GUIDE

Sustainability practice for surveyors

June 2026

RICS®

Sustainability practice for surveyors

Guide, global

1st edition, June 2026

Published by the Royal Institution of Chartered Surveyors (RICS)
Parliament Square
London
SW1P 3AD

www.rics.org

ISBN 978 1 78321 574 4

Contents

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RICS would like to thank all those who contributed to the development of this document, including:

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Executive summary

This document provides foundational knowledge on sustainability for RICS members across all surveying disciplines, as well as for people looking to start a career in surveying. Building on RICS professional ethics and standards, as well as broader scientific knowledge on the topic, it provides the basis for the practical application of sustainability in the built and natural environments.

The overall objective of this document is to provide surveyors with the foundational knowledge needed to become critical actors in delivering sustainable outcomes through their professional practice. It:

- describes how surveyors can reduce emissions from buildings to mitigate climate change, manage and adapt to emerging risks, and reduce waste and resource extraction through circular economy practices
- outlines the role of surveyors in demonstrating environmental stewardship, respecting human rights, and generating economic and social value across all disciplines, and
- introduces the techniques, frameworks and standards that enable surveyors to evaluate and manage the impacts of their clients' assets and activities, integrating environmental and social aspects with conventional economic considerations.

The built environment is a significant generator of wealth and employment, as well as the physical infrastructure that enables human development and everyday life. However, it is also a major contributor to global carbon emissions, resource use and waste. To mitigate this negative impact, professionals need to address key challenges, such as the performance gap between design and actual outcomes. Global trends such as population growth, urbanisation and increasing climate and supply chain risks require the industry to move beyond short-term approaches to decision-making.

As well as providing amenities and raw resources, natural ecosystems deliver essential services that make life on Earth possible and underpin all human development. However, they, and the communities that depend on them, often bear the most severe consequences of climate change, resource extraction and pollution. This highlights the fundamental challenge of sustainability: reducing the impact of human activities so they remain within safe environmental limits, while continuing to meet the needs of a growing population.

Surveyors play a variety of roles across the life cycle of assets: from measurement and reporting; through assessment and forecasting; to advice, management and control. To varying degrees, they can influence decision-making at every stage, and must do so by balancing clients' interests with the trade-offs between environmental, social and economic outcomes. As skilled professionals, they use a range of tools and data to ensure their work is grounded in robust evidence and structured workflows.

Sustainability is not a separate discipline that can simply be delegated to specialists, but a cross-cutting challenge that permeates all surveying activities.

Glossary

Term	Definition
Biodiversity	Also called ‘biological diversity’, refers to either the variety of life found in a place on Earth, or the total variety of life on Earth. A common measure of this variety, called ‘species richness’, is the count of species in an area. Biodiversity also encompasses the genetic variety within each species and the variety of ecosystems that species create. (Source: Encyclopaedia Britannica)
Carbon budget	In a global context, refers to the maximum total amount of GHGs that can be emitted globally over a given period, while still keeping global warming below a specified temperature limit (such as 1.5°C or 2°C above pre-industrial levels). Once determined, the global carbon budget can be divided and allocated to individual countries and/or economic sectors in order to determine national and sectoral carbon budgets, which represent the maximum amount of GHGs that each country/sector can emit in order to remain within the global budget. (Source: adapted from Intergovernmental Panel on Climate Change (IPCC), Special Report on Global Warming of 1.5°C – Glossary (2018))
Carbon footprint	Net amount of GHG emissions and removals associated with an organisation, process, product or service, expressed as CO_2 equivalent. (Source: adapted from ISO 16759:2013, 3.1.1)
Carbon management	Encompasses strategies to reduce and control carbon emissions in order to mitigate climate change. It involves the measurement, analysis and optimisation of GHG emissions within a company or process.
Carbon offsetting	Mechanism for compensating for all or part of the carbon footprint of a product, process or organisation by reducing, removing or preventing the release of GHGs in a process occurring outside the subject under study. (Source: adapted from ISO 14050:2020, 3.11.5)

Term	Definition
Carbon sequestration	Also called 'carbon removal', the process by which CO_2 is removed from the atmosphere and stored within a material, for example by being stored in biomass by plants as biogenic carbon. (Source: adapted from RICS' Whole life carbon assessment for the built environment, 2023)
Circular economy	An economy that is restorative and regenerative by design, and that aims to keep products, components and materials at their highest utility and value at all times, distinguishing between technical and biological cycles. (Source: RICS' Whole life carbon assessment for the built environment, 2023)
Climate change adaptation	In human systems, the process of adjustment to actual or expected climate, and its effects that moderate harm or take advantage of beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate this. (Source: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, IPCC, 2022)
Climate change mitigation	A human intervention to reduce emissions or enhance the sinks of GHGs. (Source: Climate Change 2021: The Physical Science Basis, IPCC, 2021)
Climate risk	The possibility that climate change will cause harm to people and the environment. This can include impacts on human life and health, nature and ecosystems, buildings and infrastructure, and the wider economy. For organisations, climate risk refers to the probability that climate-related impacts could lead to financial losses or reduced income.
Decarbonisation	The transition towards an economy that reduces and avoids carbon emissions, especially in the energy industry.

Term	Definition
Embodied carbon/ life cycle embodied carbon	For an asset, the total GHG emissions and removals associated with construction processes, and the manufacture and transport of construction products, throughout the whole life cycle of an asset (information modules A1–A5, B1–B5 and C1–C4). (Source: adapted from RICS' Whole life carbon assessment for the built environment, 2023)
ESG (environmental, social, and governance)	Covers a number of holistic frameworks used to measure and report the sustainable and ethical behaviour of a business.
Global warming potential (GWP)	A measure of how much energy the emission of 1 ton of a gas will absorb over a given period, relative to the emission of 1 ton of carbon dioxide (CO_2). (Source: RICS' Whole life carbon assessment for the built environment, 2023)
Greenhouse gases (GHGs)	Constituents of the atmosphere, both natural and anthropogenic (human-created), that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere and clouds. Often referred to as 'carbon emissions' in general usage. (Source: RICS' Whole life carbon assessment for the built environment, 2023)
Life cycle assessment (LCA)	Compilation and evaluation of the inputs, outputs and potential environmental impacts of a product system throughout its life cycle. (Source: adapted from ISO 14040:2006 (en) Environmental management — Life cycle assessment — Principles and framework)
Operational carbon	GHG emissions arising from all energy and water consumed by an asset in use, over its life cycle. (Source: RICS' Whole life carbon assessment for the built environment, 2023)

Term	Definition
Operational carbon – energy	Operational carbon – energy (module B6) refers to GHG emissions arising from all energy consumed by an asset in use, over its entire life cycle. (Source: RICS' Whole life carbon assessment for the built environment, 2023)
Social value	The net positive impact on quality of life resulting from organisations, assets, policies or interventions.
Stranded asset	An asset that has suffered from unanticipated or premature write-downs, devaluations or conversion to liabilities. This can be caused by a range of climate and transition risks, especially when these risks are poorly understood and regularly mispriced. (Source: adapted from the Stranded Assets and Scenarios Discussion Paper, Ben Caldecott, James Tilbury and Christian Carey, 2014)
Sufficiency	The concept of reducing demand for natural resources to the minimum required to meet human needs, as a means of ensuring sustainable consumption and production.
Sustainable procurement	The process by which public authorities or private corporations seek to achieve an appropriate balance between financial, environmental and social considerations when procuring goods, services or works at all stages of the value transformation cycle, while considering their costs throughout the entire life cycle. (Source: Sustainable Procurement Recommendation No. 43, United Nations, 2019)
Transition risk	Business-related risks posed by societal and economic shifts toward a sustainable future. These can manifest as policy and regulatory risks, technological risks, market risks, reputational risks and legal risks.

Term	Definition
Upfront carbon, or upfront embodied carbon	GHG emissions associated with materials and construction processes up to practical completion (modules A0–A5). Upfront carbon excludes the biogenic carbon sequestered in the installed products at practical completion. (Source: RICS' Whole life carbon assessment for the built environment, 2023)
Whole life carbon (WLC)	The sum total of all asset-related GHG emissions and removals, both operational and embodied, over the life cycle of an asset, including disposal: modules A0–A5, B1–B7, B8 optional and C1–C4 – all including biogenic carbon, with A0 assumed to be zero for buildings. Referred to in ICMS as 'life cycle carbon emissions' (LCCE). (Source: RICS' Whole life carbon assessment for the built environment, 2023)

Acronyms

Acronym	Full name
BIM	Building information modelling
BS	British Standard
BREEAM	Building Research Establishment Environmental Assessment Method
EN	European Standard
EPD	Environmental product declaration
ICMS	International Cost Management Standard
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
LCC	Life cycle costing
LULUC	Land use and land use change
SDG	Sustainable Development Goal
SROI	Social return on investment
UNEP	United Nations Environment Programme
WLCA	Whole life carbon assessment

1 Introduction

The concept of sustainability is central to surveying practice. RICS members work to create and protect sustainable, resilient and inclusive built and natural environments, as encapsulated in parts c), g) and h) of Article 3 of the RICS Royal Charter.

Rule 3 of the RICS Rules of Conduct also includes example behaviour 3.10:

> 'Members and firms, when advising clients about projects, encourage solutions that are sustainable in that they minimise harm and deliver balanced economic, social and environmental benefits'.

For RICS, the definition of sustainability in the context of built and natural environments is the balancing of economic, environmental and social objectives across multiple levels, while fulfilling technical and functional requirements and meeting current needs without compromising those of future generations.

The concept is built on **five central tenets**:

- protection of the natural environment
- prudent use of scarce global and local resources
- protection of the health and well-being of people, as well as the social and cultural values of the local community
- promotion of access to services for the benefit of all, and
- support a prosperous local and regional economy.

1.1 Why sustainability matters: global trends, risks and challenges

Sustainability is vital across all sectors of the economy, but it is especially crucial in the built and natural environments. This sector both shapes and is shaped by sustainability challenges.

The industry has always undertaken large, complex projects to meet societal needs. The sector delivers assets (in this document, an 'asset' refers to any physical entity that is constructed or under construction, including buildings and infrastructure (like roads and railways, bridges, energy and water distribution systems, waste removal systems and process plants)) that showcase best practices in sustainability, providing scalable models for implementation and future development. Yet despite these successes, there are significant challenges that threaten the sector's sustainability credentials.

There is a pattern of thinking at the individual asset level and prioritising short-term gains, while depleting shared resources. This is what economists call the tragedy of the commons: shared resources such as land, water and energy (called commons) are overused because individual actors focus on immediate benefits over collective well-being. For the surveying profession, this underscores the need to act as stewards of these commons, embedding sustainability principles into life cycle planning to ensure that development aligns with long-term societal and environmental goals.

Asset performance is far too frequently below stakeholder expectations, sometimes damaging the sector's public image. A significant performance gap exists where actual asset performance often diverges from design intent. For example, research indicates that residential projects can emit 2.6 times more carbon than estimated, while commercial buildings can be as high as 3.8 times higher than predicted levels. On a global scale, analyses from 2024 confirm that actual energy use in residential assets is typically 30% higher than modelled, with green-certified buildings frequently failing to meet their aggressive low-carbon targets. This performance gap, encompassing energy efficiency, indoor air quality and occupant health, suggests that challenges persist long after construction has finished and operation has begun.

Performance during the design and construction stages of the asset is also problematic. The construction sector remains among the most hazardous globally, contributing significantly to worker fatalities. More than one in five construction workers worldwide report experiencing harm at work within the past two years.

As a further sign of project execution challenges, a review of 1,185 projects across 88 countries found that disputes typically extended original schedules by more than 71%, with the cumulative value of disputes exceeding $48bn. Together, these persistent issues with both project delivery and long-term asset operation demonstrate a gap in meeting stated objectives, undermining trust in the sector's ability to deliver sustainable and reliable assets.

To address these risks, surveyors are now expected to deliver outputs that extend beyond traditional metrics of time, cost, scope and quality, in order to include social and environmental outcomes. This expanded responsibility is critical because the role surveyors play in shaping public and private investment strategies; guiding development; setting and using standards; and influencing how land, resources, property and infrastructure are delivered, managed and decommissioned has far-reaching implications for human rights, quality of employment, community prosperity and equitable access to essential services.

This expanded scope is increasingly important given the scale of future demand. Today, the global population stands at 8.2bn, with 45% living in cities. By 2050, the UN projects that the global population will reach 9.7bn, with an estimated two-thirds living in urban areas. This growth is driving massive demand for buildings and infrastructure, pushing the sector's global output from $11.39tn in 2024 to $16.11tn in 2030. At the same time, according to a report by the International Labour Organization, the sector employs 220m people worldwide, representing nearly 7% of the global workforce. This demographic pressure is only one of several converging challenges facing the built environment.

Looking ahead, trillions of dollars will continue to be invested globally in physical assets across the built and natural environments as populations grow and economies develop. Estimates indicate that while around $6tn per year is currently invested in physical assets, closer to $9tn per year needs to be invested to align development with broader sustainability objectives. Therefore, to account for decarbonisation, resilience and adaptation, an annual investment of an extra $3tn is needed from 2021 to 2050. Decisions taken today on asset location, design, materials, performance and life cycle management will therefore determine environmental, social and economic outcomes for decades. For the surveying profession, this scale of capital deployment elevates sustainability from a technical consideration to a core responsibility in shaping resilient, low-carbon and equitable development pathways.

This growth in population and workforce also increases the sector's impact on natural resources and the environment. The built environment sector accounts for 32% of global energy consumption and 34% of global carbon dioxide emissions, making it one of the most significant drivers of climate change. Urban areas alone account for 70% of global emissions, with transport and buildings as the most significant contributors. 40–50% of global resources are used for housing, construction and infrastructure. Global construction and demolition waste was projected to reach 1.1bn tonnes per year by 2025. Construction materials account for about half of all solid waste worldwide, underscoring the sector's significant contribution to the global resource crisis.

Water consumption is also significant in the construction sector, with the sector's global water footprint estimated at approximately 5.3% of global withdrawals in 2020, and buildings and infrastructure are estimated to account for around 15% of global freshwater use.

Beyond resource depletion, biodiversity loss represents another critical concern. It is estimated that human activity is threatening the extinction of around a million species. This activity includes land use changes for urban development and infrastructure. The construction and operation of buildings and infrastructure account for nearly 30% of global biodiversity loss. Urban land expansion also leads to a decline in wildlife populations, reflecting widespread ecosystem stress.

Climate risks compound these challenges. Approximately 3.3–3.6bn people live in areas that are highly vulnerable to climate change. This means existing and new assets, whether built or under construction, are at increased risk of damage from climate-induced extreme events. Extreme heat events, flooding and wildfires are increasing worldwide, threatening lives, the built environment and economic stability. Coastal flooding and rising sea levels also endanger cities and critical assets.

These converging pressures require urgent action to address sustainability across the built environment. The Intergovernmental Panel on Climate Change emphasises that a sustainable built environment is critical for achieving deep emissions reductions and advancing climate-resilient development. This requires integrated planning, efficient construction and retrofit, reduced energy and material use, and nature-based solutions that enhance performance.

1.2 Purpose and structure of the guide

This guide is for people pursuing RICS membership, early-stage RICS members across all surveying disciplines and senior professionals who do not work directly in sustainability assessment or other sustainability-related fields, but wish to update their knowledge in these areas. It may also be helpful to clients of RICS members.

Sustainability is a broad, interdisciplinary field encompassing environmental, social, economic and governance issues; this guide cannot cover every aspect in detail. It instead focuses on the concepts, themes and methods most relevant to surveying practice in the built and natural environments. Each practice area then has technical standards and guidance to provide the extra detail.

Readers can consult the entire guide or specific sections depending on their roles, experience levels and areas of interest. Each section builds on core concepts and progresses to more practical applications, serving as both a learning guide and a reference.

- **Section 2** provides an overview of how sustainability thinking has developed over time and how it relates to land, property, infrastructure and construction. It also introduces the three dimensions of sustainability – environmental, social and economic – and explains why these should be considered together rather than in isolation.
- **Section 3** explores how sustainability can be measured, assessed and managed through a structured workflow. It introduces key frameworks, indicators, assessment methods and tools, defines the scope and purpose of assessments, and examines how certification schemes and regulatory mechanisms can demonstrate sustainability performance across products, assets, systems and organisations.
- **Section 4** explores four critical sustainability issues for professionals in the built and natural environments:
    - climate change mitigation
    - climate change adaptation and resilience
    - circularity and resource use, and
    - biodiversity and ecosystem health.
- **Section 5** examines sustainability considerations across different areas of surveying practice. It illustrates how, at a high level, surveyors contribute to decision-making about assets throughout their life cycle, from investment and planning through design, construction, operation, maintenance, renovation and end of life.
- **Section 6** looks at what the future holds, for both individual readers and the industry in general.
- **Section 7** provides a list of additional resources.

2 Understanding sustainability

Sustainability as a concept in forestry dates back to at least the 17th century, later expanding to apply to other disciplines and areas. Over time, it became clear that achieving long-term sustainability required an organised, continuous effort, giving rise to the concept of **sustainable development**.

The most widely recognised first definition of sustainable development comes from the 1987 UN Brundtland Report, which defines it as development that meets present needs without compromising the needs of future generations.

More recently, sustainability has shifted from being a standalone or symbolic concern to becoming an integral part of business strategy and reporting. Sustainability, once primarily associated with public image, is increasingly seen as an essential element of company values, and its absence is often viewed as a potential business risk. However, there is still a long road ahead to fully embed it in practice. While the momentum of the late 2010s has faced challenges, including political shifts and, in some regions, reduced support for climate goals, the urgency of the climate crisis has only deepened. Even amid these changes, sustainability remains a core value for RICS. It is increasingly seen not only as an ethical responsibility but also as a driver of business value and resilience.

2.1 Sustainability in surveying practice

The goal of sustainability is to meet current needs without compromising those of future generations. For surveyors, this means applying sustainability principles across the entire life cycle of an asset, including planning, design, construction, operation and end-of-life, as well as considering impacts at different scales – from individual products and assets, to systems, districts and communities.

Most current human practices and systems are not sustainable, so interventions are needed to reduce environmental impacts, use resources prudently, and protect people's health and well-being. These actions help assets contribute positively to the sustainability of the wider system. Ultimately, sustainability should guide surveyors in making decisions that deliver long-term benefits for people and the planet.

2.2 Dimensions of sustainability

Sustainability in the context of the built and natural environments should be seen through three interrelated dimensions: **environmental**, **social** and **economic**. These reflect the systems that support life, enable human development and shape the production and use of natural resources.

- The **environmental** dimension focuses on the health of natural systems that provide the conditions for life on earth – air, water, land/ soil, biodiversity and climate – as well as the protection and sustainable use of natural resources (such as primary raw materials). For surveyors, this means assessing environmental impacts, managing land use, and supporting low-carbon and resource-efficient solutions.
- The **social** dimension considers how people live together, how their needs are met, and how communities operate and prosper. It includes issues such as equity, health and well-being, human rights, access and participation, and the protection and promotion of cultural heritage and diversity. Surveyors contribute by ensuring that assets deliver social value, accessibility and community benefits throughout their life cycle.
- The **economic** dimension relates to how goods and services are produced, exchanged and consumed, and the associated costs and financial value. It includes livelihoods, investment, financial risk and stability, and the capacity to support development over time. Surveyors play a key role in cost planning, valuation, and advising on economic viability and risk to support sustainable development.

This framework is often referred to as the **triple bottom line**, a concept initially developed to encourage organisations to consider environmental and social performance alongside financial outcomes. Despite its common use, this concept is sometimes criticised for suggesting that the three dimensions carry equal weight or can be traded off against each other.

Understanding each dimension in isolation clarifies the distinct sustainability challenges and priorities. The following subsections explore each and discuss their interactions in real-world systems.

2.2.1 Environmental dimension

Environmental sustainability concerns the long-term health and stability of natural systems that support human well-being and economic development, including forests, oceans, freshwater bodies, soils and the atmosphere. The goal is not to preserve nature in a fixed state, but to protect the environmental foundations sustaining all social and economic systems. Without clean air, fertile soil, stable climate conditions and biodiversity, basic human needs cannot be met.

Natural systems deliver ecosystem services on which humans depend. These include oxygen production, climate regulation, water purification, crop pollination, and carbon and waste absorption. For example, urban trees help manage heat and air pollution, wetlands reduce flood risk, and green spaces support mental and physical health. These benefits often go unnoticed, but are vital to both the resilience of communities and the value of assets. They can be considered as external benefits in economic considerations.

From land development to infrastructure construction, almost all human activities draw from and return to the environment. People extract, use and transform natural resources, then release them as emissions, waste or altered landscapes – referred to as **land use and**

land use change (LULUC). Environmental sustainability does not demand zero impact; instead, it requires maintaining the scale and nature of human activity within the limits that ecosystems can absorb and recover from, while also sustaining or improving nature's regenerative capacity.

This concept is often expressed as **carrying capacity**: the ability of an ecosystem to support a given level of demand without degrading its resources. When these limits are exceeded, ecosystems can no longer provide essential services. For example, deforestation can reduce oxygen production, disrupt water cycles and lead to biodiversity loss. Once critical thresholds are crossed, the degradation of ecosystems can accelerate and, in some cases, become irreversible. These thresholds are known as 'tipping points'.

To better understand these thresholds, scientists have developed the planetary boundaries framework, which identifies nine key Earth system processes that define a safe operating space for humanity (see Figure 1). While each boundary is described in terms of individual quantities and processes, they are interconnected.

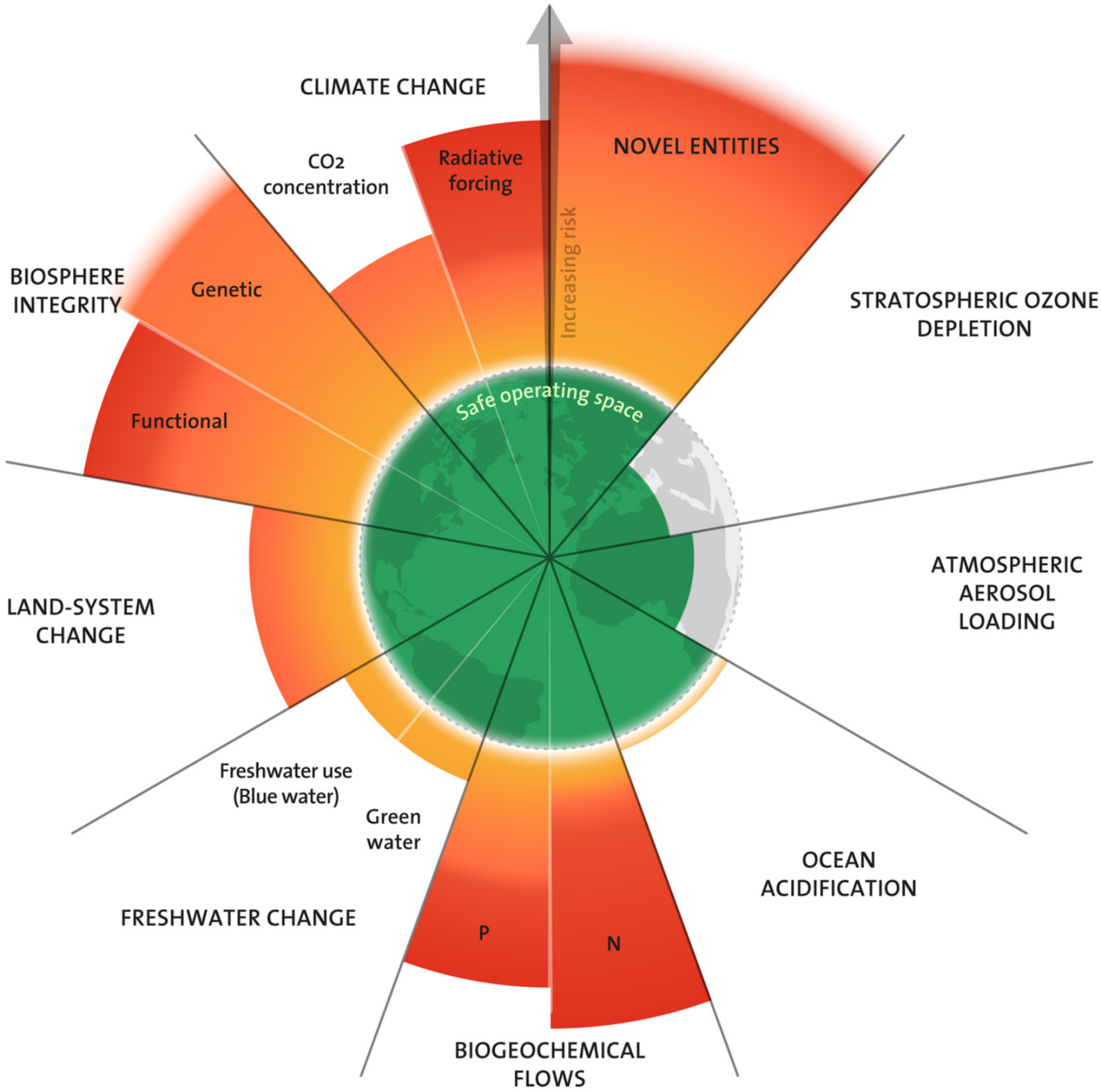


Figure 1: 2025 update to the planetary boundaries framework. Source: Azote for the Stockholm Resilience Centre, based on analysis in Sakschewski and Caesar et al., 2025

Table 1 summarises how surveyors can help maintain the two remaining boundaries within control limits, while supporting actions to reduce impacts and restore those that have already been exceeded.

Earth system	Status	Control limit description	What can surveyors do?
Climate change	Crossed	Measured by atmospheric carbon dioxide concentration and energy balance at the top of the atmosphere.	• Conduct life cycle carbon assessments and • advise on low-carbon materials and energy-efficient designs.
Novel entities	Crossed	Refers to the introduction of synthetic chemicals and pollutants that disrupt Earth's systems.	Make material specification and procurement decisions to: • reduce hazardous substances and • promote circular economy principles.
Stratospheric ozone depletion	Not crossed	Based on the thickness of the ozone layer, which protects life from harmful ultraviolet radiation.	• Ensure compliance with refrigerant regulations in building services and • avoid the use of ozone-depleting substances in construction.
Atmospheric aerosol loading	Not crossed	Relates to the amount of fine particles in the atmosphere that affect climate and human health.	Minimise dust and particulate emissions through: • construction planning and • site management.
Ocean acidification	Crossed	Determined by the acidity level of oceans, which impacts marine ecosystems and carbon absorption.	For coastal and marine projects: • assess the impacts on marine ecosystems and • evaluate the effects of materials on aquatic environments.

Earth system	Status	Control limit description	What can surveyors do?
Modification of biogeochemical flows	Crossed	Tracks the global cycles of nitrogen and phosphorus, which are essential for ecosystems but harmful in excess.	Influence land use and site development to: • reduce chemical runoff and • promote sustainable soil management.
Freshwater change	Crossed	Measures the availability and distribution of freshwater resources across the planet.	• Specify water-efficient systems • monitor water use in assets and • encourage sustainable stormwater solutions.
Land system change	Crossed	Based on the extent of forest cover and land use changes that affect biodiversity and climate.	• Land management • planning and promoting brownfield redevelopment over deforestation.
Biosphere integrity	Crossed	Assessed through species extinction rates and ecosystem functionality.	• Integrate biodiversity considerations into planning and • advocate for nature-based solutions.

Table 1: Status of planetary boundaries, adapted from the Planetary boundaries page of the Stockholm Resilience Centre website

Putting environmental sustainability into practice requires recognising ecological limits and responding through responsible planning, design and management.

- In the built environment, this includes reducing greenhouse gas emissions, improving energy and material efficiency, and avoiding damaging or unnecessary land use changes.
- In the natural environment, this involves conservation, restoration and long-term land stewardship.

While these goals are underpinned by a comprehensive set of environmental impact categories and indicators, they can be understood at a practical level as managing emissions, pollution and land use pressures so that development stays within ecological limits. For a full list of impact categories, see EN 15804:2012+A2:2019.

2.2.2 Social dimension

The social dimension of sustainability refers to the ability of societies to function, adapt and prosper over time. It focuses on human well-being and social system stability, including the relationships, institutions and values that sustain communities. Unlike environmental sustainability, which is grounded in measurable ecological thresholds and the natural sciences, social sustainability draws from fields such as sociology, psychology and political science. Therefore, its interpretation can be much broader and depend on cultural, historical and political contexts.

For surveyors, understanding this dimension is essential because it influences how assets are planned, procured and delivered to meet societal needs.

The social dimension of sustainability increasingly incorporates the concept of social value, which refers to the net positive impact on quality of life resulting from assets, policies or interventions. Social value captures economic, environmental and societal outcomes because all three ultimately affect people's well-being. Surveyors play a critical role in embedding social value into the planning, procurement, delivery and management of assets by ensuring these outcomes are measured, reported and aligned with client, stakeholder and regulatory requirements.

At its core, social sustainability revolves around supporting the long-term well-being and prosperity of people. This includes fulfilling basic human needs such as access to food, clean water, shelter and healthcare, as well as the ability to participate in economic, cultural and political life. Other important aspects include safety, education, inclusion, equity, human rights and opportunities for self-determination.

This dimension aligns with the principles of welfare economics and global policy guidelines, including the UK Treasury's Green Book and Organisation for Economic Co-operation and Development (OECD) standards. The Human Development Index (HDI), developed by the United Nations Development Programme, provides a composite measurement of health, education and living standards, which are core components of social sustainability. Surveyors use these benchmarks to inform appraisals and demonstrate alignment with international best practice.

Surveyors can apply robust frameworks such as cost-benefit analysis (CBA) to monetise both financial and non-financial impacts, reflecting changes in quality of life. Other approaches include cost-effectiveness analysis, cost-utility analysis, social return on investment (SROI) and EN 16309. This is a complex topic that often requires specialists who can translate these outcomes into financial proxies to support holistic decision-making. RICS' Measuring social value in infrastructure projects: insights from the public sector explains how to use social value measurement (SVM) techniques. However, CBA remains the most widely endorsed method internationally. Familiarity with these methods enables surveyors to provide evidence-based advice and demonstrate compliance with client and public sector requirements.

Social value assessment: to analyse social impact, frameworks such as SROI and EN 16309 are used to quantify broader outcomes. These include community well-being, local job creation and access to services. This is a complex topic that often requires specialists who can translate these outcomes into financial proxies to support holistic decision-making. RICS' insight paper Measuring social value in infrastructure projects: insights from the public sector explains how to use social value measurement (SVM) techniques.

Examples of wider societal outcomes include improved mental and physical health, reduced crime, improved skills and knowledge, sustained employment and fairer distribution of benefits. Environmental co-benefits, such as reduced carbon emissions and improved air quality, also contribute to social value by enhancing well-being.

For surveyors, embedding these considerations into appraisals and procurement decisions ensures that social sustainability becomes a core success metric alongside time, cost and quality. This approach encourages a shift from transactional procurement toward inclusive growth, positioning surveyors as key enablers of socially responsible development. Table 2 provides some examples of the surveyors' role in the social dimension of sustainability.

Action area	Description
Focus on social impact areas	Prioritise outcomes that enhance: • community inclusion • well-being and • cultural heritage.
Integrate social value across the life cycle	• Influence early design decisions • engage with stakeholders • embed social value in procurement and • monitor outcomes during operation.
Apply measurement frameworks	• Use CBA for monetising non-financial impacts and • consider SROI and HDI for benchmarking.
Report and communicate social value	• Include social metrics alongside time, cost and quality, and • ensure compliance with client and public requirements.
Leverage professional standards and tools	• Use RICS guidance and the Value Toolkit, and • align with global frameworks and local regulations.

Table 2: Action areas within a surveyor's role

2.2.3 Economic dimension

Economic sustainability is the ability of assets, programmes and organisations to remain financially viable over time, ensuring that resources for operation, maintenance, renewal and eventual decommissioning are available without creating unfunded liabilities or systemic risks. In the built environment, this applies to real estate and infrastructure assets at all scales, from components and equipment, to single assets and entire portfolios.

Current practice in many markets still focuses on upfront capital cost, rather than the life cycle cost of the asset. Design decisions are often made with limited emphasis on future repair, replacement and performance, even though these factors determine long-term value and affordability. This short-term approach can result in higher operational costs, premature failure, and increased environmental and social impacts, ultimately leading to stranded assets. Moving beyond first cost to whole-life thinking is essential for economic sustainability. This shift challenges longstanding operating models that have prioritised minimum compliance and short-term returns, which is why sustainable construction is often perceived as complex or costly.

At its core, economic sustainability means understanding and planning for the total cost of ownership across the entire asset life cycle: capital expenditure, operation, maintenance, renewal and end-of-life. It also requires recognising trade-offs and externalities (costs or benefits that fall outside direct transactions but influence long-term value, such as infrastructure upgrades, environmental impacts and social outcomes). Since money is the main criterion for decision-making, this is the point at which the other dimensions of sustainability – environmental and social – can be integrated into economic analysis by assigning them a monetary value, in order to create balanced outcomes.

Surveyors operationalise economic sustainability through structured methodologies and tools such as **life cycle costing (LCC)**. This methodology evaluates the economic dimension of sustainability. It helps assess the total cost of ownership of an asset. It combines capital, operation, maintenance and end-of-life costs into a single financial metric, and is commonly used to compare long-term value against upfront expenditure, supporting the business cases for sustainable design and construction. RICS' Life cycle costing provides professional guidance to surveyors on conducting LCC and whole-life costing (WLC) for both new and existing assets. WLC expands the scope of LCC to include costs and revenues associated with construction works that are not included in the client's direct costs. The primary ISO standard for LCC is ISO 15686-5. There are other global standards for specialised asset types, for example ISO 15663:2021 for the oil and gas industry.

LCC compares options consistently, using discounted cash flow techniques such as net present value, annual equivalent value, residual and terminal values, and sensitivity analysis. It also enables decisions at the component, asset and portfolio levels, ensuring that repair and replacement cycles are funded and performance is maintained.

LCC improves on the standard practice of focusing only on cost to build, and provides a way to calculate ownership over 60 or 120 years. However, it does not account for the social and environmental dimensions of sustainability, which is why value-based decision-making frameworks are used to build on top of LCC. These help clients define and measure outcomes beyond initial cost, embedding economic, social and environmental priorities into procurement and delivery.

For example, the Value Toolkit, developed in the UK, provides a structured process for creating value profiles and scorecards that enable comparisons of options during the ‘need’, ‘optioneering’, ‘design’, ‘delivery’ and ‘operation’ phases. Similar approaches are emerging internationally to support integrated decision-making.

Should cost modelling (SCM) is another technique that forecasts the cost of a project or programme over its whole life, including risk, overheads and profit. It informs business cases, market engagement and negotiation, and helps protect against low-cost tender or bid bias. SCM aligns with principles outlined in public procurement guidance, such as the official UK government guidance, the Green Book, but similar concepts are applied in other jurisdictions to support robust procurement and contract management for both buildings and infrastructure.

Economic decisions rarely optimise a single metric. Surveyors guide clients through trade-offs between short-term savings and long-term costs, and highlight externalities such as environmental degradation, congestion or social displacement that can erode value if ignored. Frameworks like the Four Capitals Model, which considers produced, natural, human and social capital, contextualise these impacts and dependencies, and help avoid the tragedy of the commons where shared resources are depleted through narrow cost-based decisions.

Economic sustainability is continuously assessed throughout the asset life cycle. At the strategic and optioneering stages, LCC and SCM set realistic budgets, test delivery models and inform value-based option appraisal. During design and procurement, requirements are embedded in tender documentation and commercial strategies, linking payment mechanisms to whole-life performance. In delivery and operation, surveyors monitor actual versus forecast performance, update life cycle baselines and capture lessons for future projects.

Across the asset life cycle, economic sustainability is achieved through rigorous application of financial and value-driven tools. Table 3 provides an overview of the methods surveyors use to achieve this: quantifying whole-life costs, establishing transparent procurement baselines, integrating social and environmental aspects, and advising on long-term investment outcomes.

Tool	Purpose	Surveyor role
Life cycle costing (LCC)	• Quantifies total cost of ownership throughout asset life cycle and • supports option appraisal and budgeting.	• Prepare LCC reports • advise on option appraisal • validate assumptions and • integrate LCC into sustainability assessments.
Should cost modelling (SCM)	• Forecasts what a project or programme should cost over its whole life, and • informs procurement and negotiation.	• Develop or review SCM • analyse cost drivers • support negotiation and • ensure transparency in procurement.
Value-based frameworks	Integrates economic, social and environmental outcomes into decision-making.	• Facilitate collaboration • create value profiles and • embed outcome-based metrics into procurement and contracts.
Key metrics for economic performance	Measures financial viability and value for money over time.	• Calculate and interpret metrics, and • advise clients on long-term return on investment (ROI) and trade-offs.
Integration with other sustainability dimensions	Links environmental and social factors to economic analysis.	• Combine cost analysis with environmental and social value data, and • advise on trade-offs and outcomes.

Table 3: Tools for economic sustainability

By combining financial analysis, risk management and value frameworks, surveyors enable decisions that are viable for organisations and sustainable across real estate, infrastructure and multi-asset programmes. Economic sustainability cannot be separated from environmental or social concerns, as long-term financial success increasingly depends on both managing resource constraints and responding to the concerns of stakeholders.

2.3 Integrating the dimensions of sustainability

Environmental, social and economic sustainability are often discussed in isolation, but are deeply interconnected. Most human activities affect all three simultaneously, and decisions in the built and natural environments rarely achieve a perfect balance between them. Frameworks have been developed to interpret these interactions, forming a core component of sustainability thinking.

One of the earliest and most recognised of these frameworks was the triple bottom line, which introduced the idea that organisations should measure success not only through financial results but also through social responsibility and environmental performance.

This evolved into a collection of environmental, social and governance (ESG) considerations, now one of the leading sets of criteria and analytical frameworks across financial and real estate markets. While the triple bottom line provides the philosophy, ESG operationalises it into specific criteria for reporting and investment.

Under ESG:

- **environmental** criteria cover issues such as carbon and biodiversity
- **social** criteria cover health, safety and community, and
- **governance** criteria address ethics, transparency and board accountability.

For surveyors, ESG is one of the main frameworks used to link technical sustainability performance to asset value and corporate strategy. These frameworks, including certifications and taxonomies, are explained in section 4.6.

To support the practical application of these frameworks, overarching standards such as ISO 15392, which sets out general principles for sustainability in buildings and civil engineering works, serve as the conceptual foundation for related standards. Based on these principles, the ISO 21931 series provides a framework for methods of assessing the sustainability performance of construction works. Part 1 addresses buildings, while Part 2 extends the approach to civil engineering and infrastructure projects. Both parts examine resource use, emissions, human health and long-term value, all of which are relevant to an asset's overall performance. The related ISO 21929 series establishes the general framework for sustainability indicators and defines how subjects, scopes, criteria and indicators are organised in an assessment.

The three-pillar metaphor has faced criticism. It tends to treat the dimensions as independent and interchangeable, whereas some of the more integrated theories recognise that the economy operates within society, which in turn depends on the natural environment. Therefore, from the perspective of nested systems, environmental limits shape the potential achievements of economies and societies.

This is shown in Figure 2.

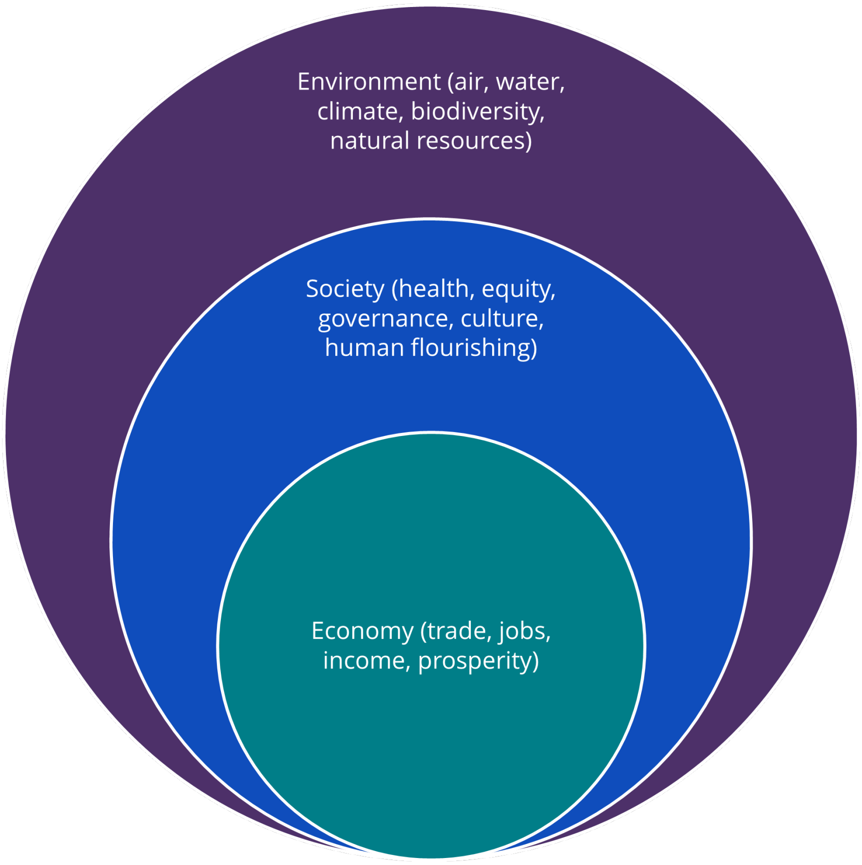


Figure 2: The nested systems perspective of the three interconnected dimensions of sustainability

There are different perspectives, for instance that strong economic performance enables investment in social development and environmental protection. These differences reflect ongoing debates about priorities and trade-offs, but also underline the importance of sound professional judgement in balancing them.

Table 4 lists illustrative examples of these trade-offs and the role surveyors can play in prudent decision-making.

Example	Trade-off	Mitigation strategies
Opening a new mine	Economic benefits (jobs, income) versus environmental damage (land degradation, biodiversity loss)	• Whole-life environmental impact assessments • progressive land rehabilitation and • community social value programmes.
Building low-cost housing	Social benefits (affordable housing) versus land use concerns and carbon emissions	• Whole-life carbon assessment • modular prefabricated construction • green infrastructure integration and • access to public transport.
Infrastructure expansion	Economic connectivity versus ecosystem fragmentation and increased emissions	• Wildlife corridors and green bridges • low-carbon materials • circular economy principles and • renewable energy integration.
Urban regeneration projects	Economic growth and social revitalisation versus risk of gentrification and displacement	• Affordable housing policies • community engagement plans • social impact assessments and • mixed-use development.

Table 4: Example trade-offs and mitigation strategies

In practice, most decision-making still prioritises economic outcomes, which can often have negative environmental and social impacts. RICS members can mitigate these impacts by adopting a whole-of-life approach and using methods such as whole-life carbon assessment (WLCA), social value measurement and circular economy principles.

Doughnut economics identifies a 'safe and just space' for development between ecological ceilings and social foundations (Figure 3).

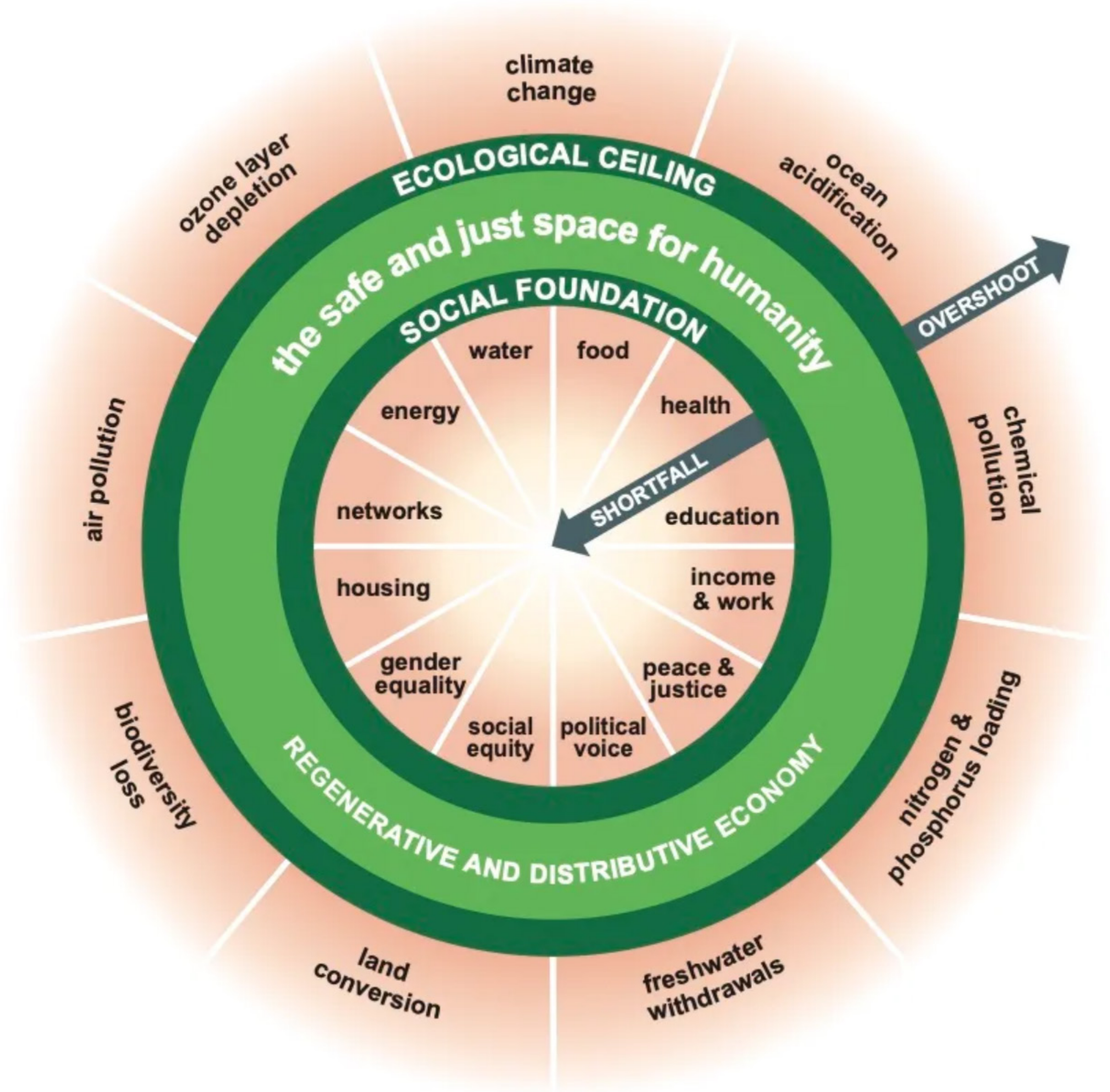


Figure 3: The doughnut of social and planetary boundaries (credit: Kate Raworth and Christian Guthier (CC-BY-SA 4.0); source: Raworth, K. (2017), Doughnut Economics: seven ways to think like a 21st century economist. London: Penguin Random House.

The doughnut has:

- an outer ring representing ecological ceilings, to avoid crossing the planetary boundaries, and
- an inner ring representing the minimum social foundations needed for a dignified life.

Between them is the 'safe and just space' – a space where sustainable and inclusive development can occur. Some cities, including municipal authorities in Amsterdam, Barcelona and Leeds, use this model as a decision-making guide. A growing number of institutions also apply its principles, including the Better Business Network, a community of hundreds of businesses collaborating on climate action and advocacy; LEAP Cities in India, which helps cities become more liveable and sustainable through collective-action programmes; and the Doughnut Economics Coalition for East Africa, which supports regional partners in aligning social well-being with ecological boundaries.

Amsterdam in particular has become a leading example of applying doughnut economics to urban development. In 2020, the city adopted this model to guide planning and investment decisions, aiming to stay within ecological limits while meeting community needs. For the built environment, this translated into a strong focus on circular construction practices, material reuse and life cycle assessments. The city's Circular Economy Monitor tracks progress by measuring material flows and identifying opportunities to reduce waste and carbon emissions. For surveying professionals, this approach highlights the growing importance of life cycle costing, embodied carbon analysis and social value metrics in asset evaluation.

The UN Sustainable Development Goals (SDGs) provide another integration framework. The SDGs consist of 17 goals and 169 targets that address significant global challenges including poverty, inequality, climate change and biodiversity loss. Figure 4 shows the SDGs.

Figure 4: SGDs (source: UN Sustainable Development Goals website (https://www.un.org/sustainabledevelopment); the content of this publication has not been approved by the UN and does not reflect the views of the United Nations or its officials or Member States

Despite their broad scope, the SDGs have become a common reference point for governments, companies and institutions seeking to align sustainability strategies and track progress across all three dimensions. Table 5 shows examples of how SDGs relate to sustainability outcomes in the built and natural environments.

Activity/issue	Negative impact	Positive outcome	Relevant SDGs
Land use patterns and planning	Habitat loss, high greenhouse gas emissions.	Sustainable land management and restoration improve carbon sequestration and biodiversity (e.g. tree-planting initiatives, wildlife corridors).	• SDG 13: Climate Action • SDG 15: Life on Land, and • SDG 11: Sustainable Cities.
Resource extraction and material use	Resource depletion, soil degradation.	Circular economy practices and responsible sourcing reduce environmental footprint.	• SDG 12: Responsible Consumption and Production, and • SDG 15: Life on Land.
Construction and end-of-life waste	Waste generation and disposal affect the environment and communities.	Recycling and reusing materials reduce waste and emissions (e.g. zero-waste construction sites, material take-back schemes).	• SDG 12: Responsible Consumption and Production, and • SDG 6: Clean Water and Sanitation.
Governance and ethics	Corruption in planning and real estate undermines trust.	Transparent governance and ethical standards improve accountability (e.g. ethical procurement audits, blockchain for supply chain transparency).	• SDG 16: Peace, Justice and Strong Institutions.
Housing provision	Poor availability and quality of housing reduce the quality of life.	Inclusive housing policies and community engagement improve social resilience (e.g. modular housing for affordability, universal design for accessibility).	• SDG 11: Sustainable Cities and Communities, and • SDG 3: Good Health and Well-being.

Activity/issue	Negative impact	Positive outcome	Relevant SDGs
Energy and infrastructure	High carbon emissions and energy costs.	Energy-efficient, renewably-powered buildings eliminate energy poverty (e.g. highly-insulated buildings with photovoltaic roofs).	• SDG 7: Affordable and Clean Energy, and • SDG 13: Climate Action.
Economic development	Lack of labour rights and inequitable growth.	Fair labour practices and social value metrics create equitable development (e.g. living wage policies, apprenticeships for disadvantaged groups).	• SDG 8: Decent Work and Economic Growth • SDG 10: Reduced Inequalities, and • SDG 1: No Poverty.

Table 5: Sustainability impact of the built and natural environments and their relevance to SDGs (Source: Advancing Responsible Business in Land, Construction and Real Estate Use and Investment – Making the Sustainable Development Goals a Reality, RICS, April 2018)

Although these frameworks do not solve the complex task of integrating environmental, social and economic considerations, they help clarify the interactions between the three dimensions. Professionals in the built and natural environments can use such frameworks to make more informed decisions that consider long-term outcomes, systemic impacts and the connections between people and the planet.

3 Key issues of sustainability

This section introduces the four key issues of sustainability most relevant to surveyors:

- climate change mitigation
- climate change adaptation and resilience
- circularity and resource use, and
- biodiversity and ecosystem health.

These issues are global challenges that stem from the need to manage environmental pressures alongside social and economic goals. As they are strongly associated with the built and natural environments, they are the strategic themes around which the RICS sustainability programme is structured. They are summarised in Table 6. The following subsections then describe each issue, including its causes, solutions, relevance to the built and natural environments, and implications for professional practice. Although this document presents the four concepts separately, they are interconnected. For instance, climate mitigation and circularity actions both reduce carbon emissions, and biodiversity enhancement supports adaptation and resilience. It is essential to recognise these interdependencies in order to achieve balanced outcomes that reflect the integrated nature of sustainability.

Key issue	Description	Examples of relevance to professional practice	Main global frameworks and policy references	Relevant standards and professional guidance
Climate change mitigation	**Minimising human-induced GHG emissions** to avoid a dangerous alteration of the Earth's natural climate.	Efficiently managing building operations to reduce energy consumption and the resulting emissions.	UN SDG 13: Climate Action Paris Agreement (2015) IPCC 1.5°C Pathway	RICS professional standard: Whole life carbon assessment for the built environment (2023) ISO 14064 – Greenhouse Gas Accounting and Verification EN 15978 – Assessment of Environmental Performance of Buildings
Climate change adaptation and resilience	**Adapting the built and natural environments** to the inevitable change in climatic conditions due to human-induced GHG emissions.	Assessing an asset's exposure to climate risk (e.g. flooding, overheating) and advising on adaptation and resilience measures.	UNFCCC Global Goal on Adaptation SDG 11: Sustainable Cities and Communities SDG 13: Climate Action UNEP Adaptation Gap Report	ISO 14091 – Guidelines on Vulnerability, Impacts and Risk Assessment ISO 14055 – Guidelines for Land Degradation and Restoration ISO 4931-1:2024 – Buildings and civil engineering works – Principles, framework and guidance for resilience design. Part 1: Adaptation to climate change CEN/TC 350 Framework (EN 15643:2021)

Key issue	Description	Examples of relevance to professional practice	Main global frameworks and policy references	Relevant standards and professional guidance
Circularity and resource use	**Minimising natural resource extraction and pollution** by shifting to closed loops of material reuse and recycling.	Disassembling a building into reusable components instead of conventional demolition.	SDG 12: Responsible Consumption and Production EU Level(s) Macro-Objective 2: Resource-Efficient Material Life Cycles European Circular Economy Action Plan (2020)	ISO 20887 – Design for Disassembly and Adaptability ISO 14040/14044 – Life Cycle Assessment ISO 59004:2024 – Circular economy – Vocabulary, principles and guidance for implementation
Biodiversity and ecosystem health	**Protecting and enhancing natural habitats** to ensure the provision of ecosystem services.	Including 'green corridors' in urban developments to connect wildlife populations separated by human infrastructure.	SDG 14: Life Below Water SDG 15: Life on Land Kunming-Montreal Global Biodiversity Framework (2022) UN Decade on Ecosystem Restoration (2021–2030)	BS 8683 – Process for Designing and Implementing Biodiversity Net Gain ISO 14055 – Land Degradation and Restoration EN 15643 – Sustainability Assessment Framework RICS insight paper: Value of natural capital: the need for chartered surveyors

Table 6: Relevance of four key issues of sustainability

3.1 Climate change mitigation

Climate change mitigation encompasses all actions to reduce or prevent GHG emissions and increase their removal from the atmosphere. While the greenhouse effect is a natural process that enables life to exist, human activities have intensified it by increasing atmospheric concentrations of GHGs, leading to an unnaturally rapid rise in global temperature (commonly known as **global warming**) with cascading environmental, social and economic consequences.

Since climate change is already underway, mitigation is not aimed at reversing it, but at limiting its extent by keeping the global temperature rise within the IPCC target of 1.5°C. This means that by 2100, the global average temperature will have risen by no more than 1.5°C relative to pre-industrial levels. Below this limit, the effects of climate change are expected to be significant but somewhat manageable. Any increase beyond 1.5°C would progressively lead to larger and more destructive impacts.

International efforts to achieve this target have evolved through key agreements:

- the Kyoto Protocol (1997), which first set legally binding emissions reduction targets for developed nations
- the Paris Agreement (2015), which established a global framework for limiting warming well below 2°C and pursuing 1.5°C, and
- nationally determined contributions (NDCs), which are country-specific plans under the Paris Agreement outlining how each nation will reduce emissions and adapt to climate impacts.

Achieving the 1.5°C target requires reducing GHG emissions across all sectors and regions, in order to reach a state where any remaining emissions are balanced by natural sinks or equivalent removals. This state is not an absolute-zero state, but rather a balance between GHG sources and sinks that prevents future climate change attributable to human activities.

Different GHGs contribute to global warming with varying intensities. Their impacts are measured in **kilograms of carbon dioxide equivalent** (kgCO_2e), based on the GWP concept defined by the IPCC. For example, methane has a GWP that is 84 times that of carbon dioxide, meaning that one kilogram of methane traps 84 times more heat in the atmosphere than one kilogram of carbon dioxide. The GWP metric is calculated over a fixed period, typically 100 years (referred to as 'GWP 100').

Political debates persist over the causes and magnitude of climate change, but the observed global temperature increase is well documented and not widely disputed. The broad scientific consensus is that human activities – in particular fossil fuel combustion, deforestation and industrial processes – are the primary drivers of increased GHG concentrations and resulting climate change. Mitigation is therefore one of the foundations of sustainable development, addressing the root causes of climate change.

Mitigation strategies are generally built on four successive steps:

- **Reducing demand** lowers the need for inputs that generate GHG emissions, for example by renovating existing buildings rather than constructing new ones.
- **Improving efficiency** reduces the need for inputs that generate GHG emissions (e.g. energy generation) by optimising existing activities, for example by installing insulation in buildings to reduce their heating or cooling demand.
- **Decarbonising supply** focuses on transitioning from high-carbon to low-carbon energy sources, for example by replacing coal-fired power plants with renewable energy such as wind and solar.
- **Offsetting residual emissions** means compensating for emissions that are unavoidable. Even renewable energy sources emit GHGs throughout their life cycle due to the manufacturing, transportation and disposal processes required. These emissions can be offset by employing natural or artificial methods to remove equivalent amounts of GHG from the atmosphere.
- **Natural methods** involve using natural processes that remove GHGs and store them over long periods (e.g. carbon sequestration in forests, wetlands, grasslands and coastal ecosystems).
- **Artificial methods** for carbon capture, utilisation, and storage (CCUS) are under development and may support mitigation efforts, but their effectiveness and economic feasibility remain unclear.

Increasing efficiency comes first, because it addresses the problem directly by reducing activities that generate GHG emissions. It also often provides additional economic benefits by reducing operational costs.

Alongside efficiency, reducing demand addresses the quantity of resources that are used in the first place – a concept known as **sufficiency**. In the built environment, this includes reusing existing structures, designing smaller and more adaptable spaces, and implementing policies that limit sprawl and incentivise sharing. The IPCC AR6 Mitigation Report (2022) identifies sufficiency as a key pathway to rapid emissions reductions, alongside efficiency and decarbonisation.

Decarbonising supply is the third step, aiming to meet minimised demand for human activities with progressively lower emissions rates. However, in today's technology landscape, no activity is entirely free of associated emissions. Therefore, the fourth step is to offset residual emissions by removing an equivalent amount of GHGs from the atmosphere, which achieves a net-zero carbon balance.

3.1.1 Socioeconomic aspects of mitigation

Mitigation has significant socioeconomic implications. Implementing mitigation measures often involves high upfront costs when retrofitting existing assets or transitioning to low-carbon technologies. However, the long-term costs of inaction are far greater, and mitigation actions can generate jobs, increase energy security and improve living standards. For example, energy-efficient buildings can lower utility bills and reduce energy poverty.

An essential part of the shift from business as usual to a decarbonised economy involves the idea of a **just transition**. This principle, explained in the IPCC's Climate Change 2022 report, states that policies must support communities and sectors affected by decarbonisation. Mitigation strategies should also align with international carbon management standards, such as the ISO 14068 series on carbon neutrality (2023), which provides transparent methods for verifying decarbonisation claims.

Climate mitigation is a multifaceted process that requires coordination across dimensions. Both built and natural environments provide scalable opportunities for emissions reduction. Pursuing these opportunities not only reduces climate risks, but also strengthens economies, improves public health and protects ecosystems. Mitigation is therefore crucial in setting the foundation for sustainable, equitable and prosperous development.

3.1.2 Addressing mitigation in professional practice

Understanding where and how GHG emissions occur across the life cycles of both natural systems and built assets is central to effective mitigation. The natural environment plays a vital role in mitigation. Forests, wetlands, soils and oceans act as carbon sinks, absorbing and storing large quantities of carbon. Protecting and restoring these ecosystems not only improves their sequestration capacity, but also provides additional biodiversity, water regulation and community benefits. Nature-based approaches complement emissions reduction strategies, creating further opportunities in sectors that remain difficult to decarbonise, such as heavy industrial processes involved in cement and steel production, which rely on high-temperature processes that currently have limited low-carbon alternatives. Environmental protection and management also serve to avoid or limit instances where natural phenomena release GHGs into the atmosphere.

A variety of methods and techniques, such as soil sampling, remote sensing and using geographic information systems, are used to assess GHG fluctuations between land ecosystems and the atmosphere, and model the impacts of specific land management practices.

The built environment is a major contributor to global GHG emissions, responsible for roughly a third of the total. These emissions are broadly classified as:

- direct and indirect **operational emissions**, which come from energy and water use during an asset's use stage, and
- **embodied emissions**, which come from the extraction, manufacture and transport of construction products, as well as from on-site construction, maintenance, replacement and end-of-life activities.

To quantify GHG emissions at the level of individual assets, professionals conduct a **whole-life carbon assessment (WLCA)**, which accounts for an asset's full life cycle from raw material extraction to deconstruction, and is based on the **life cycle assessment (LCA)** approach. LCA is a standard methodology used for conducting environmental impact assessment across an asset's life cycle. The main ISO standards for LCA are ISO 14040 and ISO 14044. In Europe, the EN 15978 standard (a new edition of which is coming in 2026) is a recognised method for undertaking LCAs for buildings.

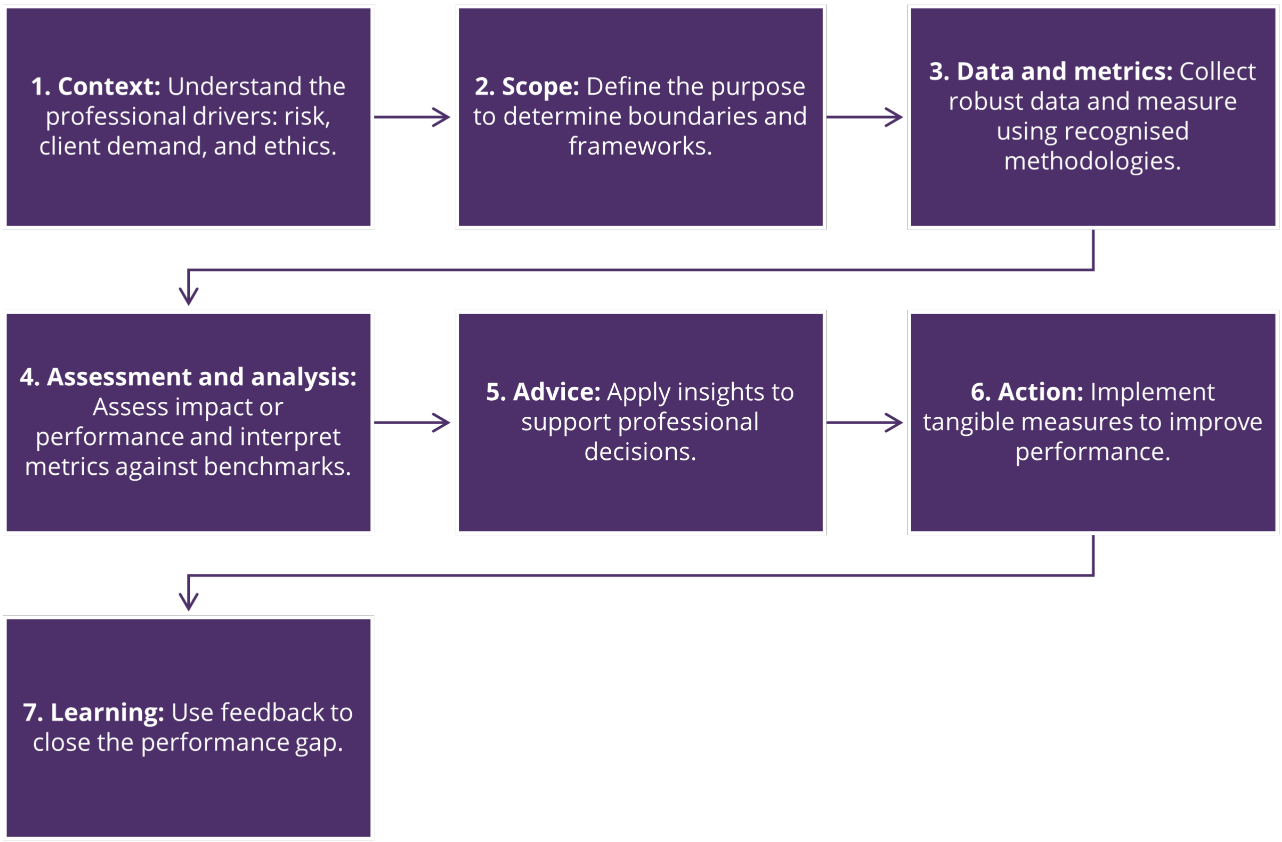
The overall framework for WLCA is established by standards such as EN 15978. RICS' Whole life carbon assessment for the built environment builds on this framework by providing a detailed methodology and reporting format to ensure consistency and guide the assessor through the complex process of carbon accounting.

A WLCA adds the emissions of different GHGs together to produce a total GWP 100, which is expressed in $kgCO_2e$. Most methodologies also require the total GWP 100 to be divided into three components:

- GWP 100, fossil (GHGs from fossil fuel use)
- GWP 100, biogenic (GHGs sequestered in and emitted from biomass) and
- GWP 100, LULUC (GHGs emitted due to land use, land-use change, and forestry activities).

In practice, the term **carbon** is commonly used as a shorthand for all GHGs.

WLCA standards provide a more precise definition of operational and embodied emissions associated with assets, using a framework with four life cycle modules (see Figure 5).



1. Context: Understand the professional drivers: risk, client demand, and ethics.

2. Scope: Define the purpose to determine boundaries and frameworks.

3. Data and metrics: Collect robust data and measure using recognised methodologies.

4. Assessment and analysis: Assess impact or performance and interpret metrics against benchmarks.

5. Advice: Apply insights to support professional decisions.

6. Action: Implement tangible measures to improve performance.

7. Learning: Use feedback to close the performance gap.

Figure 5: Life cycle modules of an asset

These life cycle modules are divided into a number of sub-modules:

- Module A, pre-construction, product stage and construction process:
    - **A0** covers the pre-construction stage.
    - **A1–A3** cover the production stage, including extraction, transportation and manufacturing processes.
    - **A4–A5** cover the construction stage.
- Module B, use stage:
    - **B1** covers direct emissions and removals from construction products.
    - **B2–B4** cover material-related emissions from the maintenance, repair and replacement of any construction products, components or elements of the asset.
    - **B5** covers any refurbishment or change in the asset's performance.
    - **B6** covers the asset's energy use during the in-use stage.
    - **B7** covers water use during the in-use stage.
    - **B8** covers user activities.

- Module C, end of life stage:
    - **C1–C4** cover emissions during the asset's end of life stage.
- Module D, benefits and loads beyond the system boundary:
    - **D1** covers the potential carbon loads and benefits beyond the system boundary.
    - **D2** covers the potential carbon benefits beyond the system boundary of any utilities exported from the asset.

Using this framework, carbon emissions can be divided into different types:

- **Upfront** GHG emissions (also called upfront embodied carbon) are generated during the production and construction phases (modules A1–A5).
- **Life cycle embodied** GHG emissions (also called embodied carbon) is a combination of upfront emissions from modules A1–A5; emissions during the use stage due to maintenance, repair, replacement and refurbishment (modules B1–B5); and emissions produced during deconstruction and disposal (modules C1–C4); but not emissions related to energy and water use (modules B6 and B7).
- **Operational** GHG emissions (also called operational carbon) are from energy and water use during the asset’s use stage, and are covered in modules B6 and B7. They include energy use for heating, cooling, lighting and fixed appliances, as well as water consumption.
- **User-related** GHG emissions, covered in module B8, are associated with occupant activities such as commuting, using plug-in equipment and other behaviours that influence the asset’s overall carbon emissions.
- **Beyond the system boundary** emissions account for potential avoided emissions (and any additional emissions) from activities such as reuse, recycling and energy recovery at the asset’s end of life (module D1), and exporting energy to the electricity grid (module D2). These emissions often appear as a negative figure, indicating the potential to avoid emissions that would otherwise occur. They are always reported separately and never added to or subtracted from the whole life GHG emissions figure.
- **Biogenic carbon** refers to GHGs that are removed from the atmosphere and locked into solid material through a natural process. The most common example is carbon absorbed by vegetation through photosynthesis, and then stored in biomass such as timber. These natural processes can lead to some emissions, but biogenic carbon generally appears as a negative figure, which means a net balance of GHG removal over the time period considered. Biogenic carbon is reported separately if considering only upfront carbon, while it is added to (or subtracted from, if negative) the total of life cycle embodied carbon and whole life carbon.
- **Whole life** GHG emissions (also called life cycle GWP or whole life carbon) are the total of all GHGs emitted across an asset’s life cycle, including embodied, operational and user-related emissions, but excluding beyond-the-system-boundary emissions.

While WLCA is widely established as the framework for measuring and reporting emissions at the level of individual assets, the GHG Protocol is typically adopted to assess and report emissions across an organisation’s value chain. The protocol classifies emissions into three scopes:

- **Scope 1** covers direct emissions from sources owned or controlled by an organisation, such as on-site fuel combustion or emissions released when a company manufactures a product or delivers a service.
- **Scope 2** refers to indirect emissions from purchased electricity, heat or steam.
- **Scope 3** includes all other indirect emissions that occur across the value chain, from material production to product use and disposal.

The assets that an organisation designs, builds, owns or manages contribute to the overall emissions associated with the organisation’s activities. Therefore, assets’ emissions are accounted for when assessing and reporting at the organisation level using the GHG Protocol. An asset’s emissions will be accounted for in different scopes, depending on the nature of the organisation doing the accounting. For example, operational carbon is classified as scope 3 for a developer or asset owner because it comes from the building's downstream use. In contrast, for the building’s occupant, it would be scope 1 or scope 2, depending on whether energy is combusted on-site or purchased from an external supplier.

Carbon assessment and reporting at both the asset and organisation levels are complex tasks. They require technical knowledge and professional judgement to produce results that are as complete and accurate as possible. However, understanding the sources of GHGs emissions is only the first part of the mitigation challenge.

Table 7 shows how the four steps introduced in section 3.1 can be applied in practice.

Category	Focus	Typical measures
Demand reduction	Limit or avoid unnecessary demand for energy and materials.	• Prioritise reuse, retrofit and repurpose over new construction. • Size assets to actual needs, and design for flexibility and shared use.
Efficiency improvement	Improve the performance of existing assets and processes.	• Reduce energy demand through passive design, efficient operations and user behaviour. • Optimise material use through lean design and minimise waste.
Supply decarbonisation	Shift energy and material supply to low- or zero-carbon sources.	• Meet energy demand with electricity or on-site renewables such as solar or geothermal systems. • Support grid decarbonisation through renewable procurement and storage integration. • Specify low-carbon products and materials (e.g. cement substitutes, recycled steel). • Promote local and circular supply chains to reduce transport emissions.
Residual offset	Balance unavoidable emissions through verified removals or avoidance elsewhere.	• Invest in carbon sequestration through reforestation, wetland restoration or soil carbon projects. • Purchase high-quality, verifiable carbon credits. • Support innovation in carbon capture, utilisation and storage technologies.

Table 7: Examples of strategies for climate change mitigation in the built environment

While Table 7 provides general recommendations, it should be noted that surveyors may not be able to implement specific strategies. Surveyors may have direct control over activities that generate emissions or may advise on them, whereas other activities, such as national-level electricity generation, are generally beyond the control of individual professionals or organisations. Mitigation strategies for these activities (such as grid decarbonisation or industrial transformation) are essential to achieving a fully net-zero built environment, underscoring the need for systemic market interventions and policy frameworks to support the efforts of individual professionals and organisations.

For example, market-based policy instruments, such as carbon pricing, taxes and emissions trading schemes, assign economic value to emissions and encourage decarbonisation across supply chains. These policies can operate at the international, national or organisational level, and countries and businesses are increasingly adopting them to guide investment and decision-making.

3.2 Climate change adaptation and resilience

The effects of climate change are already being felt globally and will continue to intensify, even if the world achieves the 1.5°C scenario. It is therefore necessary to implement adaptation measures alongside mitigation measures to reduce GHG emissions.

Adaptation and resilience are distinct but closely linked.

- **Adaptation** refers to practical, proactive actions in design, planning and management that improve the asset's ability to cope with changing conditions.
- **Resilience** is the result of these actions, and is demonstrated by the ability to sustain performance and value despite disruption.

In practice, adaptation builds resilience when implemented effectively. For the built environment, this means anticipating risks and designing assets that can continue to function in a changing climate.

Adaptation and resilience are also crucial for the natural environment. Although ecosystems possess their own adaptive capacities, the current rate of change often exceeds their natural limits. Human-led interventions can help ecosystems adapt and continue to provide essential services such as water regulation, pollination and carbon sequestration.

3.2.1 Socioeconomic aspect of adaptation and resilience

Socioeconomic factors influence both the need and capacity for adaptation. Climate change impacts are not experienced equally; vulnerable communities often face the most significant risks but have the fewest resources to respond. Effective adaptation therefore depends on building **social resilience**: the ability of people and institutions to prepare for and recover from crises in an equitable manner. Ensuring this requires engagement with local communities to prevent adaptation measures from deepening existing inequalities. In this way, improving resilience extends beyond technical interventions; it also includes increasing adaptive capacity through governance structures, financial mechanisms and educational initiatives.

Adaptation and resilience deliver significant economic and social benefits. Improving asset performance reduces damage, insurance costs and business disruption, while retrofitting for flood protection or passive cooling extends asset life and increases the well-being of workers and residents. In the natural environment, ecosystem restoration protects biodiversity, while supporting rural livelihoods and tourism. Since these benefits often require large upfront investments, financial mechanisms such as resilience bonds, insurance incentives and public-private partnerships can be valuable tools for mobilising funding and sharing risk between stakeholders.

Adaptation and resilience are shared responsibilities that depend on cross-sector coordination. While individual projects can incorporate climate-responsive design, broader resilience requires integrated planning at the city, regional and national levels to ensure consistent performance evaluation and improvement.

3.2.2 Addressing adaptation and resilience in professional practice

Adaptation and resilience strategies aim to address the realities of climate change, ensuring that the built and natural environments can continue to function under changing conditions. Rising temperatures and sea levels, shifting rainfall patterns, more frequent extreme weather events and increased ecological disruption are already reshaping the conditions under which both the built and natural environments operate. In response, adaptation involves taking intentional steps to align with expected conditions, such as adjusting systems, assets and behaviours.

To devise effective adaptation strategies, it is important to first understand the specific **climate risks** relevant to an asset at its site. These vary by geography and context, but common examples include extreme heat, flooding, rising sea levels, storm surges, drought, wildfires and power outages. Most countries worldwide have developed – or are developing – adaptation strategies that incorporate climate forecast scenarios and risk maps relevant to their local context, such as UK Climate Projections (UKCP18).

Systemic resilience risks in the built environment arise when interconnected systems, such as energy, water, transportation and housing, are exposed to climate-related stresses. These risks are amplified by cascading effects, in which the failure of one component triggers disruptions in other elements. For example, extreme heat can strain power grids, leading to blackouts that compromise cooling systems, water supply pumps and even healthcare facilities. Adapting the built environment requires a system-level approach that anticipates these interdependencies with integrated planning across sectors. This includes diversifying energy sources, enhancing redundancy in critical infrastructure and embedding nature-based solutions to manage water and heat.

Risk assessment, vulnerability assessment and scenario forecasting, as outlined in ISO 14091, provide structured approaches for identifying, analysing, and prioritising climate risks. For individual buildings and infrastructure, the findings from this process shape core design and operational decisions:

- where to build
- how to orient structures
- which materials to use, and

- how to plan drainage.

Guidance on adaptation planning and risk management is provided by a series of international and regional standards, including:

- ISO 14090:2019 – Adaptation to climate change — Principles, requirements and guidelines
- ISO 14091:2021 – Adaptation to climate change — Guidelines on vulnerability, impacts and risk assessment, and
- BS 8631:2021 – Adaptation to climate change. Using adaptation pathways for decision making. Guide.

These standards outline how to identify, assess and prioritise climate risks, and how to integrate resilience into planning, design and management.

The types of risk that have an impact on building performance and would typically be assessed regarding adaptation to climate change are:

- **temperature-related risks** such as increasing frequency and intensity of heatwaves, increasing heat retention in urban areas (called the urban heat island effect) and greater variability in freeze-thaw cycles
- **precipitation and moisture risks** such as flooding, rising groundwater levels and high humidity
- **wind and storm risks**, including increasing frequency and intensity of tornadoes and cyclones
- **coastal risks** due to rising sea levels, leading to coastal erosion and saltwater intrusion
- **wildfire risks**, including smoke infiltration and wildland urban interface fires, and
- **other emerging risks**, such as power outages due to extreme weather.

Natural catastrophes, which are becoming more common and intense due to climate change, are responsible for over 17,000 fatalities and $250bn in losses annually according to Munich Re's NatCatSERVICE ('the natural catastrophe loss database').

Climate risk is increasingly shaping the professional advice provided by valuers, as environmental factors directly influence property value, marketability and long-term investment security. Climate-related risks – such as flooding, heat stress and coastal erosion – now require explicit consideration. Properties in high-risk zones may face reduced demand, higher insurance premiums and stricter lending criteria – all of which affect their market and investment value. Climate risk also affects the professional advice given by land surveyors, as changing environmental conditions affect land stability, usability and long-term planning.

Surveyors assess both physical risks (such as damage from extreme weather) and transition risks (such as policy changes, carbon regulations and energy efficiency standards). For example, buildings with poor energy performance may incur future retrofit costs or become stranded assets under tightening sustainability regulations. Valuation reports also increasingly include climate risk disclosures to inform investors and lenders of potential liabilities.

It is generally more economical to consider resilience early in an asset's life cycle than to adapt later. Designing for future climate scenarios can avoid expensive retrofits, reduce downtime and protect long-term value. However, it requires additional upfront expenditure that may affect its viability. An assessment of risk-based trade-offs may be necessary to determine the appropriate balance between adaptation and resilience measures for an asset. Examples include elevating the ground floor of buildings to prevent flood damage, improving passive cooling and insulation in hot climates, designing ventilation systems for higher humidity, and ensuring backup power and water supplies. For existing assets, retrofitting and operational changes can improve resilience. This could involve improving drainage, installing flood barriers, and upgrading monitoring and maintenance programs.

Nature-based solutions are increasingly central to these efforts. These solutions leverage natural processes to reduce climate-related risks and provide co-benefits for biodiversity and society. Strategies include:

- restoring wetlands to buffer floods
- conserving soil and water
- creating ecological corridors and reintroducing native species, while controlling invasive ones
- expanding urban green spaces to cool cities and
- using vegetation to manage stormwater.

These interventions, often described as nature-based solutions, provide multiple benefits for biodiversity and climate regulation. Frameworks such as the International Union for Conservation of Nature’s Global Standard for Nature-based Solutions (2020) and the UNEP Adaptation Gap Report 2024 recognise these approaches as being effective in aligning climate adaptation with ecosystem restoration, social well-being and long-term resilience.

3.3 Circularity and resource use

To achieve environmental sustainability, societies must transition from a linear economy to a **circular economy**. In the current linear model, raw materials are extracted from the environment, manufactured into products, utilised and eventually disposed of as waste. This model puts pressure on the environment through pollution, resource depletion and increased waste volume. The linear model has led to the built environment accounting for around half of global raw material extraction and generating a substantial proportion of construction and demolition waste, according to the World Green Building Council.

The circular model offers an alternative by shifting to an economic system in which resource extraction and waste generation are minimised or avoided entirely. A circular system relies primarily on closed material loops, in which outputs previously treated as waste are reused as inputs for new products.

At the product level, this can be achieved by:

- **extending the useful life** of products through design choices and maintenance services (as opposed to a planned obsolescence approach, which intentionally designs products to have a limited lifespan)
- **adapting manufacturing processes** to employ reused and recycled materials as inputs (as opposed to using new materials) and
- **changing disposal practices** to enable products at the end-of-life stage to be reused or recycled.

Such changes must be supported at the systemic level by measures that enable the transformation of outputs into inputs. This can include, for example, developing recycling facilities and local depots to store materials awaiting reuse, as well as policy interventions such as taxes on landfilling or on single-use products.

3.3.1 Socioeconomic aspects of circularity

The shift towards circular systems carries significant social and economic implications. It offers opportunities for new industries, such as repair networks, remanufacturing factories and innovative materials start-ups, while shortening supply chains and supporting local economies. However, the transition must also be managed to ensure an inclusive transition for communities reliant on extractive industries. Investment in training, policy reform and circular procurement practices can enable participation across the value chain.

For built environment professionals, adopting circularity requires a mindset shift that moves beyond initial cost assessments to consider whole-life value, reusability and material recovery potential. Sustainability tools and frameworks such as LCA and LCC support evidence-based decisions, while procurement and valuation practices can incentivise circular outcomes.

Circularity connects environmental performance with economic opportunity and social well-being. Integrating circular principles into design, procurement and asset management can enable both the built and natural environments to reduce resource pressure, improve resilience and contribute to a regenerative, low-carbon future.

3.3.2 Addressing circularity in professional practice

The built environment is a significant consumer of natural resources and a producer of waste, so it plays a key role in the shift to a circular economy.

In the natural environment, ecosystems operate through continuous cycles of regeneration, as nutrients and materials are constantly reused. Supporting these natural loops through practices such as regenerative agriculture, sustainable forestry and water-sensitive design improves ecosystem resilience.

Broadly speaking, implementing circular practices at the level of individual assets follows the same three principles introduced above.

- **Extending the useful life**: this can be achieved through a combination of measures adopted at the planning level (e.g. by favouring renovations and discouraging demolitions), at the design stage (e.g. by allowing for adaptation to different uses) and during operations (e.g. by ensuring adequate maintenance).
- **Employing reused and recycled materials as inputs**: this is dependent on choices made at the design stage, but also on the correct sourcing of suitable products during specification and procurement.
- **Allowing outputs to be reused and recycled:** this also relies on design choices, as the asset needs to be adequately designed and built with deconstruction in mind (e.g. by using mechanical fasteners instead of adhesives, and by maintaining clear documentation of products and construction methods), but it ultimately depends on the actual deconstruction process when the asset reaches its end-of-life stage (as opposed to conventional demolition).

Clearly, systemic changes are needed to enable circularity in the built environment. For example, new certification schemes are required to enable the installation of reused materials, whose conditions and physical properties may be unclear, in new construction, while ensuring compliance with the relevant regulations. Despite widespread agreement on the principles of circularity, practical implementation in the built environment remains challenging. In particular, the industry still faces barriers such as fragmented supply chains, limited markets for recycled and reused materials, a lack of digital tracking infrastructure and procurement models that prioritise upfront costs over long-term value.

The adoption of digital information systems is essential for achieving circularity in the built environment. Material passports and building passports (sometimes also called digital building logbooks) are digital files that store detailed information on the origin, characteristics and potential for reuse of construction materials within a building. This allows professionals to make informed decisions about maintenance, renovation and end-of-life recovery. When embedded into building information models (BIM), material passports enable the tracking and management of how resources move through an asset’s life cycle. When expanded to include legal and operational data, material passports can evolve into building passports, which are a single record of an asset’s life. Although still in their early stages, these tools will become essential for implementing circular strategies and developing markets for recycled and reused materials.

Evaluating an asset's circularity is a complex exercise that involves multiple factors, some of which are qualitative. For example, assessing the circularity of a new building may include forming a judgement on the adaptability of its design to different uses, as well as estimating its potential for deconstruction. In the absence of a single quantitative metric to measure asset circularity, professionals' expertise and awareness of context (including economic and practical feasibility) are essential for producing a realistic evaluation of an asset's circularity.

Several standards and methodologies have been developed to capture different aspects of circularity.

- ISO 59004:2024 provides general principles.
- ISO 59020:2024 guides the measurement of circularity performance at the organisational level, including indicators for material loops, waste prevention and product longevity.
- **Material flow analysis (MFA)** is a technique used to quantify the inputs, outputs and stocks of materials within a system, which makes it possible to identify resource use patterns, losses and recycling rates. By showing where materials enter, accumulate and leave the system, MFA provides a quantitative basis for evaluating circularity.
- Resource efficiency, described in BS EN 16627:2015, captures how much value is created in relation to the materials and energy consumed throughout an asset's life cycle.
- ISO 20887:2020 contains principles, requirements and guidance on design for deconstruction and adaptability.
- The second macro-objective of the EU Level(s) initiative is dedicated to 'resource efficient and circular material life cycles', and includes indicators on construction and demolition waste, adaptability and renovation, deconstruction, reuse and recycling.

It's important to note that, while there are strong synergies between mitigation and circularity, the results of a WLCA (particularly module D, which includes the benefits of reuse and recycling) are not a reliable measure of an asset's circularity.

3.4 Biodiversity and ecosystem health

Biodiversity refers to the variety of life on Earth, including the diversity of **species**, **ecosystems** and **natural resources**. It forms the foundation of the natural systems that support human well-being by regulating the climate and providing food, water, clean air and materials. **Ecosystem services** are the benefits that nature offers to human life, such as maintaining soil fertility, absorbing carbon, filtering pollutants and buffering the impacts of extreme weather.

According to the World Economic Forum (2020), over half of global GDP depends on nature and its services. Yet these systems are under severe strain as biodiversity declines at an unprecedented rate due to land use change, pollution, overexploitation, invasive species and climate change, undermining ecosystems' abilities to absorb shocks and provide the services on which societies depend. According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, around one million species are at risk of extinction, threatening the ecological foundations of economies and societies. These global trends connect directly to how land is managed.

The built environment sits at the centre of this issue. Unplanned urban expansion, infrastructure development and resource extraction transform land, fragment habitats and disrupt ecological processes. Construction activities can cause deforestation, soil erosion, water stress and contamination, while the demand for materials carries hidden environmental costs. Once constructed, the operation of buildings and infrastructure continues to place pressure on ecosystems through energy consumption, water use and waste generation. Protecting biodiversity cannot therefore be treated as a separate issue; it must be embedded in the planning, delivery and management of assets.

3.4.1 Socioeconomic aspects of biodiversity

Biodiversity ultimately underpins human health, food security and livelihood. Many medicinal compounds are derived from plants, animals and microbes. Diverse diets, supported by a wide range of crops and livestock breeds, are crucial for nutrition and resilience to climate change. Access to nature improves physical and mental health, while biodiversity-related industries such as agriculture, forestry and tourism sustain livelihoods. However, conservation and restoration efforts must be designed with fairness and inclusion in mind. Restricting land use for protection or restoration can adversely affect communities that depend on natural resources. Therefore, professionals should consider participatory planning and equitable benefit-sharing to ensure that biodiversity actions are contributing to social resilience, rather than reinforcing inequities.

Protecting biodiversity benefits ecosystems, the climate and economic stability. By embedding biodiversity considerations into design, construction and management, human influence on the built and natural environments can pivot from ecological degradation to recovery, particularly as sustainability evolves toward regenerative, nature-positive approaches that increase natural capital. Focusing on biodiversity and improving ecosystem health are therefore integral to supporting sustainable development and ensuring a liveable planet for future generations.

3.4.2 Addressing biodiversity in professional practice

Effective biodiversity management begins with assessment. Baseline studies can identify the habitats, species and ecological functions within a project site and its surroundings, contributing to an understanding of the risks and opportunities associated with asset construction and use. A variety of techniques can be used to assess biodiversity, including:

- field surveys
- satellite imagery and
- genomic analysis.

In countries where biodiversity protection requirements are set out in regulations, a specific methodology is mandated (such as the statutory biodiversity metric used in England).

Based on the assessment results, a strategy can be devised to limit environmental damage and ideally increase biodiversity. This applies to construction projects and asset operations, as well as agricultural and rural activities.

The biodiversity strategy should follow a similar hierarchy to the mitigation strategies:

- **Avoidance** includes careful site selection to prevent damage to critical habitats. This is addressed primarily at the planning level.
- **Minimisation** requires implementing practices that reduce ecosystem disturbance and pollution associated with planned activities.
- **Restoration** means actively repairing environmental damage caused by activities (e.g. through land remediation).
- **Offsetting** entails compensating for that damage through measures occurring elsewhere.

For example, if vegetation is removed and cannot be restored locally, trees can be planted at a different site to offset the loss. Overall, the goal of a biodiversity strategy is to achieve a net gain, meaning that the ecological value after development is higher than before. The process outlined in BS 8683:2021 provides a clear structure for designing and verifying such outcomes.

Design plays an essential role in both urban and rural settings. In urban areas, measures such as green roofs, living walls, native planting, permeable surfaces and wildlife corridors help maintain local ecosystems. Nature-based solutions provide further benefits, including reducing flood risk, improving air quality, regulating temperature, and supporting mental and physical health. In rural areas, sustainable land use practices such as regenerative agriculture, managed forestry and wetland restoration reduce habitat fragmentation.

These approaches align with the Kunming–Montreal Global Biodiversity Framework, which advocates integrating biodiversity values across all levels of decision-making. The framework sets global targets to halt and reverse biodiversity loss by 2050, ensuring that nature is valued, protected and restored.

For professionals in the built environment, promoting biodiversity means incorporating **natural capital** into decision-making. This involves integrating ecological assets into land valuation, feasibility studies and risk assessments. Tools such as ecosystem service valuation, natural capital accounting and biodiversity impact assessment can help guide investment toward projects that deliver long-term ecological and social value. ISO 14008:2019 provides guidance on assessing the monetary value of environmental- and ecosystem-related outcomes. Accounting for environmental externalities enables surveyors to evaluate the broader consequences of activities and investment decisions beyond mere economic returns.

For land and natural assets, standards such as the UN System of Environmental Economic Accounting (SEEA) provide a framework to assess the extent and condition of ecosystem services (such as soil health and biodiversity), translating ecological health into metrics that can be integrated into financial reporting.

To ensure biodiversity goals achieve their intended outcomes, projects should be monitored and adjusted over time. Ongoing evaluation helps track ecological performance, identify emerging risks and guide management responses. Standards such as ISO 14055-1:2017 on land degradation and restoration provide a framework for consistent reporting and improvement. The increasing use of spatial data, remote sensing and digital tools can also help track biodiversity outcomes.

4 Delivering sustainability through structured workflows

Sustainability is no longer an abstract topic or optional value-add for the surveying profession. It is a core requirement that uses data, standards, expertise and professional judgement. For surveyors, the challenge is not just to understand broad sustainability concepts, but also to apply practice area-specific knowledge systematically to deliver client-defined outcomes. Surveyors should use a structured, evidence-based approach to conduct sustainability studies. The broad steps of the workflow remain the same for all surveyors, whether they are conducting a sustainability study to provide investment advice, determining and managing the carbon budget, determining effective retrofit pathways or measuring the performance of an existing asset.

Figure 6 shows a suggested process or workflow to help surveyors translate sustainability goals into tangible outcomes, irrespective of their practice area and the nature of the study. It shows a consistent workflow that is generally applicable across all surveying practice areas, asset types and asset life cycle stages. The seven-step high-level workflow guides the sustainability study from understanding the initial drivers, through to measuring outcomes and ultimately providing advice. The overall workflow and steps may vary across surveying practices, but the intent is to adhere to the workflow principles.

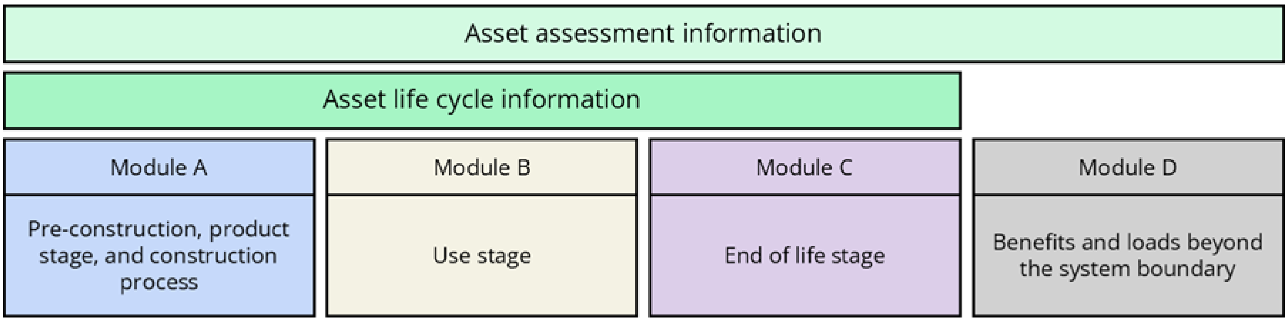


Figure 6: Sustainability workflow

Table 8 explains the workflow using the example of a retrofit project for an office building.

Steps of the sustainability study	Description	Example of a retrofit project
Context	Understand the drivers: identify why the study is needed (e.g. risk mitigation, value preservation, ethical considerations, regulatory requirements).	An asset manager wants to evaluate whether their 1990s office building will become ‘unlettable’ due to new energy-efficiency regulations and evolving occupier demands. The primary drivers are risk mitigation and preserving asset value.
Scope	Define boundaries: set the study's physical, temporal and functional scope.	Physical: whole building (envelope and services). Temporal: 20-year horizon (investment hold period). Functional: operational energy use (regulated and unregulated).
Data and metrics	Collect evidence: define the metrics and gather robust primary and secondary data.	Metrics: energy intensity and operational emissions. Data: collect three years of utility bills and perform a condition survey of the building envelope to inform modelling.
Assessment and analysis	Calculate and interpret: process the data using agreed methodologies and report the study’s findings.	Assessment: model two scenarios: business as usual versus deep retrofit. Calculate LCC for both scenarios. Analysis: the deep retrofit reduces energy intensity to meet 2030 targets. The business as usual scenario fails compliance by 2027.
Advice	Recommend strategy: translate technical findings into a commercial recommendation.	Advise the client to proceed with the deep retrofit. Although capex is higher, it protects the asset value and reduces the risk of stranding. Doing nothing entails greater commercial risk.

Steps of the sustainability study	Description	Example of a retrofit project
Action	Implement and verify: manage delivery and validate outcomes via certifications.	Procurement: include sustainability clauses in the tender to ensure low-carbon retrofit is implemented. Verification: manage third-party certification. Disclosure: align the upgrade with the appropriate reporting taxonomy to qualify for a green loan.
Learning	Close the loop: review actual performance against predictions.	Post-occupancy: one year later, compare the actual energy bills against the predicted model from step 4. Identify any performance gap and, if needed, advise on recalibration.

Table 8: Example of sustainability workflow

Each of these steps is described in more detail in the following subsections. The first step in this workflow is to understand the drivers of the sustainability study.

4.1 Context

To begin a sustainability study, the surveyor should understand the rationale for initiating it. For surveyors, the study's context and relevance relate to three primary professional factors.

- **Risk and value**: as a result of end user demands, increasing regulation and other business factors, sustainability has become a fundamental driver of business value and resilience, as well as an ethical and professional responsibility. The lack of sustainability features is generally regarded as a significant business risk. For example, buildings with low energy efficiency or high carbon emissions face transition risks, potentially becoming stranded assets that fail to meet new regulations or market expectations. Therefore, strong sustainability performance can preserve long-term value and ensure market acceptance. Surveyors need to understand the market dynamics in order to advise clients on value preservation and managing liability.
- **Client (appointing party) demand:** both public- and private-sector clients are demanding that sustainability be made a core part of decision-making. As investment priorities change, investors, occupiers and developers require data and advice to meet their own sustainability reporting requirements or comply with regulations. For example, a developer may need a decarbonisation strategy for their asset portfolio to meet local

regulatory requirements. Therefore, surveyors are now expected to deliver outputs that extend beyond traditional metrics of time, cost and quality to include social and environmental outcomes. From shaping investment strategies to ensuring low-carbon construction, developing retrofit plans and assessing the value of sustainable assets, surveyors are often asked to act as champions of sustainability initiatives, ensuring decisions are based on clear, accurate insights.

- **Ethical responsibility**: RICS members have a duty to act in the public interest and to follow the do no significant harm principle, ensuring that their actions, policies and assets do not cause significant adverse environmental or social impacts. This stewardship role is codified in the RICS Royal Charter and Rules of Conduct. Integrating sustainability into the workflow is therefore not just a commercial necessity, but a professional obligation.

After setting the study's context regarding risk and value, client demand and ethical responsibility, the workflow defines the scope.

4.2 Scope

The scope of the study is defined after the specific context has been determined. This should be done before collecting data or beginning the assessment and analysis. While the overall goal is to deliver balanced environmental, social and economic outcomes, the study’s scope shapes the subsequent steps. For example, a study undertaken to meet regulatory requirements may have rigid, predefined boundaries, whereas a study commissioned to preserve the value of an asset may adopt a broader, more flexible approach. A few examples of the purpose of a sustainability study are:

- evaluating site suitability, flood risk and social impacts to inform sustainable master planning
- establishing environmental baselines to support natural capital accounting or land stewardship strategies
- comparing design options, products or materials to balance technical performance with environmental and economic outcomes
- informing end-of-life decisions, such as the choice between demolition, deconstruction and reuse
- identifying the most significant contributors to environmental impacts, in order to target interventions effectively
- complying with regulations, planning requirements or corporate reporting obligations
- gathering evidence to achieve green building certifications or ratings
- developing retrofit plans or decarbonisation roadmaps for existing assets
- documenting environmental performance or calculating carbon footprints for portfolio-level reporting, and
- assessing transition risks and opportunities to support investment or valuation decisions.

Once the study's general scope is defined, the surveyor should determine its precise boundaries. In surveying practice, scope is typically defined across four dimensions.

- **Physical scope**: this defines what is being assessed by deciding:
- **Spatial boundary**: the physical bounds or spatial limits of the assessment. For a valuer, this may be the legal title boundary. For a quantity surveyor, the site boundary or property line determines whether external works are included in the assessment.
- **Asset elements**: these are functional elements of the asset, such as the building envelope or specific internal elements of the asset. For example, a retrofit assessment might be limited strictly to the building fabric and mechanical systems, excluding tenant fit-outs.
- **Functional scope**: this defines which operational aspects are included in the assessment. For instance, in emissions calculations for a highway project, the functional scope generally includes pavement, lighting, road furniture and barriers. However, a broader functional scope might encompass projected traffic-related emissions generated on the road (referred to as user carbon and defined later), linking the asset's performance to wider transport planning outcomes.
- **Type of assessment**: this dimension defines the nature of the assessment based on when it is performed during the asset's life cycle. Sustainability assessment is rarely a one-off calculation, but an iterative process where the scope and data availability evolve as the asset progresses through life cycle stages. It is essential to know the stage of the assessment, as data availability about the asset can vary significantly. The following four assessment types are commonly used:
  - **Strategic or concept stage**: assessing options (e.g. viability of a new build versus retrofit) using asset- and sub-asset-level benchmarks to support early decision-making. These are also called pre-construction stage assessments.
  - **Design stage**: refining the assessment to evaluate specific design options, demonstrate regulatory compliance, develop appraisals and select materials. At this stage, generic benchmarks are replaced with asset-specific data to optimise technical performance.
  - **Construction and handover stage**: typically, assessments at this stage use final documentation, as-built models and product specifications to capture the value of the work performed, and the actual environmental and cost profile of the delivered asset.
  - **In-use stage**: this assessment involves measuring actual performance to inform management, transaction or valuation decisions, or comparing against predictions to identify and close the performance gap.
- **Temporal scope**: this defines how long the assessment looks into the future and which life cycle activities (also known as information modules) are included.
- **Time horizon**: this defines the period over which environmental, social and economic impacts are measured. It could be a single point in time (e.g. the valuation date or practical completion) or a specific duration (e.g. a 60-year reference study period for life cycle costing or emissions calculations for a building in the UK).

- **Life cycle modules**: sustainability assessment considers performance and impact across an asset's life cycle. Depending on the study's purpose, different life cycle modules are selected (see section 3.1.2). Applying a life cycle structure avoids double-counting and provides a transparent basis for comparing results. It is generally recommended that a whole-of-life view of the asset should be considered (all information modules should be included in the study).

In many cases, the scope is predetermined by the requirements of a specific certification scheme (explained in section 4.6.1) or reporting framework (described in section 4.6.2), which mandates specific physical and temporal boundaries.

The assessment scope should align with recognised international standards to ensure transparency and comparability. For example, in carbon emissions assessments RICS' Whole life carbon assessment for the built environment or the upcoming EN 15978 standard may be used. This ensures that assessments are consistent, comprehensive and auditable, and support evidence-based decision-making.

4.3 Data and metrics

The quality of a sustainability study and its output depend on the use of high-quality input data, so data availability and reliability are critical. Surveyors play an important role in this and should translate the study's scope into specific data requirements to enable assessment and analysis. This translation is done by defining criteria, indicators and metrics.

- **Criteria** are used to maintain the connection to the study's purpose and scope by establishing the objective. In surveying, criteria may include climate mitigation, circular resource use, social well-being and long-term affordability. In practice, criteria are often aligned to thematic areas such as energy, water, materials or accessibility.
- **Indicators** translate each criterion into an observable or measurable variable. For climate change mitigation, a key indicator is global warming potential (GWP); for social well-being, indicators such as occupant satisfaction and workforce diversity reflect social sustainability. Affordability, life cycle cost and operational efficiency are essential measures for ensuring long-term financial viability. These indicators may be measured directly, modelled or estimated using appropriate proxies, depending on the life cycle stage and available information.
- **Metrics** provide an indicator with a quantitative value for calculation and reporting. For the climate change mitigation criterion, the indicator is GWP, and the corresponding metric is greenhouse gas (GHG) emissions expressed as carbon dioxide equivalents, reported in kilograms of CO_2 equivalent. Other examples include operational energy use, expressed as annual energy consumption normalised by floor area, reported in kilowatt-hours per square metre per year. Water consumption is measured as average daily potable water use per person and reported in litres per person per day. Selecting appropriate metrics and units is vital to ensure that data is interpretable, comparable and suitable for decision-making.

A single dataset, such as electricity consumption in kilowatt hours, may be used for different assessments depending on the criteria it supports. For example, electricity consumption measured in kilowatt-hours may be converted to GHG emissions reported in kilograms of carbon dioxide equivalent for environmental analysis.

Data for environmental, social and economic sustainability can either be measured or modelled.

- **Measured data** is empirical, observed and typically reflects actual condition or performance. Measured data for environmental sustainability may include utility meter readings, indoor air quality tests, traffic volume counts and noise measurements. Social measures can be derived from stakeholder or occupant survey results, workforce demographic records and the number of safety incidents on site. Economic data often consists of actual maintenance expenditure, invoices, energy bills and productivity logs.
- **Modelled data** is used when measured data is not available, especially when options are being explored. Generally, this type of data is used in the early stages of the asset life cycle. Typical examples are modelled data from energy simulations, daylight and thermal modelling, employment impact forecasts, life cycle costing and scenario-based resilience modelling. Modelled data is typically used for early-stage advice and decision-making. It should be accompanied by transparent documentation of assumptions and uncertainties.

From the perspective of sources of data, there are two categories.

- **Primary data**: also called foreground or asset-specific data. It can be measured or modelled, provided it is directly derived from the asset or system under consideration. Examples include utility meter readings, waste transfer notes and bills of quantities.
- **Secondary data**: complementary data needed to complete the sustainability assessment. It is not directly related to the asset or activity under consideration, and is sourced from external datasets and research. It provides insights and benchmarks from a broader industry context. Some examples include national emissions factors, life cycle inventory databases, census data, housing or employment statistics, environmental product declarations (EPDs) and cost benchmarks. Surveyors typically obtain this data from national statistics offices and government environmental datasets, industry databases, academic and research institutions, and industry benchmarking studies.

Given the diversity and extent of data types and sources, ensuring data quality is critical for reliable sustainability assessment. It is the surveyor’s responsibility to ensure that all data used in the assessment meets relevant quality standards, and to document any gaps or limitations, so clients can make informed decisions. To assess data quality, surveyors can examine four attributes.

- **Completeness** can be used to verify that all required data has been captured; for example, when collecting energy consumption data for a building, all building systems are included.
- **Representativeness** ensures the data is relevant to the local context, period, technology and user context, such as by using the correct climate data for an energy efficiency study.

- **Consistency** ensures that the data has been produced or collected using compatible methods and boundaries, for example by using RICS' Code of measuring practice or International Property Measurement Standards to measure the floor area of a building.
- **Transparency** requires clear documentation of sources, assumptions and calculations. For example, this could involve documenting whether water consumption data is based on design estimates or actual meter readings.

These principles apply to environmental, social and economic data, and help both surveyors and clients understand the strengths and limitations of the assessment.

When conducting a sustainability assessment, gaps in data availability, data quality and underlying data uncertainty are major issues. Therefore, surveyors should:

- use the most specific and reliable data available
- disclose and report the sources of data used, and
- explain the anticipated impacts of data gaps, and any issues with data quality or uncertainty.

Generally, measured data is more accurate than modelled data, and primary data sources are preferred over secondary data. When using proxy or generic data, the surveyor should consider how this may affect the study's conclusions. Similarly, uncertainty should be modelled using qualitative and quantitative techniques. All issues in the data should be identified, explained and tested through reasonable sensitivity checks whenever appropriate.

The surveyor's responsibility is to assess the use of data in client reports so that conclusions are understood in context. By grounding the analysis in clear criteria, indicators and metrics; selecting and qualifying data with care; and communicating uncertainty openly, surveyors provide clients with results that are reliable and aligned with the assessment's purpose. To manage these complex datasets effectively, surveyors increasingly rely on digital tools. For example, BIM and digital twins are valuable sources of primary data on asset elements, as well as performance data that can be linked directly to the asset model.

4.4 Assessment and analysis

The gathered data is processed and analysed through indicators selected on the basis of the purpose of the assessment. For example, consider a surveyor analysing the annual energy consumption of an office building:

- **Assessing impact**: the surveyor may convert energy consumption data into GHG emissions, and compare the figure to industry benchmarks in order to rate the environmental impact of the building.
- **Assessing value**: by converting energy consumption data into operating costs, the surveyor identifies that service charges are above market average – suppressing rental growth – and may conclude that there is a reduced market value associated with the asset.

- **Assessing risk**: the surveyor can compare energy performance against local regulatory standards to determine whether the owner may incur a penalty if a retrofit is not conducted, which would associate a high transition risk to the property.

In each case, the data is the same, but the assessment and analysis employ an indicator to evaluate different sustainability measures or outcomes.

4.4.1 Assessment

Surveyors use proven assessment methods and professional standards, adjusting them to fit the type of asset, its stage in the life cycle, the data available and the decision being made.

The overall process remains the same, but the methods used can vary depending on the study's scope and context. The main task is to conduct the assessment by selecting appropriate measures, using accepted methods and clearly documenting any assumptions or limitations. Often, sustainability studies use multiple methods to address different goals simultaneously.

Surveyors often carry out the following types of assessments:

- **Environmental impact assessment**: surveyors use LCA to measure the environmental impacts linked to an asset. They set clear boundaries and turn data on materials, energy, water use and construction into standard environmental indicators, such as GHG emissions. These results provide clear evidence for comparing options and finding the main sources of impact.
- **Financial impact assessment**: to understand long-term costs, surveyors use life cycle economic assessments (based on LCC) to measure costs over a set period. This usually covers capital spending, operating costs, maintenance, replacements and end-of-life costs. The goal is to create a clear cost profile for each option, not to decide which is better.
- **Social outcomes assessment**: when social sustainability is part of the study, surveyors use social value assessment frameworks such as SROI to see how projects affect people and communities. These assessments examine well-being, access to services, jobs and safety, using both numerical and qualitative evidence, and sometimes financial estimates. Because social impacts are complex, it is important to clearly state any assumptions and boundaries.
- **Investment appraisal and valuation inputs**: for studies related to investment or valuation decisions, surveyors assess sustainability data to fit into financial models. This can mean measuring how energy performance, adaptation steps, climate risks or other ESG factors affect expected income, costs or values. At this stage, the main goal is to create strong, traceable data that can be used later in valuation or investment analysis.
- **Ecosystem and natural asset assessment**: for land and natural assets, surveyors check the current state and expected changes in ecosystem services and ecological health. This might involve looking at soil quality, biodiversity, water management or carbon storage

potential. The assessment shows the condition and performance of natural resources before thinking about management options or trade-offs.

For all types of assessments, surveyors must ensure methods are used consistently and transparently, and align with the defined scope. Clear records at this stage are crucial because they support good analysis, comparison and professional advice in the next steps.

4.4.2 Analysis

Once the assessment is complete, the surveyor may need to analyse the results in order to answer the client's questions identified in the study's scope. The nature of the analysis varies by surveying practice area, but generally follows this interpretive process.

- **Analysing risk and resilience**: assessment results are analysed to evaluate vulnerability, which involves looking beyond current compliance to understand future exposure to risks, for example examining how future regulations or carbon pricing can affect operating costs, or how climate assessment supports the resilience of an asset against extreme weather events.
- **Comparing options and trade-offs**: surveyors often undertake assessments to analyse competing choices and provide optimal solutions. For example, comparing design options for deep retrofit not just on capital costs, but also on a weighted balance of emissions and delivery speed.
- **Evaluating suitability and capacity**: surveyors analyse carrying capacity, which is the ability of an ecosystem to support a given level of demand without degrading. When limits are exceeded, ecosystems can no longer provide essential services. This involves, for example, determining the maximum intensity of use that a parcel of land can sustain without degrading its natural capital.
- **Prioritising strategy**: a materiality assessment identifies which issues have the most significant influence on stakeholders for a specific project. Portfolio analysis aggregates data across multiple assets to identify patterns, enabling a client to target their worst-performing buildings for immediate intervention.
- **Planning for transition**: finally, analysis is used to map the journey to future targets and limits. For example, surveyors use analysis of assessment outputs to sequence costed actions over time, showing how an asset can meet decarbonisation targets.

Calculated results rarely tell the whole story on their own, so analysis involves situating them in context to determine whether the findings represent a risk or an opportunity.

The final step is transparent communication. Surveyors benchmark their results against industry datasets, peer assets or historical performance. A robust report should clearly state its purpose, scope, data sources and results. Verification, whether through internal peer review or external audit, adds credibility to these findings and is increasingly required for regulatory disclosures and certifications.

4.5 Advice

The value of a sustainability study lies not in the data itself, but in how it informs decision-making. Surveyors use assessment and analysis results to inform specific professional decisions, translating technical metrics into strategic advice. To be effective, this advice should speak the client's language; for example, a fund manager may only be interested in sustainability translated into commercial terms, such as transition risk or asset value. In this way, surveyors act as the bridge between technical performance and market and commercial reality.

Surveyors apply these insights to shape decisions at every stage of the asset life cycle. In investment and valuation, ESG data is integrated into financial models to assess risk and return, helping preserve capital value by mitigating the risk of assets becoming stranded. During procurement and construction, advice shifts to material selection and supply chain choices, ensuring that environmental commitments are translated into procurement and contractual terms. Similarly, in design and retrofit scenarios, surveyors use techniques like optioneering and LCC to help clients choose between competing interventions, optimising the balance between upfront capital expenditure and long-term operational savings.

Strategic advice often involves navigating conflicts between competing objectives, such as a low-carbon solution that may increase upfront costs, or a development that maximises social value at the expense of density. Surveyors provide the balanced evidence required to manage these trade-offs, presenting economic, environmental and social implications side by side to enable informed choices.

Finally, this advice should be adapted to the specific context. The strategy recommended to a long-term owner-occupier focused on operational costs will differ significantly from that given to a speculative developer focused on exit yields. Tailoring the message ensures that sustainability actions are aligned with the client's specific investment horizon and organisational goals.

4.6 Action

While advice supports a decision, action drives the outcome. The final phase of the active workflow focuses on implementing tangible measures to improve performance and verifying that the market recognises those improvements. This begins with setting specific, measurable goals based on the assessment findings, such as targeting a particular energy intensity or defining a decarbonisation pathway. Surveyors help clients establish these baselines and monitor progress throughout the design and operation phases, enabling corrective actions if performance deviates from the target.

This diligent oversight transforms sustainability from a one-off report into a continuous management process. Action may not be limited to direct interventions at the asset level; it may also include advice that requires retaining specialists to conduct such interventions. As an example, for a valuer, actions may involve establishing performance thresholds to prevent obsolescence, and advising the client to engage specialists who will implement the measures required to preserve the asset's value.

To independently verify these improvements and ensure market recognition, the industry relies on formal certification schemes, taxonomies and disclosures.

4.6.1 Certifications and labelling

Certifications offer a structured, recognised method for evaluating sustainability performance. They translate science-based assessments into verifiable, communicable outcomes. In addition to showing results, certifications can improve market confidence by establishing measurable criteria for environmental, social and economic performance. For clients, investors and regulators, they ensure that sustainability objectives have been met to an agreed standard; for programme teams, they offer a framework to guide continuous improvement.

Certification systems define performance criteria, indicators, benchmarks/performance levels or classes across major sustainability themes, including energy and carbon, water, materials, health and well-being, social value and economic viability. These criteria guide assessments based on verified data and documented evidence, as well as independent reviews. A rating or label can then be assigned, along with tiered schemes that may include levels such as Certified, Silver, Gold or Platinum, enabling performance comparisons across assets and over time. Certifications are increasingly embedded in client briefs, planning approvals and funding requirements, allowing professionals to trace sustainability outcomes throughout a project's life cycle.

Certifications build trust among investors, tenants and regulators, and often enhance asset value through green premiums and a reduced risk of obsolescence. Surveyors are central to this process, serving as both accredited assessors who audit compliance and strategic advisors who identify the most cost-effective credits to target. They manage the rigorous compilation of evidence, from energy models to material sourcing records, and guide project teams to ensure that initial design aspirations are realised in practice.

Certifications operate at different levels.

- **Asset-level certifications** assess buildings and infrastructure against defined sustainability criteria, often through a life cycle perspective. They are awarded to assets that can demonstrate sustainable design, construction and operation.
- **Product-level certifications and labels** verify the environmental – and sometimes social – performance of components. Examples include EPDs, social product declarations (SPDs) and product ecolabels that provide data for LCA and sustainable procurement.
- **Organisational-level certifications** recognise management systems or commitments that embed sustainability across corporate strategy, governance and operations, such as ISO 14001, CDP (Carbon Disclosure Project), GRESB (Global Real Estate Sustainability Benchmark) or SBTi (Science Based Targets initiative).

Table 9 lists examples of labelling and certification schemes for buildings.

Certification scheme	Scope and focus areas
BREEAM	Environmental, social and economic performance of buildings across all life cycle stages.
LEED (Leadership in Energy and Environmental Design)	Energy, water, materials, indoor environment and site sustainability.
WELL Certified	Health, comfort and well-being of building occupants.
Fitwel	Health, well-being and social equity in workplaces and communities.
WELL Community Standard	Health, inclusion and social equity at the neighbourhood or district scale.
EDGE (Excellence in Design for Greater Efficiencies)	Resource efficiency in emerging markets (energy, water, materials).
NABERS (National Australian Built Environment Rating System)	Operational energy, water, waste and indoor environmental quality.
Green Mark	Energy efficiency, water conservation, environmental protection and innovation.
CASBEE (Comprehensive Assessment System for Built Environment Efficiency)	Resource efficiency, indoor environmental quality and environmental load reduction are key considerations.
DGNB (Germany)	Environmental, economic, sociocultural, technical, process and site quality across the full life cycle, with a strong focus on performance-based and holistic sustainability outcomes.
SNBS (Swiss Sustainable Building Standard – Switzerland)	Balanced assessment across society, economy and environment, integrating cultural context, resource efficiency and long-term building value within Swiss regulatory and planning frameworks.
HQE (Haute Qualité Environnementale – France)	Environmental quality of buildings through health, comfort, resource efficiency and responsible construction practices, with a focus on life cycle performance and user well-being.

Certification scheme	Scope and focus areas
GRIHA (Green Rating for Integrated Habitat Assessment – India)	Energy efficiency, water conservation, waste management and environmental quality, with a strong emphasis on climate-responsive design and reducing resource consumption throughout the building life cycle.
Green Star (Australia and New Zealand)	Environmental performance across management, indoor environment quality, energy, water, materials, land use, emissions and innovation.

Table 9: Certification and labelling systems for buildings

Table 10 lists examples of infrastructure sustainability certifications.

Certification scheme	Scope and focus areas
Blue Dot Network	Quality, sustainability and resilience of infrastructure projects. A government-backed certification emphasising ESG and transparency, designed to benchmark infrastructure against international best practices and attract sustainable investment.
BREEAM Infrastructure (formerly CEEQUAL)	Sustainability performance of civil engineering, infrastructure and landscape projects.
CIC Sustainable Finance Certification Scheme	Sustainability performance of infrastructure projects across environmental, social and economic dimensions.
Climate Bonds Initiative	Climate alignment and low-carbon performance of infrastructure assets. A certification framework that assesses projects against sector-specific climate mitigation and resilience benchmarks to qualify for green bond financing.
Envision	Environmental, social and governance performance of infrastructure projects.
FAST-Infra (Finance to Accelerate the Sustainable Transition – Infrastructure) Sustainable Infrastructure Label	Identification and labelling of sustainable infrastructure assets for investment.

Certification scheme	Scope and focus areas
Infrastructure Sustainability Rating Scheme	Infrastructure planning, design, construction and operations.
SuRe (Standard for Sustainable and Resilient Infrastructure)	Sustainability and resilience of infrastructure projects. A global standard that integrates ESG criteria with a strong focus on climate resilience, stakeholder engagement and sustainable finance alignment.

Table 10: Certification and labelling systems for infrastructure

Organisational-level certifications are increasingly recognising social and governance performance. For example, ISO 26000 covers human rights, labour practices and community involvement, while B Corp certification assesses a company's overall social and environmental performance. Other frameworks, such as SROI standard, enable organisations to quantify and report their broader social impact, complementing environmental and economic metrics with social value metrics.

These certifications establish a shared framework for assessing sustainability performance, or parts of it, across the built and natural environments. They promote consistent measurement, continual improvement and assurance that goals are met in practice. The specific criteria vary by region, reflecting differences in climate, regulation, political situation and market maturity. However, all rely on a similar foundation of transparency, evidence and life cycle thinking, and contribute to advancing sustainable development. As these frameworks continue to evolve and align with policy and disclosure frameworks, they will become essential tools in connecting technical assessment with market transformation.

4.6.2 Taxonomies and disclosures

Non-financial disclosures are how organisations communicate sustainability information to stakeholders, regulators and the public. They translate results into transparent and verifiable statements that demonstrate how an asset addresses sustainability risks, opportunities and impacts. For organisations, disclosure is more than reporting. It is a strategic process that aligns business performance with environmental and social objectives.

Disclosure is critical to the surveying profession because financial reporting relies entirely on the accuracy of underlying asset data. Investors and regulators cannot assess a portfolio's alignment with green taxonomies without the granular evidence – such as energy intensity, flood risk or carbon performance – that surveyors measure and verify. Consequently, surveyors serve as critical gatekeepers, validating the physical data underpinning corporate ESG claims. Their assessments directly influence investment decisions, asset liquidity and market value, placing the profession at the centre of sustainable finance.

ESG reporting was the first structured way to do this. RICS Valuation – Global Standards Glossary calls it:

> ‘the criteria that together establish the framework for assessing the impact of the sustainability and ethical practices of a company on its financial performance and operations […] all of which collectively contribute to effective performance, with positive benefits for the wider markets, society and world as a whole.’

ESG frameworks help organisations measure and report non-financial performance. Key examples include the Global Reporting Initiative and the IFRS (International Financial Reporting Standards) Sustainability Standards, which have consolidated the legacy frameworks of the TCFD (Task Force on Climate-related Financial Disclosures), and SASB (Sustainability Accounting Standards Board). They set the stage for the next step in sustainable finance: **taxonomies**. These are classification systems that define which activities count as environmentally or socially sustainable. They provide a standard reference for interpreting sustainability claims.

Different regions have developed their own taxonomies, including the EU taxonomy for sustainable activities, the ASEAN Taxonomy for Sustainable Finance and China’s Green Finance Endorsed Project Catalogue. Some of these systems are linked to disclosure regulations, including the EU Corporate Sustainability Reporting Directive (CSRD) and the Sustainable Finance Disclosures Regulation (SFDR). They require organisations to report how their activities align with specific criteria. The EU is also developing a social taxonomy to define activities that contribute to objectives such as decent work and inclusive communities.

Most taxonomies share common principles. Activities must contribute to sustainability goals; do no significant harm to other objectives; and meet human rights, labour and governance standards. For example, under the SFDR, investors also disclose the main negative impacts of their activities, known as principal adverse impacts (PAIs). Taxonomies use standardised indicators such as greenhouse gas emissions, biodiversity effects, water use and waste generation. Such disclosures facilitate comparison of sustainability across sectors.

Common ESG and disclosure frameworks include:

- GRI (Global Reporting Initiative): impact-based reporting on environmental, social and governance performance.
- ISSB (International Sustainability Standards Board): disclosure standards focused on sustainability-related risks and opportunities.
- CDP: voluntary reporting on carbon, water and supply chain data.
- TNFD (Task Force on Nature-related Financial Disclosures): reporting on nature-related risks and dependencies.
- SBTi: setting and validating greenhouse gas reduction targets aligned with climate science.
- CRREM (Carbon Risk Real Estate Monitor): provides decarbonisation pathways for the real estate sector, and tools to assess alignment with net-zero targets and transition risk.

- UN Guiding Principles Reporting Framework (UNGP RF): reporting on human rights due diligence and governance.

As these frameworks align, information is becoming more consistent and valuable to both impact-driven and financial audiences. ESG reporting has become a bridge connecting sustainability assessment with mainstream financial decision-making. Industries, governments, investors and professional bodies are working to align standards. They are harmonising reporting requirements, reducing duplication and promoting digital disclosure through shared data lists. When assessment, certification and disclosure frameworks are interoperable, they reduce reporting effort and improve credibility.

Disclosures complete the sustainability governance cycle. They turn measurement and certification into communication that supports sustainable finance, public policy and informed dialogue. As global systems move toward shared indicators and digital standards, disclosure will link the technical foundations of sustainability assessment to financial and strategic decision-making. This is a key step toward a consistent, evidence-based approach to communicating sustainability performance across the built and natural environments.

4.7 Learning

As the final step in a sustainability study, learning and feedback turn the results from assessment, certification and disclosure into lessons for future improvement. The step in the workflow focuses on feedback, and its effectiveness depends on the willingness to reflect on outcomes and capture insights for future projects. Through this feedback loop, sustainability practices evolve in response to lessons learned, technological advances and changing conditions.

Learning begins with evaluating performance once assets are operational. Post-occupancy evaluations, operational monitoring and resource use tracking all reveal how well the original sustainability goals have been met. Comparing predicted and actual results highlights gaps between intent and outcome, showing how design assumptions, operations or user behaviour might have influenced the outcome.

At the organisational level, these feedback loops support collective improvement because as performance data accumulates, benchmarks become more accurate and representative. Industry-wide shared learning improves collaboration between stakeholders, supporting policy development and collective action on sustainability challenges. Using real-world data to refine assessment and management processes ensures sustainability practice remains evidence-based, adaptable and able to drive ongoing improvement in outcomes across the three dimensions of sustainability.

5 Sustainability in surveying practice

Surveyors are responsible for delivering sustainability across the built and natural environments. Given their involvement in investing, planning, valuing, constructing, assessing, managing and advising, their work significantly impacts environmental, social and economic outcomes. The impact they can have requires surveyors to acknowledge their ability to create both positive change and unintended negative consequences.

One of the most important contributions surveyors make is through their expertise in measurement and assessment, expressed in the popular saying ‘what is not measured cannot be managed or improved’.

By planning land use, calculating embodied carbon or advising on investment strategies, surveyors provide the evidence needed for decision-making. Even if some surveyors do not have direct input, they still act as stewards of reliable information. This ensures clients, planners, developers and policymakers make informed decisions based on clear and accurate insights.

This section explores how surveyors’ expertise contributes to sustainable outcomes across the life cycles of land and assets. Rather than following a fixed set of life cycle stages that may vary across regions and practice areas, this guide adopts a broader approach organised around four interconnected pillars of practice that offer a consistent structure for understanding how surveyors influence sustainability. Each pillar represents a distinct area of decision-making where surveyors apply their technical knowledge, judgement and ethical responsibility to deliver sustainable outcomes.

This approach aligns with the competencies provided in RICS’ sector pathways, which outline how surveyors demonstrate their practical skills and judgement across disciplines.

Each of the following pillars connects to recognised areas of expertise in order to help deliver sustainability in line with established professional standards (see Table 11 and Figure 7).

Pillar of sustainable practice	Typical RICS competencies	Illustrative areas of practice
Sustainable investment and value creation: aligning capital allocation, valuation and financial governance with sustainability goals	• Development appraisals • Property finance and funding • Valuation • Investment advisory • Risk management	• Real estate investment • ESG integration • Sustainable finance • Risk disclosure
Planning, and land and resource stewardship: ensuring responsible use of land and natural resources through spatial planning, environmental protection and equity	• Land use planning • Planning and development • Environmental management • Waste management	• Land development • Natural-capital accounting • Remediation • Biodiversity net gain
Design, construction and delivery: embedding decarbonisation, circular economy, social value and resilience principles in design, procurement and asset delivery	• Procurement and tendering • Construction technology • Quality management • Health and safety • BIM management	• Quantity surveying • Project management • Whole-life carbon assessment • Resilient infrastructure
Operation, management and regeneration: optimising in-use performance, enabling adaptation and retrofit, and supporting regenerative end-of-life strategies	• Asset management • Facilities management • Building pathology • Retrofit and adaptation	• Operational performance • Healthy buildings • Retrofit • Regeneration and deconstruction • Heritage properties

Table 11: Pillars of sustainability practice

These pillars demonstrate how surveyors contribute to sustainability throughout the asset life cycle, from the initial investment decision through renewal and reuse. They also reflect a range of professional roles, demonstrating that sustainability is not a speciality but a shared responsibility across disciplines.

Supporting these pillars are four enablers that underpin all areas of professional practice.

- **Ethics and governance**: this ensures surveyors maintain professional integrity and accountability, guarding against greenwashing and promoting responsible decision-making at every asset life cycle stage.
- **Measurement and transparency**: by standardising how sustainability impacts are quantified and consistently reported, professionals provide clear, reliable evidence that builds trust between stakeholders.
- **Collaboration and systems thinking**: this encourages professionals to look beyond their specific disciplines, working collaboratively to understand how individual decisions affect the broader asset life cycle and ecosystem.
- **Data, technology and AI**: leveraging digital tools, advanced analytics and AI enables more accurate modelling, evaluation of a large number of options, continuous monitoring and efficient data-driven sustainability strategies.

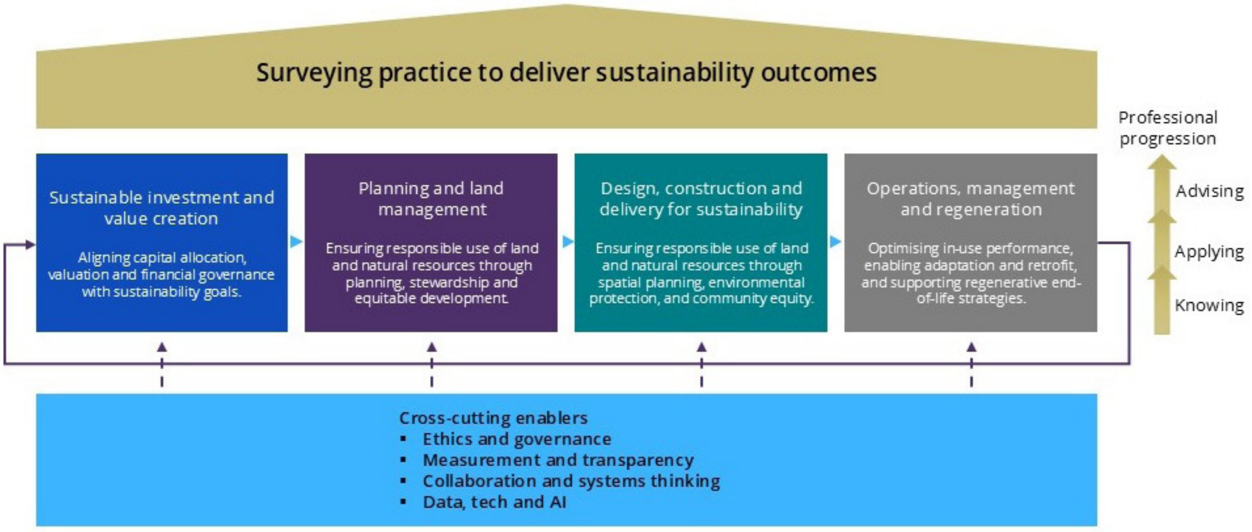


Figure 7: Pillars and enablers of sustainability practice

The vertical axis on the right of Figure 7 represents the development of professional competence, progressing from knowing, through applying, to advising. The horizontal sequence follows the asset life cycle, from initial investment through to operation and regeneration.

5.1 Sustainable investment and value creation

Investment, acquisition and leasing activities are often overlooked in discussions on how to make the built and natural environments more sustainable. But these decisions are critical. The choices to develop, buy, rent or invest in buildings and infrastructure determine how capital is used, what is built and how assets function over time. These decisions send signals about market values that shape future investment and development.

When sustainability considerations guide these choices, capital flows toward assets with a strong environmental and social performance. By demonstrating an asset's sustainability performance, asset owners can attract investment or secure higher returns, rents or sale prices (the so-called green premium). On the other hand, disregarding sustainability considerations risks creating stranded assets that are not adapted to climate change and new regulations.

Surveyors work at the centre of this market dynamic. Their work facilitates reliable information, the appraisal of sustainability and transparent transactions.

- **Investment and fund managers** oversee client capital in asset portfolios. They can direct investment toward assets that advance sustainability goals, although they are often constrained by client mandates or data availability. By integrating ESG metrics into investment appraisals, funds can be channelled toward high-performing, low-risk assets.
- **Finance and funding specialists** play a similar role, managing the flow of debt and equity underpinning development. They advise owners on how to boost sustainability performance to attract investment and access green finance options.
- **Valuers** put values on these qualities. They assess the market or investment value of land, buildings and infrastructure, which provides financial recognition of sustainability features. ESG reporting generally plays a vital role in these assessments.
- **Estate agents and transaction professionals** broker agreements between buyers, sellers, landlords and tenants. They translate sustainability features, such as high energy efficiency, low operating costs or superior resilience, into commercial terms that influence price, rent and marketability.
- **Corporate real estate and strategic advisors** help organisations with location and portfolio decisions. They can guide clients towards decarbonisation, integration of climate-risk assessments into corporate planning and reduction of operational costs and environmental impact.

RICS members uphold transparency, integrity and accountability across valuation, finance and investment. They adhere to RICS ethical standards, ensure that ESG information is accurate and comparable, and work to prevent financial crime, corruption and misleading disclosures. This commitment aligns property investment with responsible business principles and builds market confidence. Surveyors understand how economic, environmental and social risks shape value and market performance. With these insights, they integrate ESG data and sustainability benchmarks into financial analysis, and advise clients on strategies that align capital and governance with long-term sustainability goals.

5.2 Planning and land management

Planning and land management decisions determine how people use space, natural resources and infrastructure. Surveyors working in planning and development, rural practice, environmental surveying, geospatial services and natural resource management help strike a balance between environmental protection, impact on rural communities and economic development. Their work ranges from site appraisal and planning advice to long-term land stewardship.

- **Land and natural resource management** encompasses a wide range of practices focused on the responsible use and conservation of land, with the potential to deliver significant environmental benefits when implemented effectively. However, poor management can lead to degradation, biodiversity loss and social issues. Sustainable land management strives to meet current needs while preserving future resources through practices such as crop rotation, agroforestry and erosion control.
- **Agriculture**, a central component of human development, can have both positive and negative impacts. Large-scale intensive farming and livestock production can cause climate change, soil depletion and habitat loss. In contrast, sustainable approaches such as permaculture, agroecology, organic farming, regenerative agriculture and agroforestry help protect the environment. Surveyors can support a shift to sustainable agriculture by helping landowners to integrate sustainability goals into farm management.
- **Agroforestry** combines trees and shrubs with crops and livestock on the same land to create diverse, productive systems that improve soil health, support wildlife and generate income. Forestry activities can also contribute to these impacts when managed well, as forests store carbon, provide habitat, support recreation and enable sustainable development. However, unsustainable practices such as clear-cutting without replanting, illegal logging and overharvesting can undo such benefits. Certification systems such as the Forest Stewardship Council help ensure that forestry operations meet responsible management standards.
- **Extraction of natural resources** (minerals, fossil fuels, timber and water) also underpins development, but can cause significant environmental challenges, disrupt communities and spark conflict over land rights. Surveyors working in extraction management balance growth with protection through sustainable extraction plans, erosion control measures and engagement with local communities.
- **Land remediation** restores land damaged by industrial activity, waste disposal or accidental pollution, protecting public health and enabling safe development. Surveyors assess remediation costs, manage projects and ensure compliance with environmental laws, turning degraded land into a sustainable resource.

Within the broad field of planning and land management, surveyors provide a range of specialised services:

- **Geospatial surveyors** measure and map the physical features of the environment, generating the baseline data needed for responsible planning and environmental management.
- **Environmental assessors and managers** evaluate the costs and benefits of environmental practices, including remediation. They guide clients towards available incentives or tax benefits that support sustainable measures.
- **Rural estate managers** oversee landholdings, improving environmental performance and social value through stewardship and community engagement.
- **Natural resource managers** regulate the extraction and use of natural materials, adopting practices to minimise damage, control waste and protect workers.
- **Planning and development experts** evaluate sites for suitability, looking at flood risk, accessibility, biodiversity and heritage. They negotiate planning obligations for affordable housing, green space and public infrastructure, while embedding climate adaptation into development proposals.
- Surveyors working in **heritage and conservation** ensure that interventions respect the local culture while continuing to meet their environmental and economic goals, demonstrating that sustainability and preservation do not have to be at odds.
- **Waste management** is a vital part of responsible resource use. Surveyors overseeing waste and recycling facilities work to reduce pollution while recovering as much material as possible. Their job is to balance environmental compliance, cost control and social impact, moving the focus from disposal to circularity.

Sound governance reinforces this stewardship. Surveyors uphold environmental law, planning regulations and professional ethics, ensuring decisions are evidence-based, transparent and fair to both communities and ecosystems.

5.3 Design, construction and delivery for sustainability

Choices made at the design and construction stages determine the asset's long-term impacts and how it performs during the use stage, which generally lasts several decades. The design decisions dictate how the asset will be constructed, used, maintained, adapted and demolished. At this stage, supporting sustainability means creating the right conditions for those choices to deliver benefits throughout the asset’s life cycle.

Surveyors working in **quantity surveying, cost consultancy, project management, procurement and building control** professions all contribute to turning sustainability goals into real outcomes. Even observational and advisory tasks, such as providing reliable appraisal options or verifying the quality of work and regulatory compliance, are essential to delivering assets that are safe, healthy, efficient and profitable. Surveyors influence decisions that affect the performance, cost and long-term value of all types of assets through the following practices:

- minimising energy demand and the resulting GHG emissions
- reducing material use and prioritising low-carbon, reused or recyclable products
- increasing service life through durable solutions, systematic maintenance, and adaptability to changing needs and market conditions
- ensuring adaptation to changing climatic conditions
- enabling deconstruction and reuse during the replacement of components and at the end of life of the asset
- protecting occupant health and safety, well-being and user satisfaction
- providing good indoor air quality, as well as thermal, visual and acoustic comfort
- ensuring accessibility for all users
- minimising adverse impacts on biodiversity while increasing ecological value where possible.

These principles need to be embedded in the client's brief and the earliest design stages, in order to shape the concept and detailed design. Surveyors influence these outcomes by providing evidence and advice, applying life cycle costing and identifying trade-offs between performance, capital and operational costs on one hand, and environmental impact on the other.

Realising design intent depends on product **specification and procurement**, as the construction products, materials and vendors selected determine how sustainability commitments are executed on site. Surveyors overseeing construction procurement can evaluate tenders through a broad lens that considers not only cost, but also environmental and social criteria. Good practice involves:

- applying responsible sourcing standards consistent with ISO 20400 Sustainable procurement
- setting sustainability requirements in contracts and performance clauses
- promoting ethical sourcing and fair labour practices across the supply chain, and
- verifying supplier performance and certifications.

Construction activities affect the environment through energy and water use, emissions and waste, but also generate jobs and economic growth. Managed well, construction can minimise adverse effects while retaining social benefits, using good practices that include:

- realising design features and installing equipment correctly
- minimising on-site energy use, waste generation and emissions
- protecting worker health and safety, and
- supporting local employment while reducing community disturbance.

Surveyors can contribute to sustainable construction through various roles:

- **Project managers** oversee project execution and can make a real difference in reducing on-site impacts, although client objectives, regulations and contractual structure constrain their influence.
- **Cost managers and quantity surveyors** act as technical accountants, managing budgets, confirming sustainable designs are implemented as intended, and measuring embodied carbon in line with standards such as ICMS and RICS' Whole life carbon assessment for the built environment standard.
- **Fire and building safety advisors** provide essential services that protect lives, supporting social sustainability and minimising the environmental impact of fires.
- **Building control surveyors** assess compliance with building and environmental regulations, maintaining the legal and technical standards that form a baseline for environmental protection.
- **Infrastructure surveyors** apply the same sustainability principles at a larger scale, overseeing civil, transport and utility projects to ensure resilience, cost efficiency and minimal environmental impact across interconnected systems.

The **handover stage** is when control of an asset passes from the project team to its owners and users. A well-executed handover enables occupants to operate the asset as intended, but some assets fail to meet their design targets. For example, buildings often consume more energy than predicted, resulting in a **performance gap**. An insufficient understanding of operational requirements is a common cause of such a gap, and a well-supported handover can close it through clear user guidance, commissioning and training.

Surveyors managing **project completion** should provide the owner or operator with accurate, complete information, including product data, material specifications and system manuals. This handover also increasingly includes digital records linked to an asset's digital thread, which support later asset management, maintenance planning and pre-demolition audits. Through **post-occupancy monitoring** and user feedback, lessons can be learned from how the building and its components perform over time under different conditions.

From design, through construction to handover, chartered surveyors uphold professional ethics and standards to deliver assets ready to perform at their best. Through their connected roles, surveyors help embed sustainability in every aspect of delivery, from the earliest design concept to final handover.

5.4 Operations, management and regeneration

Once an asset enters operation, sustainability moves from a design intention to actual performance. At this stage, surveyors specialising in asset management, building surveying, and control and retrofit keep buildings and infrastructure efficient, safe and adaptable over time. Sustainability entails maintaining environmental, social and economic value, while minimising resource consumption and ensuring the asset can adapt to changing needs.

While asset managers are often not involved in day-to-day operations, they remain responsible for **asset performance and impact**. Responsible management minimises negative effects, while maximising benefits through strategic planning that involves energy performance targets, monitoring systems and maintenance programmes. Engagement with occupants and users also allows managers to communicate intentions and learn how the asset is used in practice.

Surveyors acting as asset managers typically oversee contractual, financial and maintenance responsibilities for owners and occupiers. In commercial portfolios, they can define operational standards for energy performance, resilience and adaptation measures, which shape sustainability outcomes. In residential contexts, tenancy agreements typically limit their scope, but they can still advise landlords and tenants on energy and climate improvements.

Due to the high energy demand for heating, cooling, lighting, ventilation and equipment use, operations tend to account for the largest share of an asset's carbon emissions. Depending on the asset, significant impacts can include water consumption and waste generation. How an asset is run affects user well-being, productivity and satisfaction. Surveyors often use the following good operational practice during this phase:

- monitoring and optimising energy, water and waste management to reduce costs and emissions, for example through the use of building management systems (BMS)
- maintaining healthy indoor environments that ensure thermal, acoustic and visual comfort by using user satisfaction surveys and other tools, and
- protecting the health and safety of occupants and staff.

Surveyors providing **asset management services** are often well-positioned to deliver carbon and cost savings, and to close the performance gap by assessing environmental and social impacts, recommending improvements and supporting clients in implementing changes, even in circumstances where client interests or lease conditions may limit their influence. Guidance from frameworks such as RICS' International Building Operation Standard (IBOS), the Strategic Facility Management Framework and the Responsible business framework structures these efforts. Through these frameworks, digital data management and performance monitoring, surveyors enable transparency, benchmarking and continuous improvement.

Maintenance extends the functional life of assets and ensures they perform as intended. While maintenance tends to have positive effects, it also involves material use, waste generation and embodied emissions. Best practice reduces these impacts through careful planning, waste management and the use of low-carbon materials and products. Building surveyors, asset managers and facility managers work together to design maintenance that minimises environmental harm and improves resilience to climate change impacts.

Renovation and retrofit offer opportunities to restore and enhance asset performance while cutting emissions. Upgrades such as insulation, shading and draught-proofing reduce energy demand. Decarbonising systems, such as replacing gas boilers with heat pumps, enhances thermal comfort and reduces energy use. Operational savings and the avoided impacts of demolition and new construction often offset the additional embodied carbon from renovation works. Renovation also enables climate adaptation, improves comfort and allows flexible use of space – all of which extend an asset's life. Surveyors support this process through condition assessments, project and cost management, carbon assessments and project oversight to ensure renovations deliver sustainability outcomes.

Assets at the end of their useful life may be demolished or deconstructed. Conventional **demolition** is wasteful, generating large volumes of waste that is often landfilled or incinerated, with resulting emissions. On the other hand, **deconstruction** disassembles structures, reusing or recycling their components for high-value applications, thereby avoiding landfilling and incineration, and reducing demand for virgin materials.

Surveyors can conduct detailed **pre-demolition audits** to identify reusable elements, estimate their market value and plan safe, efficient removal. Project managers work to mitigate adverse impacts, while regeneration specialists coordinate redevelopment to create environmental, social and economic value for communities.

Surveyors contribute to sustainable operation and renewal through various roles.

- **Residential and commercial property surveyors** help landlords balance tenant satisfaction, cost efficiency and environmental performance, while monitoring energy and water use, managing waste and implementing operational strategies that improve health and carbon performance within lease constraints.
- **Facilities and asset managers** oversee day-to-day performance, coordinate maintenance and align operational activities with ESG objectives at the portfolio level. They use performance data to guide investment in improvements, while ensuring compliance with environmental and safety standards.
- **Building surveyors** identify defects, assess conditions and plan maintenance, retrofit and refurbishment projects that extend asset life, increase resilience against climate risks, and deliver health and safety outcomes.
- **Building control surveyors** oversee regulatory compliance during new builds, refurbishment, alteration and regeneration, ensuring that health, safety and environmental standards are met.
- **Retrofit specialists** manage upgrades to existing buildings, combining improvements to fabric, systems and controls with renewable technologies. Their work balances embodied and operational carbon, increases occupant well-being and enhances asset value.
- **Regeneration and deconstruction specialists** coordinate neighbourhood renewal and material recovery, using circular economy approaches to create economic, environmental and social benefits.

Sound governance underpins all these activities. Surveyors uphold transparency by reporting performance accurately and ensuring that maintenance, retrofit and regeneration decisions are consistent with ethical and professional standards. Through this stewardship, assets can make positive contributions to communities.

Surveyors combine their detailed knowledge of how assets perform and deteriorate across environmental, social and economic dimensions with their practical experience in managing, maintaining, retrofitting and regenerating the built environment. They advise various clients on strategies that enhance resilience, circularity and sustainable value creation throughout an asset's life cycle.

5.5 Applying the framework across scales

Sustainability decisions occur across projects, portfolios and systems, guided by the same principles of evidence, ethics and value. Surveyors implement these principles at various levels of influence, from measuring performance at the product or project scale, to aligning strategies across portfolios and shaping policies at the system level (see Table 12).

Scale	Decision focus	Example surveyor contributions
Asset	Performance and resilience	Whole-life carbon assessment, retrofit planning and facility management.
Portfolio	Optimisation and disclosure	ESG reporting, investment strategy and capital planning.
System	Policy and resource governance	Urban planning, carbon budgeting and natural-capital accounting.

Table 12: Application scale

This integrated approach connects asset-level outcomes to system-wide goals, reinforcing the surveyor's role as a bridge between technical measurement and broader policies.

Sustainability is a core component of professional surveying practice. Through spanning valuation, land, construction, and management, surveyors connect value creation with environmental stewardship. By developing knowledge, making practical decisions, and providing advice across the four pillars, surveyors drive forward evidence-based, equitable, and regenerative development. RICS supports this mission through standards and guidance that create consistent, accountable and measurable impacts across the profession.

6 What does the future hold?

Across the sector, a cultural and procedural shift is underway to move from treating sustainability as a nice-to-have to a core requirement, in which environmental and social concerns are incorporated by default into decision-making, and the impact of assets and activities is monitored and actively managed. RICS members have a vital role to play in this shift, as delivering sustainability is essential to the surveying profession's relevance and its role as a force for good in society.

6.1 Learning beyond this guide

As a next step, the reader can reflect on how the themes presented in section 3 (mitigation, adaptation and resilience, circularity and biodiversity) apply to their area of work, and consider the potential actions their position enables.

As discussed in section 5, some surveyors can enact decisions directly, some act as advisors, while others are bound to an observational or supportive role. In all cases, there is scope to contribute to the move towards sustainability as a business-as-usual practice.

Section 7, References and additional reading provides some starting points to develop knowledge further. Skills and knowledge can also be developed through RICS webinars, events and training courses. Information and experiences can be shared with colleagues and peer professionals in a collaborative spirit through case studies and publications.

6.2 The broader picture

Aside from individual responsibility, the built and natural environments sector must come together to promote the following actions in the short, medium and long term.

- **Adopt and implement life cycle thinking** at the asset and systems level. This ensures that environmental, social and economic outcomes are considered together, from planning, through operation, to end of life. If clients demand this approach, professionals can help make prudent choices that reduce unintended impacts, optimise value across the supply chain and align with long-term sustainability outcomes.
- **Promote sustainability skills** across all practice areas in the built and natural environments. RICS is taking several steps on this front. The RICS Surveying skills report highlights the urgent need for sustainability literacy across surveying, real estate and construction. To meet this need, RICS is embedding sustainability into professional development, education and standards. At the time of writing, the Sustainability Advisory (MRICS) pilot pathway is creating a new route for professionals to demonstrate sustainability competence as part of chartered membership. RICS has also partnered with the University of Cambridge Institute for Sustainability Leadership (CISL) to build capacity

and leadership in sustainability. In addition, recent updates to the RICS CPD framework place sustainability at the heart of lifelong learning, ensuring that every member continues to build the knowledge and skills required to deliver sustainable outcomes.

- **Leverage data, technology and AI**, as they play a pivotal role in driving sustainable outcomes. The sector must use digital tools and AI responsibly to improve how sustainability performance is measured, managed and communicated, which is why RICS launched the Responsible use of artificial intelligence in surveying practice professional standard in 2025. Reliable, interoperable data supports better life cycle assessment, risk management and valuation. In a survey-based study conducted by RICS in 2025, sustainability was identified as an area where AI has significant potential but remains underutilised, highlighting a gap in how organisations apply it to improve environmental performance. Technologies such as digital twins can simulate asset performance to improve investment and environmental outcomes, reduce embodied carbon by comparing design options, and enable more efficient decisions across the asset life cycle.
- **Map and harmonise standards**, drawing on the RICS whole life carbon assessment (WLCA) harmonisation guide, to improve consistency between methodologies, which is critical for transparency and comparability. Mapping and aligning international, regional, and national frameworks will help reduce duplication, close methodological gaps and enable interoperability. Harmonisation efforts should build on work by ISO, CEN and professional institutions to promote shared definitions, data structures and indicators that support credible, consistent assessment across the built and natural environments.
- **Develop benchmarks** for measuring progress and driving improvement. Establishing robust benchmarks for carbon, energy, biodiversity and social value enables professionals, clients and policymakers to assess performance objectively and identify areas for action. RICS continues to advance this work by developing whole life carbon benchmarks that guide decision-making, investment and policy toward more sustainable built and natural environments.

These actions are critical, especially given the **scale of the investment** needed for the built and natural environments, with additional investments required to make the assets sustainable, resilient and equitable. Decisions on how assets are planned, valued, delivered and managed will lock in long-term environmental, social and economic consequences. As trusted advisors, surveying professionals play a vital role in ensuring this investment supports long-term value and shared prosperity.

7 References and additional reading

About the concept of sustainability and its dimensions:

- Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist, Kate Raworth, 2017
- Ward JD, Sutton PC, Werner AD, Costanza R, Mohr SH, Simmons CT (2016), Is Decoupling GDP Growth from Environmental Impact Possible? PLoS ONE 11(10): e0164733.
- Magis, K. & Shinn, Craig. (2009). Emergent principles of social sustainability. (p1) See Ref. 22. 15-44.

About sustainability frameworks:

- UN Department of Economic and Social Affairs, 2015. 2030 Agenda for Sustainable Development.
- Handbook of Sustainability Assessment, Angus Morrison-Saunders, Jenny Pope and Alan Bond, 2015.
- Sustainability Certifications, Labels and Tools in the Built Environment, Edited by Francesco Asdrubali & Umberto Berardi, 2025.
- Methods in Sustainability Science: Assessment, Prioritization, Improvement, Design and Optimization, Edited by Jingzheng Ren, 2020.
- Practical Guide for Companies Developing a Sustainability Management System, Institute for Sustainability, Berlin and World Environment Center (WEC), 2019.
- Investor Briefing: Institutional Investor Action on Climate Risk as the World Approaches the 1.5°C Limit of the Paris Agreement, Principles for Responsible Investment, 2015.
- Sustainable Outcomes Guide, RIBA, 2019.

About climate change:

- John Cook et al 2016 Consensus on consensus: a synthesis of consensus estimates on human-caused global warming. Environ. Res. Lett. 11 048002.
- Mark Lynas et al 2021 Greater than 99% consensus on human caused climate change in the peer-reviewed scientific literature. Environ. Res. Lett. 16 114005.
- Krista F Myers et al 2021 Consensus revisited: quantifying scientific agreement on climate change and climate expertise among Earth scientists 10 years later. Environ. Res. Lett. 16 104030.

- Forster et al, 2022. Indicators of Global Climate Change 2022: annual update of large-scale indicators of the state of the climate system and human influence, Earth Syst. Sci. Data, 15, 2295–2327.
- Climate Policy Initiative, 2024. The Cost of Inaction.
- International Labour Organisation, 2019. Working on a warmer planet: The effect of heat stress on productivity and decent work.

About the status of ecosystems and their impact:

- Rockström, J., Steffen, W., Noone, K. et al. A safe operating space for humanity. Nature 461, 472–475 (2009).
- Richardson, J., Steffen W., Lucht, W., Bendtsen, J., Cornell, S.E., et.al. 2023. Earth beyond six of nine Planetary Boundaries. Science Advances, 9, 37.
- Rockström, J., W. Steffen, K. Noone, Å. Persson, et.al. 2009. Planetary boundaries: exploring the safe operating space for humanity. Ecology and Society 14(2): 32.
- World Economic Forum 2020. New Nature Economy Report II - The Future Of Nature And Business.
- The SAGE Handbook of Environment and Society, Edited by Jules Pretty et al., 2007.
- World Economic Forum 2020. Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy.
- IPBES (2019): Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (editors). IPBES secretariat, Bonn, Germany. 1148 pages.
- The Sixth Extinction: An Unnatural History, Elizabeth Kolbert, 2014.
- Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities, Edited by Thomas Elmqvist et al., 2013.
- UNEP, 2024. Global Resources Outlook 2024: Bend the Trend – Pathways to a liveable planet as resource use spikes. International Resource Panel.
- WWF-UK, 2021. Driven to waste: The Global Impact of Food Loss and Waste on Farms.

About sustainability in the built environment:

- United Nations Environment Programme (2025). Global Status Report for Buildings and Construction 2024/2025: Not just another brick in the wall – The solutions exist. Scaling them will build on progress and cut emissions fast. Paris.
- Environmental Design Sourcebook: Innovative Ideas for a Sustainable Built Environment, McLean, William and Silver, Pete, 2021.
- Sustainable Construction, Sandy Halliday, 2019.

- Design for Biodiversity: A Technical Guide for New and Existing Buildings, Kelly Gunnell, Carol Williams & Brian Murphy, 2019.
- Energy and Climate in the Urban Built Environment, Edited by M. Santamouris, 2001.
- Architecture: From Prehistory to Climate Emergency, Barnabas Calder, 2021.
- Ellen MacArthur Foundation, Circular economy introduction.

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We inspire professionalism, advance knowledge and support our members across global markets to make an effective contribution for the benefit of society. We independently regulate our members in the management of land, real estate, construction and infrastructure. Our work with others supports their professional practice and pioneers a natural and built environment that is sustainable, resilient and inclusive for all.

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