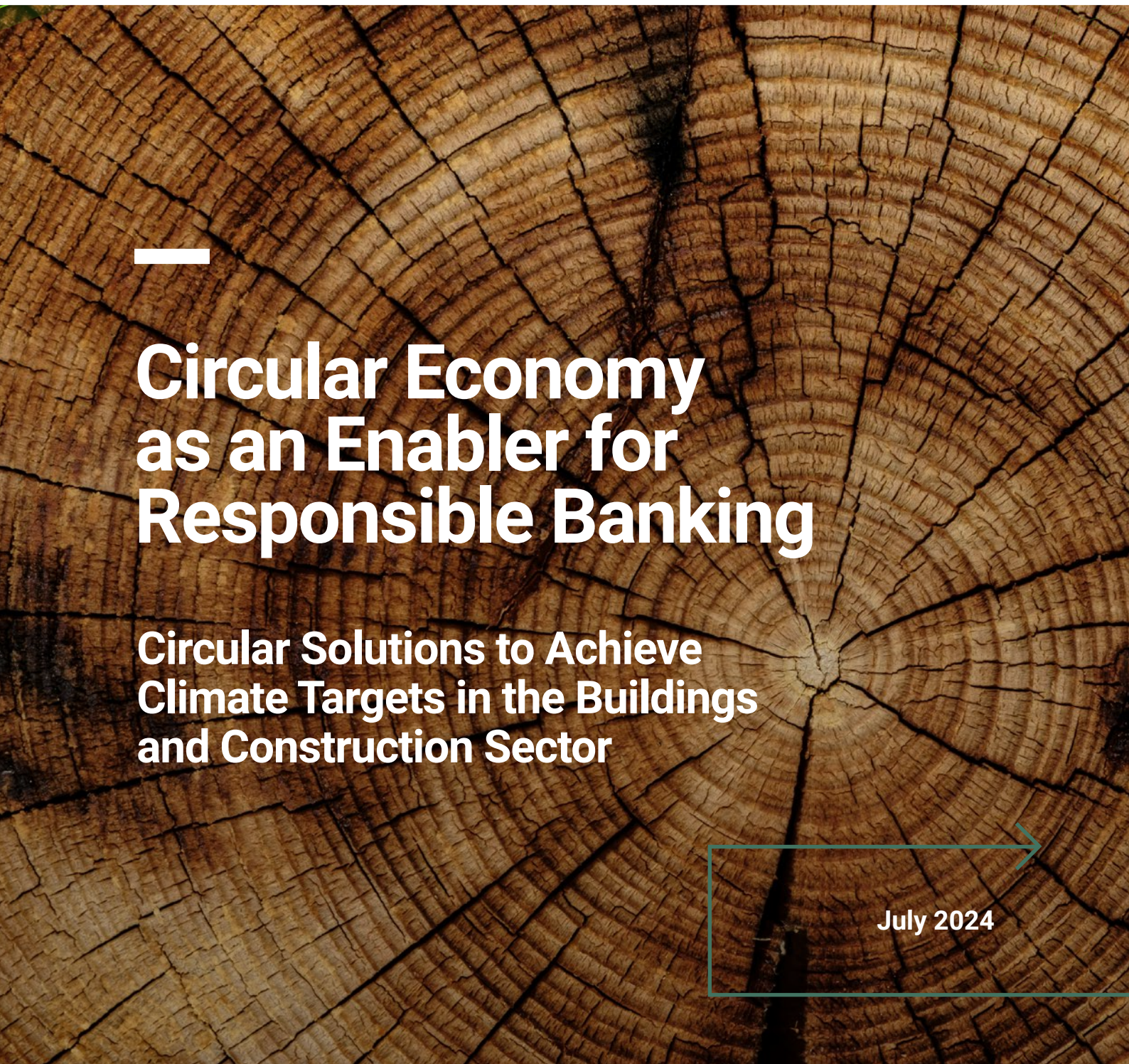
Principles for Responsible Banking:
Guidance for banks

UN environment programme | finance initiative

Principles for **Responsible Banking**



Circular Economy as an Enabler for Responsible Banking

Circular Solutions to Achieve Climate Targets in the Buildings and Construction Sector

July 2024

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Member banks

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Acronyms and abbreviations

BAT	Best Available Techniques
CDP	Carbon Disclosure Project
CSRD	Corporate Sustainability Reporting Directive
CTI	Circular Transition Indicators
E&S	Environmental and social
EFRAG	European Financial Reporting Advisory Group
EPR	Extended Producer Responsibility
ESG	Environmental, social and governance
ESRS	European Sustainability Reporting Standards
EU	European Union
GFANZ	Glasgow Financial Alliance for Net Zero
GHG	Greenhouse gas
GRI	Global Reporting Initiative
ICT	Information communications technology
IDB	Inter-American Development Bank
ILO	International Labour Organization
IPBES	Intergovernmental Panel on Biodiversity and Ecosystem Services
ISSB	International Sustainability Standards Board
KPI	Key performance indicator
KYC	Know Your Customer
LCA	Life cycle assessment
MDB	Multilateral development bank
NDCs	Nationally Determined Contributions
PaaS	Product as a Service
PD	Probability of default
PRB	Principles for Responsible Banking
SBTi	Science Based Targets initiative
SBTN	Science Based Targets Network
SMEs	Small and medium-sized enterprises
SDGs	Sustainable Development Goals
TCFD	Task Force on Climate-Related Financial Disclosures
TNFD	Taskforce on Nature-related Financial Disclosures
TPT	Transition Plan Taskforce

TSC	Technical Screening Criteria
UNEP	United Nations Environment Programme
UNEP FI	United Nations Environment Programme Finance Initiative
WBCSD	World Business Council for Sustainable Development
WCEF	World Circular Economy Forum
WWF	World Wide Fund for Nature

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1. Introduction

This sectoral guidance is a supplement to the guidance Circular Economy as an Enabler for Responsible Banking: Circular Solutions to Achieve Climate Targets (referred to below as the Guidance) and should not be read in isolation.

Most Principles for Responsible Banking (PRB) signatory banks set climate mitigation targets (UNEP FI, 2023b) and a vast proportion of them are also members of the Net-Zero Banking Alliance (NZBA). The first progress report (UNEP FI, 2022) of the NZBA published in 2022 summarises the initial set of targets produced by its members. With regard to the real estate sector, 65 per cent of banks had set targets for both residential and commercial real estate. Of the banks that had set commercial real estate targets at that time, 56 per cent had covered their lending portfolios only, 13 per cent covered lending and investment, 6 per cent covered lending and capital markets, and 19 per cent covered lending, investment and capital markets. Residential targets set at that time were mostly (78 per cent) lending only, with 11 per cent of targets covering lending, investment and capital markets. Most banks used the International Energy Agency's (IEA) Net Zero Emissions by 2050 (NZE 2050) scenario for target setting, while some used the IEA's Beyond 2°C (B2DS) scenario or the Network for Greening the Financial System's (NGFS) Net Zero 2050 (NZ2050). Most banks' targets (88 per cent) covered only clients' Scope 1 and 2 emissions, while 6 per cent also covered clients' Scope 3 emissions (UNEP FI, 2023a).

As banks progress from setting climate targets to implementing them, it becomes crucial to focus on practical strategies for leveraging circular solutions to make tangible impacts. The adoption of circular principles in the buildings and construction sector is pivotal for decarbonisation efforts, potentially cutting global carbon emissions from building materials by 38 per cent by 2050 through decreased reliance on steel, aluminum, cement and plastic (Ellen MacArthur Foundation, n.d.).

This guidance is designed to assist banks in integrating circular solutions in the buildings and construction sector as part of their climate transition plans to achieve net-zero emissions or climate mitigation targets, though a reduction of their financed emissions and through transition finance strategies (Chapter 2). It also explores specific areas of action in all four PRB categories—internal policies and processes, client engagement, portfolio composition and financial flows, and advocacy and partnerships (Chapter 3).

Circular economy as an enabler for climate mitigation in the buildings and construction sector

The buildings and construction sector contributes significantly to global climate change, accounting for approximately 21 per cent of global GHG emissions and 37 per cent of global CO_2 emissions (UNEP, 2024). Yet, the sector remains largely off track for decarbonisation by 2050, lacking progress in building energy intensity, in line with the respective nationally determined contributions (NDCs) and building energy codes. With urbanisation on the rise and global material use projected to double by 2060, the sector's emissions are set to surge, particularly from materials like concrete, steel and aluminium, with concrete alone which could contribute up to 12 per cent of global GHG emissions by 2060 (OECD, 2018).

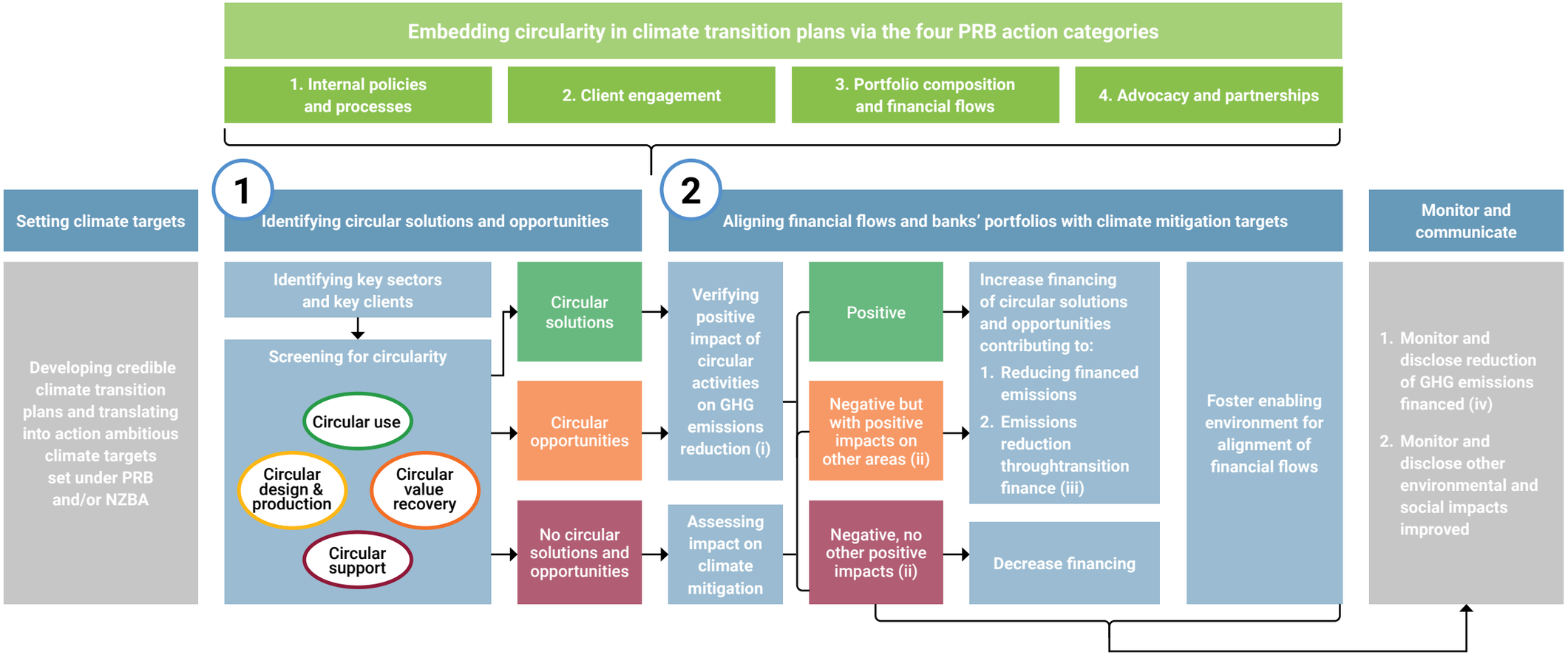
Most attention has focused on reducing **operational carbon emissions**, generated during the use phase of buildings (for example, energy consumption for heating, cooling and lighting). **Embodied emissions,** which include the carbon footprint of materials used such as concrete, steel and other building components (from extraction to processing), as well as emissions generated from construction activities and disposal of buildings throughout the building's life cycle, remain under-addressed. However, they constitute a significant component of the sector's Scope 3 emissions and are projected to surge from 25 per cent of total emissions in the sector to 49 per cent by 2050, driven by the rising demand for building materials and advancements in operational efficiency and renewable energy adoption in buildings (OECD, 2018).

To decarbonise the sector, it is therefore crucial to apply whole life cycle thinking, which involves considering the environmental impact of material choices from extraction to demolition. This is particularly important given that buildings have long lifespans and could potentially lead to long-term lock-in effects from current investments.

Circular solutions offer a viable pathway to reduce emissions across the whole life cycle of buildings, including embodied emissions. They can broadly be classified into three strategies: **avoiding** waste and the extraction of new raw materials, **shifting** to renewable and bio-based materials, and **improving** conventional materials through decarbonisation efforts ("avoid-shift-improve") (UNEP, 2023). By 2050, these material efficiency strategies could reduce emissions by 35–40 per cent in G7 countries and by up to 50–70 per cent in China and India (UNEP & IRP, 2020). Furthermore, they enhance resilience and safety of building materials, address social issues in the material life cycle, and can lead to significant financial gains amounting to an estimated USD 31–48 billion by 2030 and USD 184–310 billion by 2050 (McKinsey & WEF, 2023). For more details on the potential of circular solutions in the global buildings and construction and underlying impacts on GHG emissions, see the Annex.

2. Identifying and financing circular solutions and opportunities with positive impact on GHG emissions

On the journey towards achieving climate commitments and targets set under PRB or NZBA, a core element of progress for banks is to embed circularity in their climate transition plans. For this, banks are invited to screen their portfolios against specific circularity criteria to identify circular solutions and opportunities (Section 2.1). This should be followed by an analysis of the associated GHG emissions impact, as detailed in Section 2.2, which will inform banks' financing decisions. By financing more circular solutions and opportunities that contribute to reducing financed emissions and emissions reduction through transition finance, while also decreasing financing for projects with negative GHG emissions impact, banks can progress towards aligning their buildings and construction portfolio with climate mitigation targets while achieving additional environmental and social benefits. Figure I provides an overview of banks' journey to embed circularity in their climate transition plans.



i. Circularity is generally expected to have a positive impact on GHG emissions reduction, observing a negative impact is expected to occur only in rare cases

ii. Positive impacts on other areas such as nature, pollution, healthy and inclusive economies

iii. E.g. defined by GFANZ' Key Transition Finance Strategies (similar to other frameworks such as NZBA, CBI, ICAPs, NZIF, SBTi):

1. Climate Solutions,
2. Aligned
3. Aligning
4. Managed Phase Out

iv. Report reduction of GHG emissions financed and alignment with GFANZ Key Transition Finance Strategies (or under other frameworks such as NZBA, CBI, ICAPs, NZIF, SBTi)

Figure I: Integrating circularity in transition plans to achieve climate targets
See the Guidance for further details

2.1 Identifying circular solutions and opportunities

The use of a screening or categorisation approach to assess banks' portfolios against a set of circularity criteria allows them to identify circular solutions and opportunities in the buildings and construction sector and value chain. Although sector-agnostic, the European Commission Categorisation System can be used by banks to identify circular activities, projects and clients in the buildings and construction sector across circular business models.

1. **Circular design and production**
   - Design innovation: strategies that avoid waste and improve circularity through resource-efficient and holistic design that extends the life of buildings and designs out carbon upfront, including the use of recycled and reused materials. It is important to note that early design choices have repercussions on the ability to reuse or recycle materials later, which also explains why the potential to reduce and avoid embodied carbon in buildings is greatest during the early planning and design phases.
   - Process innovation and re-engineering: strategies that avoid material waste and energy consumption during more circular and energy-efficient material extraction and construction processes, for example by using innovative technologies such as 3D printing.
   - Material innovation and substitution: using alternative materials with lower environmental footprints (such as recycled or bio-based materials) and improving the environmental footprint of conventional materials by researching and developing decarbonised versions of conventional building materials (such as low-carbon cement or recycled steel).
2. **Circular use**
   - Product and asset use optimisation: strategies that shift to leasing and sharing models for building materials and components to enhance their utilisation efficiency, repair, reuse, and refurbishment and avoid waste.
   - Product and asset life cycle extension: alternative strategies that prolong the lifespan of materials and avoid waste (such as repurposing or remanufacturing).
3. **Circular value recovery**
   - Recovery of waste: strategies that avoid waste and improve decarbonisation through the collection and processing of construction components, elements and products for reuse, and waste for recycling, or other circular economy strategies to recover valuable resources.
4. **Circular support**
   - Enable other circular activities and projects: support services (such as consultancy or technology solutions) that facilitate the adoption of circular practices in the buildings and construction industry.

Many strategies fall under the previously mentioned "avoid-shift-improve" approach, which proves useful in defining specific circularity criteria along the entire value chain of buildings. Box 1 contains an illustrative list of selected key performance indicators (KPIs) in the buildings and construction sector that banks can use to assess the circularity or circularity potential of a client's activities.

Box 1: Examples of circularity indicators for buildings and construction

- Percentage decrease in virgin materials use
- Decrease in the amount of material sent to landfill from construction sites
- Percentage increase in recycled materials sourced for construction
- Mass of materials from deconstruction sites which can be reused and repurposed or resold in its current state (tonnes)
- Percentage increase in building utilisation
- Reduction in time taken to fit out and maintain a building due to modular design
- Improved energy and water consumption and air quality of buildings

For more guidance on the development and selection of sector-specific indicators, banks can refer to the work by the Global Alliance for Buildings and Construction (Global ABC, n.d.) or the Platform for Analysing Carbon Emissions (PACE, n.d.). The technical screening criteria (TSC) of the EU Taxonomy (European Commission, 2023) include precise indicators for construction and real estate activities to be considered as substantially contributing to the transition to a circular economy. TSC are defined for activities related to the construction of new buildings (in particular NACE codes, F41.1, F41.2 and F43), renovation of existing buildings (in particular NACE codes, F41 and F43), and demolition and wrecking of buildings and other structures (in particular NACE code F43.1). Examples of criteria include the maximum percentage of material that can come from primary raw materials for different types of building materials (such as concrete), or the minimum amount of waste generated on the construction site that must be prepared for reuse or recycling. These indicators have to be used by banks located in the European Union and may inspire banks outside the European Union to define circularity criteria to screen and analyse their buildings and construction portfolios.

2.2 Aligning financial flows and banks' portfolios with climate mitigation targets

Having classified activities, projects and clients in the buildings and construction sector according to their level of circularity or circularity potential, banks need to analyse their impact on GHG emissions in order to align their portfolio with climate mitigation targets.

2.2.1 Verifying positive impact on GHG emissions and other sustainability topics

Circular solutions and opportunities are expected to reduce GHG emissions in the buildings and construction sector, yet confirming this reduction is essential to validate claimed benefits and address potential trade-offs effectively. This ensures that reductions attributed to circular solutions are credible, reliable and genuinely contribute to their climate mitigation targets.

Hence, after a bank has identified circular solutions and opportunities in its portfolio, it still needs to confirm the positive impact on climate mitigation and ensure that no negative interlinkages arise. For non-circular solutions with no opportunities, assessing GHG emissions reduction is still necessary to inform the bank's financing decision.

As previously explained, a building's carbon footprint over its lifespan (namely, life-cycle carbon emissions) is the sum of its embodied plus operational emissions (PCAF, GRESB, CRREM, 2023). The standards CEN/TC 350 (CEN, 2024) and EN 15978 (BSI, 2011) define the different sources of carbon emissions in buildings. EN 15978 identifies four stages in the life of a building: product manufacture, construction, in-use and end-of-life. It also details subcategories to pinpoint specific sources of emission as displayed in Figure II. These categories align with the different business model categories defined in the European Commission Categorisation System, as seen below.

GHG emissions of a built asset and alignment with the EU commission categorisation system

EU Commission Categorisation System		Stages in the life of a building		Sub categories of source of emissions		
Circular Support	Circular Design & Production	Product Manufacture	A1	Raw Material Supply		
			A2	Transport		
			A3	Manufacturing		
		Construction	A4	Transport		
			A5	Construction Installation Process		
	Circular Use	In-Use	B1	Use	B6	B7
			B2	Maintenance (incl transport)	Operational Energy Use	Operational Water Use
			B3	Repair (incl transport)		
			B4	Replacement (incl transport)		
			B5	Refurbishment (incl transport)		
	Circular Value Recovery	End Of Life	C1	De-construction/Demolition		
			C2	Transport		
			C3	Waste Processing		
			C4	Disposal		
		Beyond Lifecycle	D	Reuse, Recovery, Recycling, Exported Energy		

Figure II: Different stages of the building's life cycle. Adapted from: PCAF, CRREM & GRESB, 2023

Banks can report financed building operational emissions using absolute emission metrics (for example, annual tCO_2e) and/or emission intensity metrics (for example, annual $kgCO_2e/m^2$). Banks may monitor residential real estate and commercial real estate separately given the different scenario pathways and frequent operational segregation. For more information on the requirements and calculation of emission intensity data, see the Net-Zero Banking Alliance (NZBA)'s Climate Target Setting for Real Estate Sector Financing from 2023. It also proposes concrete metrics, attribution methods and benchmarking approaches, depending on the data available in different geographies. Operational emissions often have better data availability than embodied emissions, which is a relatively new concept and still evolving. The former are typically included in banks' real estate portfolio targets, and can be reduced through energy efficiency measures. With regard to embodied emissions, there is still a lot of variability depending on product manufacturers who are responsible for providing lower emissions products. These products form the baseline of embodied emissions reductions and will limit the total emissions reductions that can be achieved. Embodied emissions data is gradually becoming more accessible, which also allows banks to identify the most effective energy efficiency interventions for improving energy and financial performance across the whole life cycle of buildings (UNEP FI, 2023a).

2.2.2 Increasing circular financing with positive impact on climate mitigation and decreasing financing in absence of positive impact

After verifying the expected impact on GHG emissions, banks are expected to strategically increase financing towards circular solutions and opportunities that significantly reduce emissions, particularly in high-impact sectors such as buildings and construction. This proactive approach not only enhances the environmental performance of the bank's portfolio but also aligns with global climate mitigation targets.

By prioritising and increasing investments in circular economy initiatives—such as sustainable building materials, energy-efficient designs, and innovative waste management systems—banks can drive substantial emissions reductions.

Conversely, banks must also decrease financing for activities, projects, and clients that have negative impacts on climate mitigation or other critical environmental and social impact areas.

This dual approach ensures that banks are not only reducing their financed emissions but also contributing to a broader transition towards a low-carbon economy. Through transition finance mechanisms, banks can facilitate the decarbonisation of the high-emitting buildings and construction sector, thereby supporting efforts to mitigate climate change.

Given their potential to reduce GHG emissions across the entire buildings and construction value chain, the identified circular solutions or opportunities can be strategically integrated into one of the four key transition financing strategies as defined by the GFANZ (Climate Solutions, Aligned, Aligning, Managed Phaseout). For a more detailed description of these strategies, see Section 2.3 of the paper *Circular Economy as an Enabler for Responsible Banking—Leveraging the Nexus between Circularity and Sustainability Impact*.

3. Actions to leverage circular solutions and opportunities in line with bank's climate transition plans

As discussed above, the actions needed to reduce carbon emissions span the whole life cycle of the buildings and construction sector. Banks and the financial sector can play a key role in the transition to a sustainable and circular buildings and construction sector through embedding circularity considerations in: internal policies and processes, client engagement, portfolio composition and financial flows, and advocacy and partnerships. For a more detailed description of these action categories as defined by the PRB framework, see Section 5.2 of the paper *Circular Economy as an Enabler for Responsible Banking—Leveraging the Nexus between Circularity and Sustainability Impact*.

This chapter provides an illustrative, non-exhaustive list of actions banks can take to integrate circular solutions into climate transition plans (bank level), as well as a description of the expected impact on GHG emissions in the real economy (client level, for Scope 1, Scope 2 and Scope 3 emissions). The last column shows the relevant step of the value chain, according to the four business model categories defined by the European Commission Categorisation System: circular design and production, circular use, circular value recovery and circular support. Banks then need to monitor and report the impact on financed GHG emissions and, if applicable, the contribution to GFANZ's key transition financing strategies.

3.1 Internal policies and processes

Table 1: Integrating circularity in **internal policies and processes** to achieve climate mitigation targets—sector agnostic actions for banks.

Actions by banks to integrate circular solutions into climate transition plans (bank level)	Impact of these actions on GHG emissions (client level)	Circular business model category
Due diligence, risk assessment and other internal processes		
Integrate circular economy principles into risk assessments and Know Your Customer (KYC) protocols, that prioritise circular practices in the buildings and construction sector, including the use of eco-friendly, low-carbon materials, construction methods and closed-loop systems.	Integrating circular economy principles into risk assessments and KYC protocols can significantly reduce GHG emissions by promoting the use of eco-friendly, low-carbon materials and closed-loop systems. This approach decreases emissions from raw material extraction, construction processes, and waste management, impacting Scope 1, 2, and 3 emissions	Across value chain
Develop processes and methodologies to improve data availability, for example by means of data collection templates. These may include requirements for environmental impact assessments that include an evaluation of circular economy practices, such as life cycle assessments (LCA) of materials and resource efficiency.	Improving data availability through environmental impact assessments and life cycle assessments (LCA) enables better decision-making for reducing GHG emissions. Accurate data helps identify high-emission areas in the supply chain and building operations, leading to targeted reductions in Scope 1, 2, and 3 emissions	Across value chain
Sectoral policies and other internal policies		
Develop and implement lending policies in the buildings and construction sector that prioritise projects incorporating circular economy principles, such as the use of recycled materials, low-carbon materials and methods, modular construction and design for deconstruction.	Lending policies that prioritise circular economy projects can drive significant GHG reductions by encouraging the use of recycled and low-carbon materials, modular construction and design for deconstruction. These practices reduce emissions across the entire building lifecycle, particularly in Scope 3	Across value chain
Establish a policy requirement that financed construction projects achieve a recognised green building certification that incorporates circular economy principles and ideally includes an LCA.	Requiring financed construction projects to achieve recognised green building certifications that incorporate circular economy principles can comprehensively reduce GHG emissions. Such certifications ensure improvements in energy efficiency and material use, leading to lower operational (Scope 1 and 2) and embodied carbon emissions (Scope 3).	Across value chain

Internal capacity building		
Enhance knowledge and awareness in the buildings and construction sector through specialised training for board members and client-facing employees on circular economy practices and their connections to climate mitigation and other impact areas. Build internal capacity to engage clients effectively by developing a robust client engagement strategy, conducting portfolio impact analyses and creating new products and services that support clients' circular business models, technologies and operations.	Building internal capacity to engage clients effectively through a robust engagement strategy, portfolio impact analyses and new products and services that support circular business models is essential. This comprehensive approach is a prerequisite for significantly reducing GHG emissions across Scope 1, 2, and 3, ensuring that all direct and indirect emissions in the value chain are minimised.	Across value chain

3.2 Client engagement

Table 2: Integrating circularity in **client engagement** to achieve climate mitigation targets—sector agnostic actions for banks

Actions by banks to integrate circular solutions into climate transition plans (bank level)	Impact of these actions on GHG emissions (client level)	Circular business model category
Client awareness raising		
Engage with clients to raise awareness of the benefits of circular solutions in the buildings and construction sector, and encourage the adoption of relevant circular frameworks.	Promoting practices like material reuse, waste reduction, and energy efficiency can result in a significant decrease in emissions from raw material extraction and processing (Scope 3), as well as from construction and operational processes (Scope 1 and 2). The holistic approach of circular solutions can drive systemic changes, potentially reducing the sector's overall carbon footprint by promoting more sustainable practices throughout the entire building life cycle.	Across value chain

Actions by banks to integrate circular solutions into climate transition plans (bank level)	Impact of these actions on GHG emissions (client level)	Circular business model category
Client support plan		
Help clients implement building retrofit programmes.	Encouraging building retrofit programmes can substantially reduce GHG emissions, primarily in Scope 1 and 2. Retrofits improve energy efficiency in existing buildings, reducing operational emissions from heating, cooling, and lighting. Additionally, by extending the lifespan of existing structures, retrofits avoid emissions associated with new construction (Scope 3).	Circular use
Collaborate with architects, engineers and construction firms to integrate circular design principles into building projects, focusing on aspects such as material selection, modular construction and adaptive reuse.	Prioritising material selection, such as recycled and low-carbon materials, and promoting modular construction and adaptive reuse reduces the demand for virgin materials and minimises construction waste, leading to lower embodied carbon in buildings. Additionally, designing for longevity and flexibility enables buildings to adapt to changing needs over time, reducing the need for new construction and further curbing emissions.	Circular design and production
Encourage clients to require project teams to adopt and use digital material passports and related data repositories to facilitate the tracing, marketing and trade of raw materials in end-of-life products and constructions.	By providing comprehensive data on material composition, origin and recyclability, these tools enable supply chain transparency and more informed decision-making for material reuse and recycling. This approach can decrease emissions associated with raw material extraction, manufacturing, and waste disposal (primarily Scope 3). Digital passports also facilitate the transition to a circular economy in construction, potentially reducing the need for virgin materials and associated emissions. Additionally, by optimising material use and enabling more efficient deconstruction, these tools can indirectly lower emissions from construction and demolition processes (Scope 1 and 2).	Circular support

Actions by banks to integrate circular solutions into climate transition plans (bank level)	Impact of these actions on GHG emissions (client level)	Circular business model category
Encourage clients to promote modular construction.	Promoting modular construction can lead to significant reductions in GHG emissions, primarily in Scope 3 as it typically results in less waste, more efficient use of materials and reduced transportation needs. This can lower emissions associated with material production and construction processes (embodied emissions). Additionally, the controlled factory environment for module production can improve energy efficiency, potentially reducing Scope 1 and 2 emissions during the construction phase.	Circular design and production
Support construction waste recycling programmes.	Holds potential to significantly reduce Scope 3 emissions by diverting waste from landfills and reusing materials, thereby reducing the need for virgin material extraction and processing, which are major sources of indirect emissions. The use of recycled materials in new construction often requires less energy than virgin materials, potentially reducing Scope 1 and 2 emissions in manufacturing processes. Furthermore, efficient recycling programmes can decrease transportation emissions related to waste disposal.	Circular value recovery
Encourage facilitating shared space and co-working models.	By maximising the utilisation of existing buildings, these models reduce the need for new construction and embodied emissions of materials, while also leading to more efficient use of energy and resources in building operations.	Circular use

Actions by banks to integrate circular solutions into climate transition plans (bank level)	Impact of these actions on GHG emissions (client level)	Circular business model category
Products and services offering		
Offer technical and financial support to startups and small and medium-sized enterprises (SMEs) in the buildings and construction sector, which are born circular and have circular designs, circular business models and circular manufacturing processes.	SMEs are a driving force in the construction sector and hold significant potential for innovation. Creating accessible financing options and technical assistance for SMEs helps them lower their resource and energy use, which results in GHG emissions reductions across the construction value chain. It also supports innovation in sustainable building practices, promotes the adoption of circular economy principles and enhances the overall environmental performance of the construction industry.	Across value chain
Develop criteria for sustainability-linked loans that include specific circular economy targets, such as the reduction of construction waste, the use of renewable energy sources and the integration of closed-loop water systems.	Offering financial incentives for developers to adopt circular solutions can significantly reduce the carbon footprint of buildings by promoting the use of sustainable materials and practices. This approach encourages the reduction of emissions across all scopes by minimising the need for virgin materials, enhancing energy efficiency and reducing waste throughout the building life cycle.	Across value chain

3.3 Portfolio composition and financial flows

Table 3: Integrating circularity in **portfolio composition and financial flows** to achieve climate mitigation targets—sector agnostic actions for banks

Actions by banks to integrate circular solutions into climate transition plans (bank level)	Impact of these actions on GHG emissions (client level)	Circular business model category
Increasing circular financing with positive impact		
Increase financing of sustainable materials and low-carbon design and methods.	Significant reduction in Scope 3 embodied carbon emissions from materials production, construction processes and operational emissions from more energy-efficient buildings.	Circular design and production

Actions by banks to integrate circular solutions into climate transition plans (bank level)	Impact of these actions on GHG emissions (client level)	Circular business model category
Increase financing for clients that promote modular construction and building retrofit programmes.	Reduces embodied emissions by reducing material waste and construction time, improving resource efficiency and extending the lifespan of existing buildings. Modular construction reduces waste and transportation emissions (Scope 3), while retrofits enhance energy efficiency and reduce operational emissions (Scope 1 and 2).	Circular design and production, Circular value recovery
Increase financing towards product-as-a-service models.	This model shifts the focus from selling physical products to providing ongoing services, which incentivises manufacturers to create durable, easily maintainable and recyclable products, thereby reducing the overall environmental impact throughout the product life cycle, notably in Scope 3 emissions from the manufacturing, processing and end-of-life stages of products (Scope 3). It also decreases emissions from operational activities (Scope 1 and 2) through more efficient resource use and optimised production processes.	Circular use
Offer financial incentives for deconstruction operations, encouraging recovery and reuse of materials.	Providing financial incentives for deconstruction operations can significantly reduce GHG emissions by facilitating the recovery and reuse of building materials. This reduces the demand for virgin materials and minimises waste, impacting Scope 3 emissions primarily, while also lowering emissions from demolition activities (Scope 1).	Circular value recovery
Decreasing financing with no positive impact		
Decrease financing of real estate projects that are designed for short-term use or lack adaptability for future purposes.	Such projects contribute to premature demolition and waste generation, with little or no potential for circularity and hence emissions reductions.	Circular use
Phase out financing for real estate projects that lack comprehensive end-of-life plans or strategies for material recovery and reuse.	Projects without proper end-of-life planning contribute to increased waste and inefficient resource utilisation, thereby hindering circularity and increasing the carbon footprint of the buildings and construction sector. Phasing out financing for these projects can significantly reduce GHG emissions by ensuring that buildings are designed for material recovery and reuse, which lowers the need for new materials and minimises waste.	Circular value recovery

3.4 Advocacy and partnerships

Table 4: Integrating circularity in **advocacy and partnerships** to achieve climate mitigation targets—sector agnostic actions for banks

Actions by banks to integrate circular solutions into climate transition plans (bank level)	Impact of these actions on Scope 1,2,3 GHG emissions (client level)	Circular business model category
Engaging with policymakers		
Engage with government agencies and regulatory bodies to advocate for policies and incentives that support circular economy initiatives in the construction industry, such as tax breaks for using recycled materials or grants for green building projects.	Encouraging favorable regulatory frameworks can accelerate the adoption of circular economy practices, including the use of recycled materials, energy-efficient designs and sustainable building practices, thereby leading to significant reductions in GHG emissions and promoting sustainability at a larger scale. For instance, tax breaks and grants could incentivise developers and construction firms to adopt circular principles, potentially leading to widespread reductions in embodied carbon and operational emissions across the built environment.	Across value chain
Partnering with other financial institutions, including development financial institutions		
Facilitate knowledge sharing and best practices with other financial institutions, by organising forums, workshops and conferences that facilitate the exchange of knowledge and best practice related to circular economy principles in the construction sector, involving stakeholders from various parts of the value chain.	Creating platforms for knowledge sharing helps spread innovative circular solutions and accelerates their implementation, reducing environmental impact and promoting the efficient use of resources.	Across value chain
Collaborate with international financial institutions such as multilateral development banks or development financial institutions to access de-risking instruments (such as blended finance) for financing circular projects in the buildings and construction sector.	As construction projects often involve significant upfront costs and long payback periods, accessing de-risking instruments from international financial institutions can facilitate greater investment in circular initiatives with high potential for emission reduction. This increased funding for circular projects could accelerate the transition to low-carbon construction methods and materials, potentially leading to substantial reductions in both embodied and operational carbon emissions in the buildings sector.	Across value chain

Engaging with industry initiatives, civil society and academia		
Partner with industry leaders, construction firms and sustainability organisations to advocate for and develop standardised circular economy practices and certifications within the real estate sector.	Partnering to develop standardised circular economy practices and certifications in real estate could drive widespread adoption of sustainable building methods and materials. Standardisation would make it easier for the industry to implement circular principles, potentially leading to significant reductions in GHG emissions through increased use of recycled materials, improved energy efficiency and better end-of-life management of buildings.	Across value chain
Support research and development initiatives by funding and collaborating with academic institutions, research organisations, and startups focusing on developing new technologies and methodologies enhancing circular economy practices in construction and buildings.	Supporting research and development (R&D) initiatives focused on circular economy practices in construction could lead to breakthrough technologies and methodologies that dramatically reduce the carbon footprint of buildings. Innovations in areas like low-carbon materials, modular construction and building deconstruction techniques could significantly decrease embodied carbon and enable more efficient resource use, translating to substantial GHG emissions reductions across the building life cycle.	Across value chain
Engage in multistakeholder partnerships that bring government, industry and SMEs together on common platforms for support and action to foster circular practices across the entire value chain, with the objective of addressing fragmentation in the sector.	Engaging in multistakeholder partnerships to address fragmentation in the construction sector could lead to more coordinated and effective implementation of circular practices. By bringing together government, industry, and SMEs, this action could facilitate the adoption of circular principles across the entire value chain, and result in significant reductions in GHG emissions through improved resource efficiency, increased use of recycled materials and optimised building designs.	Across Value Chain

Annex

Additional information on sectoral impact on GHG emissions and the potential of a circular economy

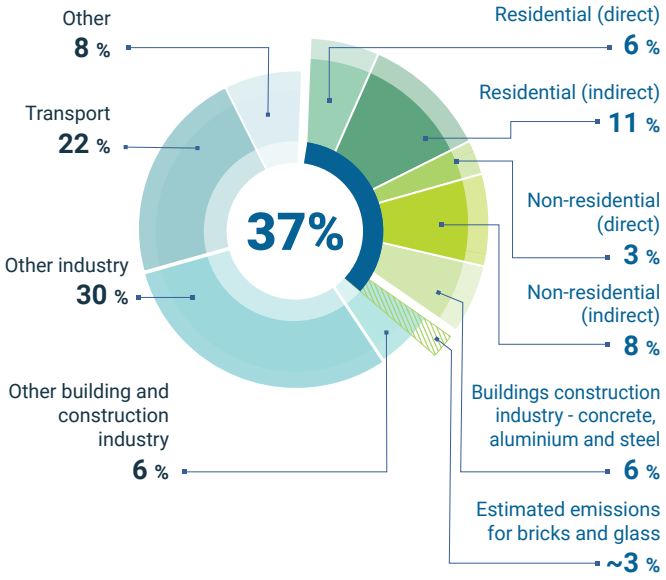


Figure III: Global share of buildings and construction operational and process CO_2 emissions in 2021 | Source: UNEP, 2024

The buildings and construction sector contributes significantly to global climate change, accounting for approximately 21 per cent of global GHG emissions and 37 per cent of global CO_2 emissions, as shown in Figure III (UNEP, 2024). A distinction can be made between the emissions stemming from buildings-related energy demand, so-called operational emissions,[1] and embodied emissions that arise during the extraction, manufacturing and transport of materials as well as on-site construction and demolition of buildings. In 2022, operational emissions amounted to 27 per cent of global carbon emissions with an additional 9 per cent of emissions coming from the construction of buildings. These embodied emissions primarily originate from the three most commonly used building materials: concrete, steel and aluminium. As urbanisation continues to rise, with an estimated 68 per cent of the world's population expected to live in urban areas by 2050 (UN Department of Economic and Social affairs (UN DESA), 2018), the global building stock is projected to double by the same year. Additionally, global material use is projected to more than double from 79 Gt in 2011 to 167 Gt in 2060 (OECD, 2018).

1 Operational emissions can be further divided into direct emissions from on-site fuel combustion (for example, space heating, water heating or cooking), and indirect emissions from purchased energy (electricity, steam, heat, and cooling) for space heating, water heating, space cooling, lighting, cooking, appliances and miscellaneous equipment.

The Organisation for Economic Co-operation and Development (OECD) projects that if "business-as usual" practices continue, the biggest increase in resource use by 2060 will be in extractive minerals, particularly in developing economies (OECD, 2018). The carbon emissions of common construction materials such as concrete, steel and aluminium are projected to grow to increasingly alarming levels, with concrete alone being expected to contribute to 12 per cent of global GHG in 2060 (OECD, 2018).

In addition to the emission intensity of building materials, it is also important to consider the material intensity of buildings and identify critical materials for reduction. Addressing global and regional material use is essential, as extraction impacts local biodiversity and climate vulnerability. Enhancing material circularity must consider ecological impacts and conflicts with other systems, such as food production and land use changes.

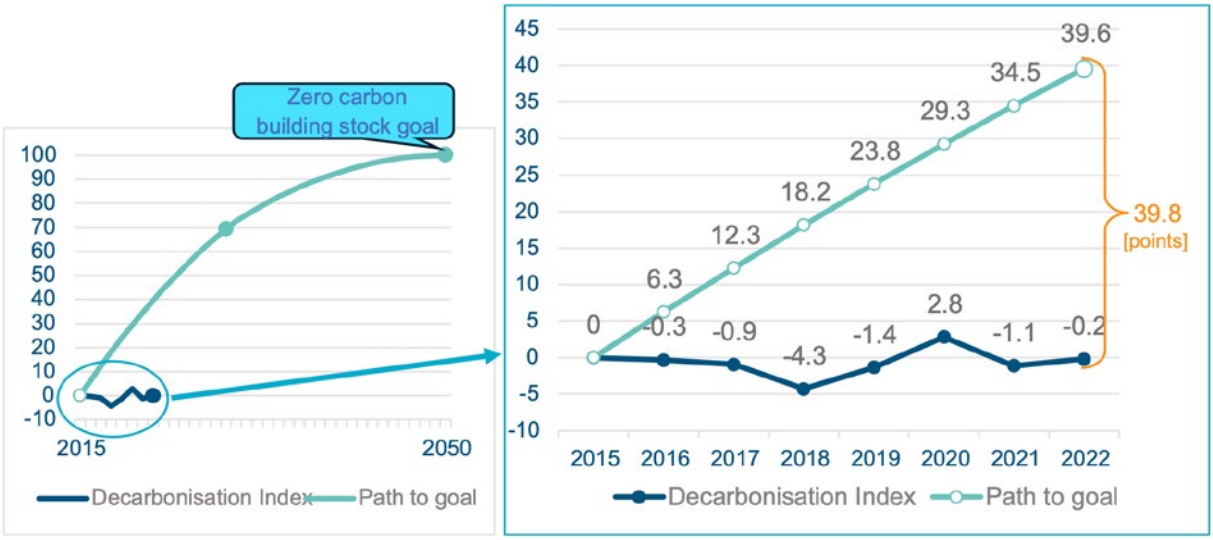


Figure IV: The Global Buildings Climate Tracker (GBCT) decarbonisation index shows that the gap between the actual climate performance of the sector and the necessary decarbonisation pathway is widening | Source: UNEP, 2024

Figure IV shows that with these projections, the buildings and construction sector remains largely off track to achieve decarbonisation by 2050 according to the Global Buildings Climate Tracker by the UNEP-hosted Global Alliance for Buildings and Construction (UNEP, 2024). The lack of progress is linked to the significant gap in progress of indicators for building energy intensity, of NDCs with extensive detail on buildings, and of building energy codes aligned to net-zero emissions (UNEP, 2024). The buildings and construction sector has also received only a small fraction of climate-focused funding for research and development compared to other sectors. Although investments in the energy efficiency of building operations increased 16 per cent among Group of Seven (G7) countries in 2021 (UNEP, 2024), such commitments pale in comparison to what is required to decarbonise the built environment. Attention has mainly focused on how to reduce operational carbon in the built environment, while embodied emissions have largely been under-addressed in current decarbonisation strategies. Yet, as seen in Figure V, the share of embodied carbon of materials is projected to surge from 25 per cent to 49 per cent by 2050 (UNEP, 2023); while the share of operational carbon is expected to shrink as electricity grids increasingly transition to renewable energy and as building operations become more efficient.

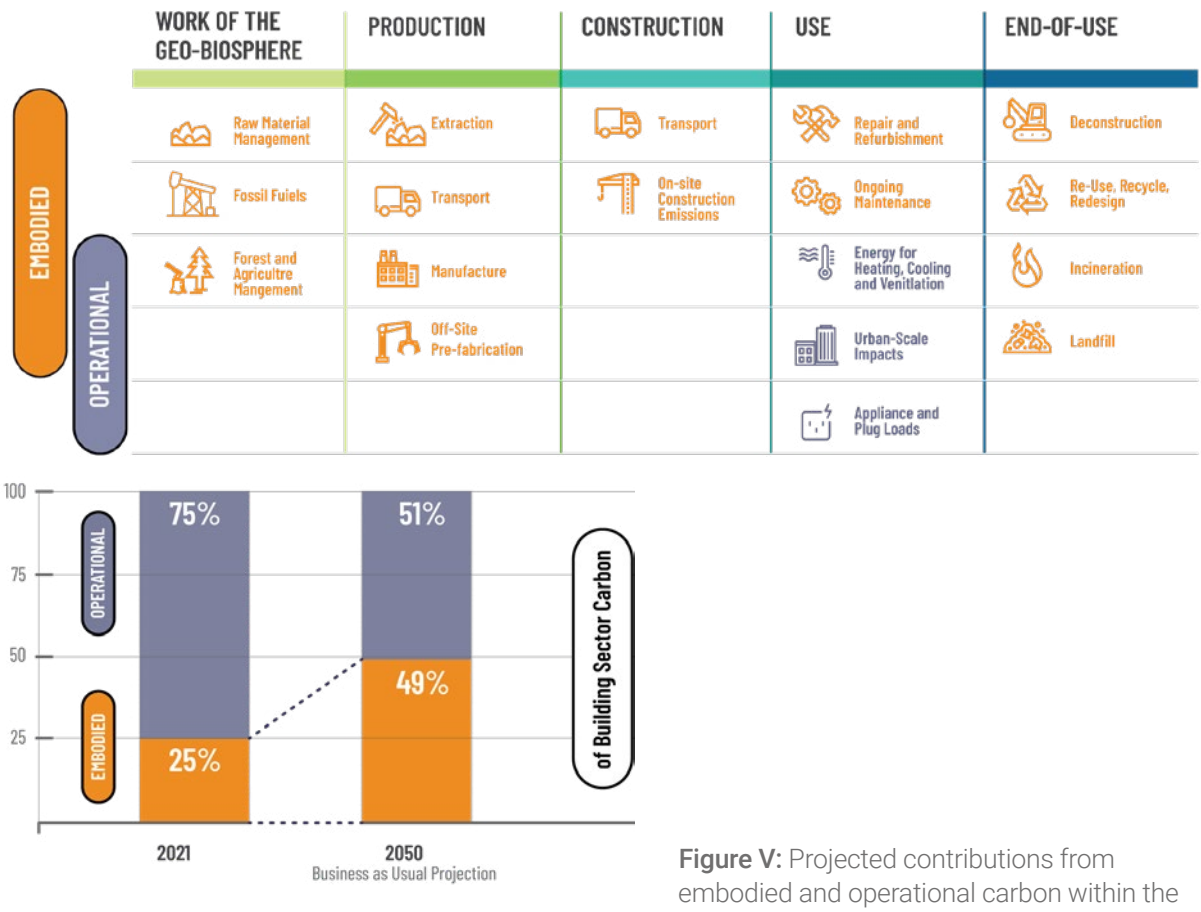


Figure V: Projected contributions from embodied and operational carbon within the building sector | Source: UNEP, 2023

To decarbonise the buildings and construction sector, circular transformations are required along the entire value chain. Such a whole life-cycle approach considers the environmental impact of material choices before the materials are even extracted, and then at each phase of the building life cycle, from extraction to processing, installation, use and demolition. The key to achieving whole life-cycle thinking is to ensure that the right decisions are made early in the design process to determine the carbon impact over a building's lifespan and end-of-life. With the expected increase in embodied emissions, it is crucial to strengthen strategies that enhance material efficiency, which can broadly be classified under the following three categories (UNEP, 2023):

- **Avoid** waste and the extraction of new raw materials by integrating circularity in design and decision-making. This includes using resource-efficient design, extending the life of buildings, and "doing more with less" through holistic design and circular economy strategies that design out carbon upfront. It also means prioritising the use of recycled, secondary and reused materials for major material types such as concrete and steel, which requires design for disassembly and the reuse of buildings and components.
- **Shift** to renewable, bio-based building materials to reduce demand for primary extraction. This includes greater use of agriculture and forestry by-products. Rather than relying on virgin forest for materials, it requires using wood and timber harvested from lands that were once used for agriculture and implementing sustainable management and afforestation practices.

- **Improve** conventional building materials through decarbonisation efforts, including through energy and material efficiency and the use of renewable energy in production. Materials made from primary sources should be produced using best available technologies and electrified processes, and end-of-use recycling and reuse should be prioritised. Recycling in the global buildings and construction sector is projected to increase by 3.7 times by 2060 and become more competitive, thereby establishing a good base for transitioning towards a circular built environment (OECD, 2018). This should be complemented by a shift towards renewable, bio-based products if practical.

Looking at the whole life cycle of buildings, the International Resource Panel (IRP) estimates that by 2050, material efficiency strategies researched could reduce emissions from the construction, operation and deconstruction (dismantling) of homes by 35–40 per cent in G7 countries and up to 50–70 per cent in China and India (UNEP & IRP, 2020). In addition to highlighting the need for material substitution; light-weighting of buildings structures; reuse and recycling that align with the "avoid-shift-improve" strategies above, the IRP also highlights the need for more intensive use of buildings and thus less floor space per capita;[2] as well as lifetime extension of buildings[3] as important strategies for material efficiency. Figure VI shows the emission reduction potential of these strategies.

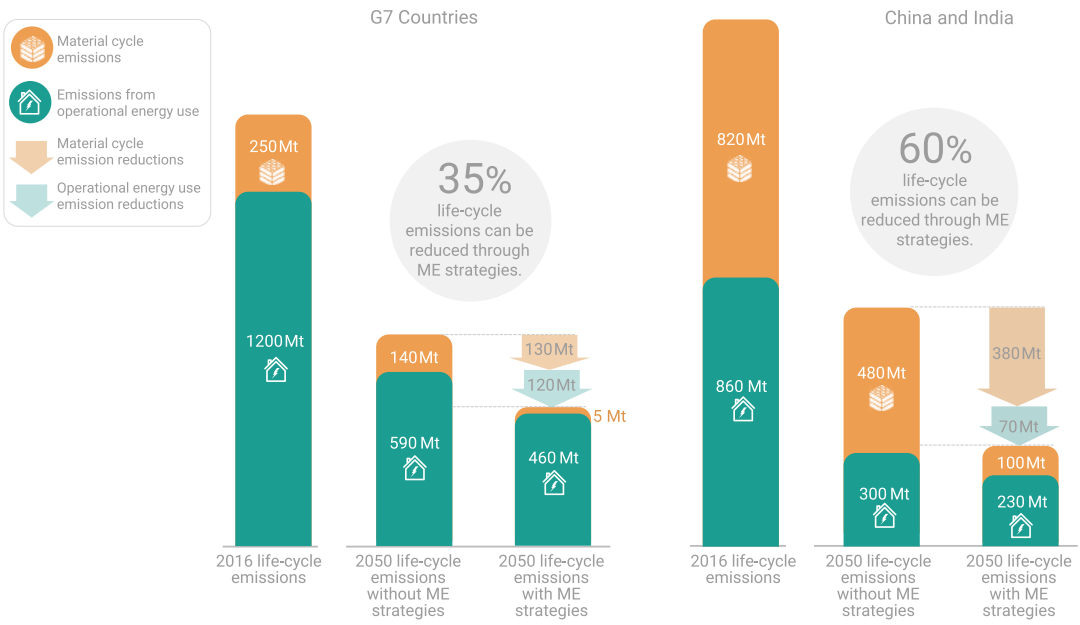


Figure VI: Life-cycle emissions from buildings with and without material efficiency (ME) strategies in 2050 in G7 countries, China and India | Source: UNEP & IRP, 2020

2 Strategies include designing buildings with smart and adaptable floor plans, peer-to-peer lodging, trendy smaller homes and replacing single family homes with multi-family homes, which are normally smaller per capita and are the residence of choice in urban areas that offer amenities.

3 One way to achieve longer building lifetime is to increase the durability of components. Ultimately, lifetime extension makes sense for well-designed, energy-efficient homes or houses of cultural heritage value rather than those of poor quality and high operational energy requirements.

Increasing material efficiency and the circularity of processes not only reduces GHG emissions, but also makes building materials chemically safer, efficient and resilient, while addressing social hotspots in the material life cycle. It thereby helps prevent unintended trade-offs between environmental, social or economic issues that inhibits progress towards sustainable development. At the same time, embedding circularity in the buildings and construction sector can result in significant financial gains. The annual net value impact of recirculating materials and minerals is estimated at USD 31–48 billion and USD 184–310 billion by 2030 and 2050 (McKinsey & WEF, 2023). The net impact of reusing and remanufacturing is estimated at USD 6–13 billion and USD 45–96 billion, respectively, in 2030 and 2050, whereas that of recycling materials and minerals (including downcycling) is estimated at a higher value of USD 25–35 billion and USD 138–214 billion, respectively, in 2030 and 2050. As building have an average lifetime of 50–120 years (UNEP & IRP, 2024), it is more urgent than ever to implement effective measures to reduce GHG emissions in the building sector and avoid lock-in effects from such long-term investments.

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