BEYOND THE BUSINESS CASE

WHY YOU CAN'T AFFORD **NOT** TO INVEST IN A SUSTAINABLE BUILT ENVIRONMENT

WORLD GREEN BUILDING COUNCIL

November 2021

About the World Green Building Council

Our global network of Green Building Councils is leading the transformation of the built environment to make it healthier and more sustainable

The World Green Building Council (WorldGBC) catalyses the uptake of sustainable buildings for everyone, everywhere. Our mission is to transform the building and construction sector across three strategic areas — climate action, health & wellbeing, and resources & circularity. We are a global action network comprising over 70 Green Building Councils around the globe.

As members of the UN Global Compact, we work with businesses, organisations and governments to drive the ambitions of the Paris Agreement and UN Global Goals for Sustainable Development. Through a systems change approach, our network is leading the industry towards a net zero carbon, healthy, equitable and resilient built environment.

Read more about WorldGBC's North Star Goals for the industry here.

Kindly supported by

Building tomorrow's future today

Statement from Cristina Gamboa, CEO of WorldGBC

As one of the largest economic ecosystems in the world, the building and **construction industry** has a critical role to play in achieving global sustainability goals, especially in **tackling the climate crisis**

The COVID-19 crisis has profoundly changed human relationships with our built environment, and the global real estate sector is readjusting to a 'new normal' - where social value is rising in industry attention.

In this context, it is crucial that we now embark on a radical transformation of the built environment, mitigating the impacts of climate change, enhancing equity and justice and implementing greater economic and environmental resilience to combat risks. By adopting sustainable practices at all stages of the life cycle, we can reduce our reliance on finite resources, generate positive and restorative impact, and improve quality of life for people in all stages of the value chain.

Today's value proposition for a sustainable built environment is both financial and ethical. It is on a powerful trajectory to amplify in the future. Through this report, WorldGBC champions immediate, transformational and regenerative action for people and planet, based on contextual research and future scenario modelling. In short, no business can afford not to adopt substantive sustainability measures in the built environment.

Foreword

Sustainability is becoming an **integral part** of the business case for the global real estate market

Since the publication of WorldGBC's *'The Business Case for Green Buildings'* report in 2013, the global network has seen the building and construction industry increasing their awareness about sustainability, and starting to differentiate in quantifying the value of built assets based on green credentials.

There are a multitude of economic imperatives and opportunities for investing, developing, designing, constructing or occupying sustainable buildings or infrastructure assets. These range from higher sale or rental value, reduced construction and operating costs, to lower asset risk and insurance premiums. However, for the global real estate sector today, the value proposition is both broadening and increasing in prominence.

Awareness of social value — comprising environmental, economic and community-based interventions to enhance our quality of life — is on the rise across the real estate sector[1]. Although social and environmental impacts are not yet being widely captured within asset value, ethical action is being driven through leaders across the value chain — from financial, public and private sector organisations across all geographies.

Through this report, WorldGBC presents the drivers for the broadening business case within the context of current and future market trends. These are both the drivers that set the economic business case, including policy, sustainable finance, and corporate risk and reputation; plus the compelling forces behind the rise in social value — from the aftermath of the pandemic to urgency for action on the climate crisis and wider environmental and social issues.

Considering the wider value proposition — encompassing climate action and social value alongside financial benefits and risk mitigation — strengthens the business case for a sustainable built environment.

You cannot afford not to be part of the sustainability movement — from an ethical, financial, risk mitigation or future-proofing perspective. Green assets are an opportunity not to be missed.

We hope this report inspires both optimism and urgency. WorldGBC calls for deep, unprecedented collaboration and multi-stakeholder action across the entire value chain, that will provide both business benefit and resilience, and create equitable societies and support the creation of equitable societies. Together we can drive a zero carbon, resilient, healthy and sustainable future.

You cannot afford not to be part of the sustainability movement - from an **ethical, financial, risk mitigation** or **future-proofing** perspective.

The Broader Value Proposition for a Sustainable Built Environment

DRIVERS OF BUSINESS CASE

- Policy change, nationally, and at city level
- Incoming finance regulation, such as carbon pricing
- The growth of sustainable finance and ESG (Environmental, Social and Governance) reporting

THE BUSINESS CASE

- Greater access to investment
- Corporate reputation
- Higher asset value and desirability
- Resilient investment & lower risk of stranded assets
- Lower operational costs and enhanced return on investment
- Reduced build costs and circularity opportunities
- Preferential insurance premiums
- Better occupant productivity in commercial sector

DRIVERS OF SOCIAL VALUE

- The impact of COVID-19
- Increased awareness from the private sector, and rise of CSR
- Public drivers, including policy and procurement

THE SOCIAL VALUE CASES

- Health and wellbeing at building level
- Community benefit. including jobs, resilience and equity
- Protecting people in material supply chain and construction sector, including construction worker welfare, human rights and justice

THE FUTURE VALUE COSTS

- In a 3º climate change scenario, sustainable buildings present a strong business case in terms of occupant benefits, risk mitigation and asset values
- In a 1.5º climate change scenario, costs, finance and reputation are stronger drivers
- In an unhealthy, inequitable world, sustainable buildings present a business case through occupant benefits, cost and risk mitigation. In a healthier, equitable future, costs, asset values, investor reputation and the wider role of business are key themes in the value proposition

Seven Ways to Identify Value from a Sustainable Built Environment

Seven themes consistently emerge in both the financial business case and social value sections of this report. Together these themes outline some of the co-benefits that enhance the value proposition for a sustainable built environment.

- OPERATING COSTS
- RISK MITIGATION
- ASSET VALUES
- INVESTMENTS
- FINANCE
- THE WIDER ROLE OF BUSINESS
- OCCUPANT BENEFITS

Introduction

This is a **critical decade** for united, international efforts to **enhance sustainability**

The climate crisis must be tackled with absolute urgency. Climate change impacts are widespread, real and intensifying, and some impacts are now irreversible[2]. Deep and sustained reductions in emissions of carbon dioxide and other greenhouse gases are the only possibility to limit further climate change. However, with the emissions already released to date, it could take 20-30 years to see global temperatures stabilise. Therefore some future climate impacts are, sadly, inevitable[3].

The COVID-19 pandemic has amplified a diverse range of inequalities between and within societies[4]. Differences between high and low income countries, plus intra-nation health inequalities, gender inequalities and employment disparities have made their mark on society, and will likely take decades to heal[5]. In the next decade, the global population is expected to grow to around 8.5 billion in 2030, combined with changes in spatial distribution driven by increasing urbanisation[6]. The risk of inequalities in resource availability and quality of life will heighten with rapid urbanisation and population growth, alongside the demand and consumption of global resources and our natural capital.

We acknowledge both the challenge and urgency of transitioning to a net zero, regenerative, healthy and equitable society before 2050, and we call for the building and construction sector to play its part.

In the last two decades, sustainability has rapidly mainstreamed to become the powerful principle it is today — catalysing efforts, budgets, attention and attitudes[7] as climate change is growing in public awareness[8], and governments and institutions are committing to re-evaluating and improving regulations[9]. For some societies, sustainable growth linked with circularity is the most viable long-term option[10]. The value proposition for investment in net zero, healthy and equitable built environments is now stronger than ever.

IN THE LAST TWO DECADES, SUSTAINABILITY HAS RAPIDLY MAINSTREAMED TO BECOME THE **POWERFUL PRINCIPLE IT IS TODAY** — CATALYSING EFFORTS, BUDGETS, ATTENTION AND ATTITUDES

Why the Built Environment

Sustainability in the built environment should consider all stages of the building and **construction lifecycle**

The sustainability movement within the built environment sector has been on a journey through the last three decades. Initially, the green building movement focused on operational energy use, efficiency and primarily environmental concerns. However, the scope and breadth of sustainability ambition has dramatically expanded — encompassing now the diversity of the UN's Sustainable Development Goals, to be considered across all stages of the building and construction lifecycle, plus the communities and infrastructure that serve our buildings as well as the built assets themselves.

Catalysing a Changing Built Environment

What is the built environment?
Within this report, the scope of WorldGBC's reference to the built environment sector includes:

- **Buildings:** of all typologies and in all geographies
- **Construction:** as a sector, and considering the creation of both new and retrofitted assets
- **Infrastructure:** capturing both horizontal infrastructure, which is composed mainly of transportation, power & communications and waste (both overground and subterranean), and vertical or social infrastructure, comprising buildings (particularly spaces that facilitate the delivery of social services by governments), plus structured facilities (eg. parking areas) and structures.

WorldGBC's calls for sustainability extend across the entire lifecycle of all built environment components.

Who are the key stakeholders?
The global real estate sector takes responsibility for the finance, development, design, construction, operation, use, maintenance and end of life actions for all built assets. Through this report, WorldGBC aims to catalyse demand for sustainable action from these key actors through a narrative which will focus on:

- **Developers and investors:** who finance, develop and manage our built assets
- **Designers and construction:** who design and create our built environment
- **Owners and occupiers:** who buy, lease, sell and occupy our buildings and spaces
- **Policy makers:** major asset owners, managing public procurement and setting targets and regulation for buildings, infrastructure and urban areas.

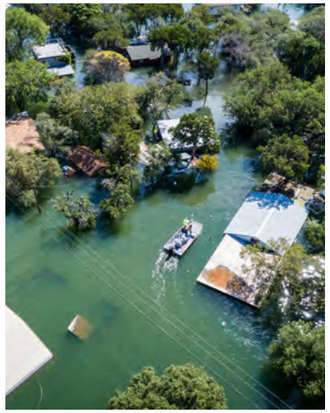
Although a non-exhaustive list, these broad stakeholder groups represent the key actors who hold the potential to catalyse the systemic, transformational change required across the supply chain and full lifecycle. Advantages and considerations for each stakeholder group are presented throughout this report.

By demonstrating why these groups cannot afford not to invest, design, procure, supply, buy, sell, own or occupy a truly sustainable built environment asset, we can generate market stimulus from all actors across the value chain.

A Changing World

The Intergovernmental Panel on Climate Change (IPCC) suggests that to limit global warming to less than 1.5°C over the next few decades, global carbon neutrality must be achieved at the latest by 2050[22]. The last decade has experienced the hottest years on record and increasing extreme weather events, such as forest fires, heat waves and floods[23]. At current trajectory, global warming is anticipated to exceed pre-industrial levels by more than 2°C by 2060 and could even reach 5°C by the end of the century[24]. As well as posing tremendous risk to human development and quality of life, environmental changes may simultaneously affect the biodiversity, productivity, and stability of the Earth's ecosystems[25] that we all rely upon.

The last decade has experienced the hottest years on record and increasing extreme weather events, such as **forest fires**, **heat waves** and **floods**



The built environment sector is critical to achieving a more sustainable future due to the impacts it does, and will, create. These include:

- **75%** of annual global greenhouse emissions from the built environment, with buildings accounting on its own for 37%[11] [12]
- Around **50%** of emissions from new buildings will be from embodied sources, and half from operational sources, between 2020 and 2050[13]
- **40-50%** of resources extracted for global materials are used for housing, construction and infrastructure[14]
- Building materials account for **half** the solid waste generated every year worldwide[15]
- **230 billion** square metres of new buildings will be constructed in the next 40 years[16]

- **75%** of the infrastructure needed by 2050 still needs to be built[17]
- **7%** of the global population is employed in the construction workforce[18]
- **90%** of our time is spent inside buildings, and our cities, infrastructure and urban ecosystems shape our quality of life[19]
- **68%** of the world's population will live in cities by 2050[20]
- Green buildings will represent a **$24.7 trillion** investment opportunity by 2030[21].

It is estimated that over the next four decades, global building floor area will double, adding the equivalent of a city the size of Paris every week in new building construction[26]. Most of this growth will take place in residential construction in emerging markets including Africa, East and South Asia, and the Pacific[27]. In addition, there is a worldwide deficit of 330 million homes, which is expected to grow to 440 million homes by 2025, including in regions such as Latin America, Middle East and Africa[28].

We cannot tackle climate change without addressing buildings, which account for close to 40% of emissions, and our cities that host the majority of our population[29].

Switching from fossil fuels to clean energy sources, optimising resource consumption and prioritising deep energy efficiency retrofits can provide local governments and property owners with an opportunity to enhance the quality of life and resilience of communities. A sustainable built environment will also improve health and reduce infrastructure to enhance the quality of life and resilience of communities.

The built environment represents one of the biggest global investment opportunities of the next decade, an avenue to enhance sustainable development and human quality of life, and — if tackled correctly — reduce emissions and combat the climate crisis[30].

Introducing the Broader Business Case

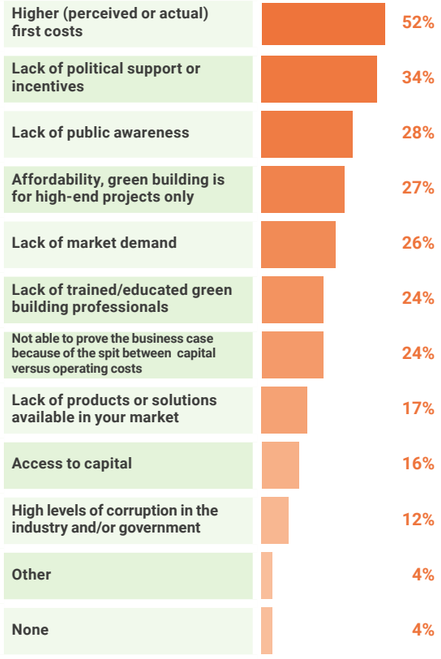
WorldGBC introduces a **broader** and **enhanced value** proposition for achieving **sustainability goals** for the built environment

Seven key co-benefits emerge across both the financial and social value proposition.

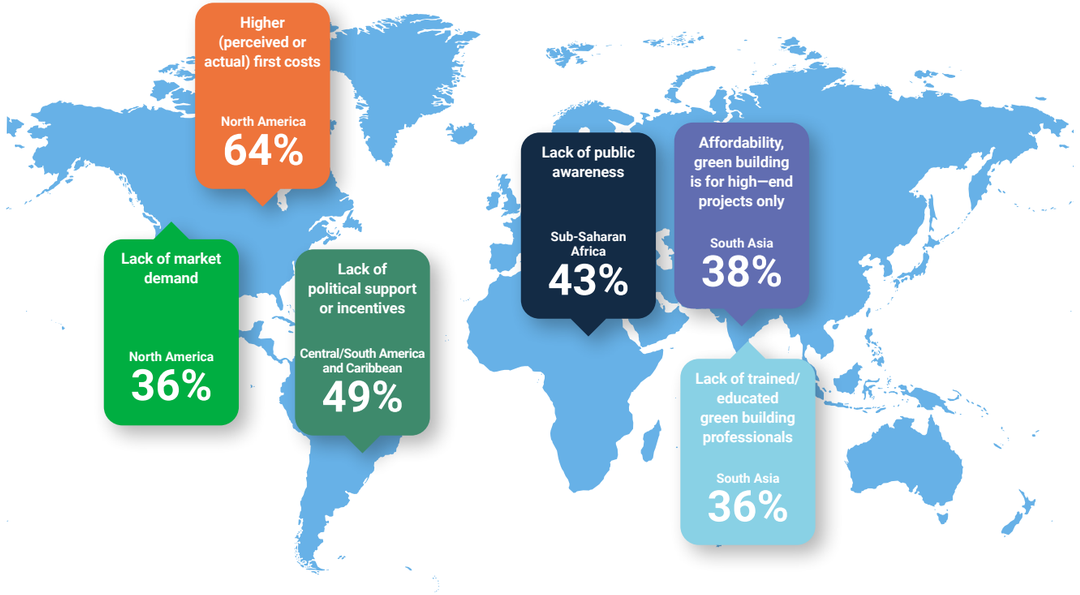
Whilst climate action should be an absolute and urgent priority for the global real estate sector, this report is not presenting the details of the environmental case for a sustainable built environment. Market action in the last decade has demonstrated that, while many leaders are motivated by tackling the climate crisis, to motivate the global mass market in all geographies and across competing priorities, a broader value proposition that speaks to the core priorities of most organisations is essential to stimulate action. This priority is, of course, finance.

Barriers to green building: globally and by region

Three of the five most substantial obstacles to sustainable buildings globally relate to finance, and are most often cited in North America and South Asian markets[31].



Barriers to Green Building: Globally and by Region



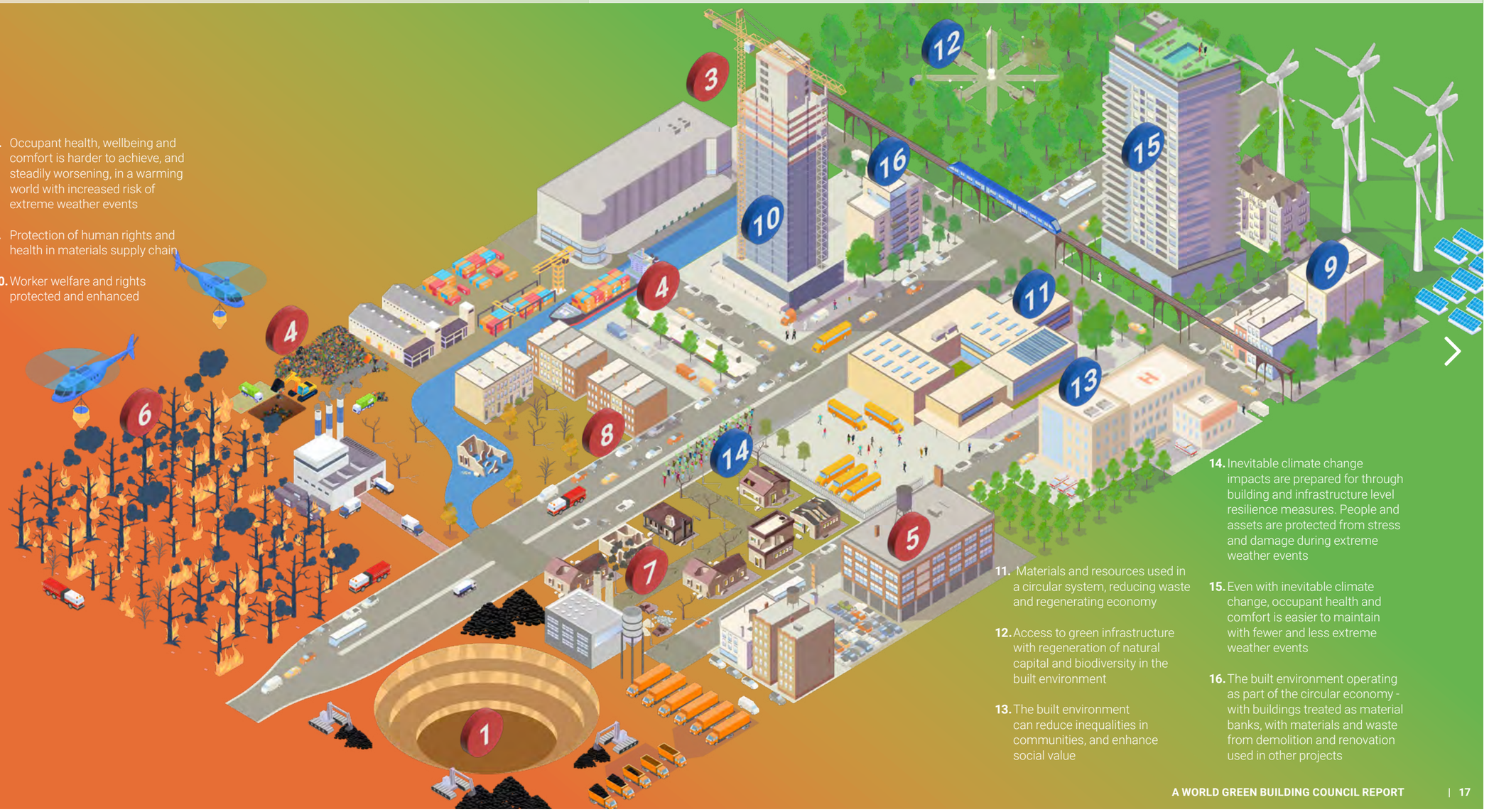
By demonstrating a strengthening value proposition for a sustainable built environment, WorldGBC and its local network hopes to address some of these barriers, such as the perception of higher costs and the types of projects it relates to.

This report is clear in its recommendation that the real estate and built environment sector cannot afford not to invest in a sustainable built environment, and commit to urgent action to tackle the climate crisis. Social value is on an increasing trajectory of importance that will soon be reflected in financial metrics.

The financial drivers are improving and it's also the right thing to do. Considering social and environmental value considerations strengthens the business case, making sustainable built assets a powerful financial opportunity. Because in this changing world, you can't afford not to act.

The Future We Face

1. Localised air, soil, water and noise pollution from raw material extraction, damaging ecosystems and harming biodiversity
2. Human rights violations and forced labour in material supply chain
3. Risk of worker welfare violations in construction process
4. Waste creation from built environment construction, operation and end-of life, plus continued unsustainable use of virgin materials
5. Our built environment can enhance inequalities
6. With unmitigated climate change, global warming could reach 5° Celsius by the end of the century, causing extreme weather events such as forest fires, heatwaves and floods
7. Damage to buildings and infrastructure, with heightened risk of stranded assets and higher insurance premiums for owners
8. Occupant health, wellbeing and comfort is harder to achieve, and steadily worsening, in a warming world with increased risk of extreme weather events
9. Protection of human rights and health in materials supply chain
10. Worker welfare and rights protected and enhanced



11. Materials and resources used in a circular system, reducing waste and regenerating economy
12. Access to green infrastructure with regeneration of natural capital and biodiversity in the built environment
13. The built environment can reduce inequalities in communities, and enhance social value
14. Inevitable climate change impacts are prepared for through building and infrastructure level resilience measures. People and assets are protected from stress and damage during extreme weather events
15. Even with inevitable climate change, occupant health and comfort is easier to maintain with fewer and less extreme weather events
16. The built environment operating as part of the circular economy - with buildings treated as material banks, with materials and waste from demolition and renovation used in other projects

Drivers of the Business Case

Today, **sustainability** is an **essential component** of any organisation's future **risk mitigation strategy**.

An increasing body of evidence suggests that sustainable built assets offer preferential financial opportunities in the current context. This trend is being strengthened by factors outlined in this chapter.

As the urgency of climate change is becoming clearer, sustainability is being integrated into every corner of the economy. This includes finance, politics and consumer purchases, in addition to real estate that is also, in many markets, on the same trajectory[32]. Regulation, financial trends and growing expectations of corporate responsibility are cementing the business case for sustainability in the built environment in both a current and future context.

Policy Change

An **important stimulus** is **compliance** with incoming regulatory change **committed** to as part of **global climate action**

Nationally Determined Contributions

Nationally Determined Contributions (NDCs) are at the heart of the 2015 Paris Agreement and the achievement of the proposed long-term environmental goals. NDCs articulate each country's efforts to reduce national emissions and adapt to the impacts of climate change, requiring them to prepare, report and maintain successive domestic mitigation measures in order to meet the targets of these contributions.

As of early 2021, of those who have submitted an NDC, 136 countries mention buildings, indicating international recognition of the importance of our built environment to our climate future[33]. By October 2021, of those who have submitted an NDC, 63% mention building energy efficiency. Within NDCs, energy efficiency and energy codes in buildings are the second most frequently cited actions. As of September 2021, 80 countries had mandatory or voluntary building energy codes on a national or regional scale, within which 43 countries had mandatory codes on the national level for both residential and non-residential buildings[34].

The global real estate market should expect increasing regulatory enforcement to advance sectoral mitigation goals. Expectations from consumers and the public sector will be that private sector organisations also align with the trajectory of NDCs and the 1.5°C warming pathway[35]. The ambition is also not fixed — the improvement of these national commitments is expected to continue as countries heighten their commitments for enhanced ambition of their NDCs to meet the 1.5°C temperature rise goal[36]. Businesses looking to avoid financial repercussions can consider implementing highly ambitious sustainability policies today, targeting net zero well before 2050, as an investment in future compliance.

City Level Shift

Cities, in which more than half of the global population currently live, expected to reach two-thirds by 2050[37], are an important stakeholder in the sustainability transition. Many cities, as major policy enablers and owners of real estate, are committing to action faster than national governments. City policy is able to change at a faster trajectory, hence, real estate stakeholders in these locations, especially small and medium-sized enterprises (SMEs), are likely to be impacted by increasing ambition of regulation.

More than 1000 cities,[38] representing a population of over 720 million people, are now committed to halving emissions by 2030 and reach net zero by 2050, while employing innovative approaches to achieve these goals. For example, Amsterdam is delivering a strategy to halve the use of new raw materials by 2030 and achieve a fully circular city by 2050, and Oslo is piloting fossil fuel free construction sites on public procurement projects.

Net zero trends will ultimately be reflected in local policies and planning laws, such as those already in place in Vancouver and Tokyo[39], and are likely to present increased opportunities for organisations prepared for such changes.

As with national policy change determined by NDCs, the business case for the real estate sector at city-scale is future-proofing for the regulatory change our city leaders have committed to — but with the understanding that cities are moving further, and faster.

ASSET VALUES | INVESTMENTS | FINANCE

Carbon Pricing

Trends suggest that carbon pricing will likely soon be a significant consideration for all organisations operating on the global market[40]. As emissions are increasingly quantified and reported on, real estate actors risk being severely financially impacted if they do not implement decarbonisation efforts in line with the trajectory of the Paris Agreement.

Today, carbon pricing is one of the most debated tools for mitigating the effects of climate change. Carbon pricing works by financially incentivising low carbon actions and adapting to the potential risks and opportunities associated with the transition to a low-emission economy.

The Canadian government announced in **December 2020** that the price of its federal carbon tax will increase by over **450%** in the next decade

Despite the economic and social upheaval of COVID-19, carbon pricing instruments, such as a carbon tax or energy tax related to carbon content, have continued to be rolled out or increased in ambition[41].

- China's emissions trading system, the largest carbon market in the world, was launched in 2021 covering around 4,000 $MtCO_2$ annually, or 30% of its national greenhouse gas emissions, with prices expected to increase in line with emission reduction goals[42]
- The Canadian government announced in December 2020 that the price of its federal carbon tax will increase by over 450% in the next decade[43]
- In the private sector, nearly half of the largest 500 companies in the world have reported the use of an internal carbon price, or have declared the intention to use one within the next two years[44].

The trajectory of carbon taxation is continuing to rise, and can be expected to strengthen in the coming decades. The implications on organisations will be reduced where pre-emptive steps are taken to measure and reduce carbon footprints across the lifecycle of both buildings and infrastructure — higher performing, lower carbon built assets will be faced with more manageable offset payments[45].

CASE STUDY

EU Green Deal and EU Taxonomy

RISK MITIGATION | ASSET VALUES | INVESTMENTS

The EU Taxonomy is set to be a foundational tool of the European Green Deal and represents global innovation in financial regulation. It is increasing global awareness in sustainable investment and ESG reporting, creating a classification system for economic activities and sectors critical to climate change mitigation and adaptation, based on impact and performance — including the building and construction sector[46].

It will strengthen the value proposition for a sustainable built environment by:

- Enabling owners and developers to access dedicated green financial products
- Stimulating investment for renovating less energy efficient buildings and constructing new energy efficient buildings
- Advancing market competitiveness and combat 'greenwashing'
- Creating a context for corporate best practice, influencing reputation and risk management
- Reducing risk by establishing a common sustainability language and criteria

The EU Taxonomy will be mandatory within 2022 for a significant number of European financial institutions and companies[47]. Every organisation offering financial products on the European market will have to comply.

This will include the construction sector and the implications are likely to be felt worldwide. It is also likely that other countries will prepare or adopt similar approaches, such as the UK Taxonomy currently under development[48].

In this context, advancing a decarbonised and sustainable environment will become necessary as well as desirable, and the global real estate market is advised to future-proof assets and investments against future regulatory change or compliance risks.

The European Green Deal is an example of global leadership in ambitious sustainability policy.

The Business Case

A **cleaner** and more **sustainable economy** will grow stronger and faster in an increasingly **low-carbon global economy**

Real estate is a major asset class accounting for 10% of global GDP[49]. Therefore, the creation, renovation and maintenance of a sustainable built environment offers large scale financial opportunities, from both a market competitiveness and risk mitigation perspective.

A growing body of evidence has shown that unmanaged climate change generates significant value risks for investors and that the inclusion of climate factors can improve returns[50]. It is now more widely accepted that maximising returns goes hand in hand with minimising environmental impact[51]. Global market leaders are making ambitious sustainability commitments, with one of the largest corporate pension schemes in the UK setting a 2050 net-zero financed emissions targets towards the end of 2021, aiming to halve emissions of this decade[52].

Consequently, financial markets are increasingly directing their investments towards projects and companies that guarantee (in addition to economic profitability) the achievement of social and environmental development goals[53]. These financial business benefits of this approach are outlined in this chapter, highlighting specific opportunities for key stakeholders across the building and construction value chain.

"GREEN BUILDINGS ARE OF **HIGH VALUE** BECAUSE OF LOWER OPERATING COSTS, HIGHER OCCUPANCY RATES AND RENTAL INCOME, IN ADDITION TO **AVOIDING FINANCIAL PENALTIES FOR CARBON EMISSIONS**. WHICH MAKES GREEN BUILDINGS A **BETTER CREDIT RISK ASSET** AND BETTER COLLATERAL."

INTERNATIONAL FINANCE CORPORATION (2019)[54]

ESG: Underpinning the Business Case for all Real Estate Actors

RISK MITIGATION | INVESTMENTS

The impacts of **climate change** have already influenced real estate markets at the **global scale**

Environmental, Social and Governance (ESG) reporting is not a new phenomenon, as these issues have long been a consideration of many companies and organisations. However, ESG is dramatically increasing in industry influence in developed markets[55], with growing efforts to support popularity of ESG investing in all markets[56] [57].

In recent decades, institutional investors and pension funds have become too large to diversify away from systemic risks[58], forcing them to consider the environmental and social impacts within their portfolios. The UN Principles for Responsible Investment (PRI) have also heightened accountability of investment decisions, and the increasing availability and popularity of voluntary reporting tools such as CDP, GRESB or the Task Force on Climate-Related Financial Disclosures (TCFD)[59], have facilitated mass market engagement.

This trend is true for built asset owners as environmental initiatives such as reducing energy or water usage have been attractive due to their tangible financial benefit from lower operating costs. The impacts of climate change have already influenced real estate markets at the global scale, with 65% of investors expressing their motive for taking ESG issues into consideration to help manage investment risks, as 35% of Real Estate Investment Trusts' (REITs) properties are exposed to climate hazards[60].

More than half of global asset owners are currently implementing or evaluating ESG considerations in their investment strategy[61] and it is estimated that ESG funds under management will represent the majority of proportions of mutual fund assets by 2025[62]. ESG now represents a priority for leaders and companies in all sectors, including real estate[63].

Five ways ESG reporting is creating a business case for sustainable built assets:

1 **ESG is changing market trends:** adopting more responsible behaviour in terms of resource management, environmental and social impact is becoming business as usual. As of July 2020, **90%** of companies in the S&P 500 released ESG or annual sustainability reports[64].

2 **Shareholder expectations:** trend predictions expect organisations will soon be held accountable by shareholders for their ESG performance[65].

3 **Regulatory enforcement:** in the EU, the Sustainable Finance Disclosure Regulation (SFDR) imposes mandatory ESG disclosure obligations for asset managers and other financial markets participants[66].

4 The **growing popularity** of ESG is increasing pressure from investors, employees, customers and numerous other stakeholders **to increase transparency** on sustainable and socially responsible practices[67].

5 **ESG has influenced a new generation of consumers:** **92%** of 'Generation Z' consumers would switch to a brand that supports ESG issues over one that does not[68].

More than half of global asset owners are currently implementing or evaluating ESG considerations in their investment strategy

The ESG reporting industry is set to continue growing in the coming decades, with new tools of sustainable finance emerging to measure criteria within organisations in a transparent and harmonised way[69]. This provides investors with a significantly improved ability to compare investment options in terms of ESG factors, supporting them to make informed decisions that align with their impact investing goals.

The building and construction sector should, therefore, ensure rigorous sustainability enhancements during supply chain, construction and operational phases in line with increasingly stringent ESG targets and organisational transparency. The market trajectory outlined above suggests that actors across the value chain — developers, designers, construction, owners — will be in a stronger financial position by committing to ambitious sustainability measures in line with the targets of the Sustainable Development Goals and Paris Agreement. The specifics of this stronger financial position, or business case, are outlined in the chapters following.

Increasing use of Certification in Buildings

For more than three decades, green building certification schemes and rating systems have aimed at mitigating the impact of buildings on the natural environment through more sustainable designs. Application within the sector continues to grow year on year, at a global scale. As of 2020, more than 3.5 billion square metres of green building space were certified worldwide through the WorldGBC network alone[70] — a tenfold increase in 10 years. The frequency of certified projects that is expected to grow significantly in the next three years, particularly with owners and developers representing the largest demand for certification for new commercial or institutional assets[71].

From a financial perspective, certifications have provided verified, third-party frameworks on which to base investment criteria. Sustainability ratings for built assets have provided the real estate market with benchmarks for comparability and targets for design, performance and maintenance ambition[72].

Demand for verified sustainable construction is also increasing in many geographies due to inclusion in local building and planning policy[73]. This growth will continue in high-income countries, and it is expected that emerging economies will demonstrate the highest utilisation of rating tools in pursuit of sustainable outcomes[74].

Requiring or acquiring assets that meet certification criteria — or equivalent levels of SDG-aligned ambition — for sustainable performance, will not only lead to the creation of better quality and higher value assets, but also ensure compliance with incoming building regulations and both market and consumer expectations.

CASE STUDY

Sustainable Buildings Research Centre, University of Wollongong, New South Wales, Australia: 'Australia's most sustainable building'

In operation, the centre produces all its own power on-site from renewable sources and is close to water neutral

Low embodied carbon, net zero operational energy and eliminating toxic materials.

- Deemed "Australia's most sustainable building", the Sustainable Building Research Centre is designed to act as a living laboratory. The 900m2 research centre has a net zero carbon certified Living Building Challenge rating
- During design and construction, embodied carbon was minimised through:
  - design interventions such high proportions of recycled content, extensive reuse of materials from demolition of other sites or infrastructure (including steel from train tracks and timber from a bridge), plus use of exposed finishes to avoid unnecessary material use
  - optimised passive design reducing the size of HVAC systems
  - material selection for reduced life-cycle impact, such as locally sourced re-used bricks (that were heavily insulated to assist with thermal comfort) to minimise transport energy and support local economies
  - construction for durability and ease of maintenance and cleaning, with incorporated design for disassembly at end of useful life
  - all remaining embodied energy for the project including materials, construction, waste and predicted maintenance and repairs over the lifetime of the building has been offset using premium market offsets
- In operation, the Centre produces all its own power on-site from renewable sources (an on-site PV system where excess renewable energy is used to power another nearby building, and surplus electricity sold back to the grid) and is close to water neutral - with the vast majority of the building designed to be self-sufficient for water in an average year using rainwater harvesting and black water recycling systems
- Early modelling of energy, daylight, glare, thermal comfort and air flows in the building helped to inform the design of the building and systems, which aims to eliminate the 14 most common toxic chemicals found in buildings (known as the 'Red List'). It also incorporates urban farming, providing native fruits, vegetables, herbs and other productive materials for use by students, staff and the local Aboriginal community
- The University expects a resulting return on investment through reduced operating costs, from operational energy and water savings as well as less tangible measures such as increased student and staff attraction and retention, improved productivity and learning outcomes.

Business Case For Investors And Developers

There is **increasing finance** available for **sustainable built assets** from countries, **banks** and **institutions**.

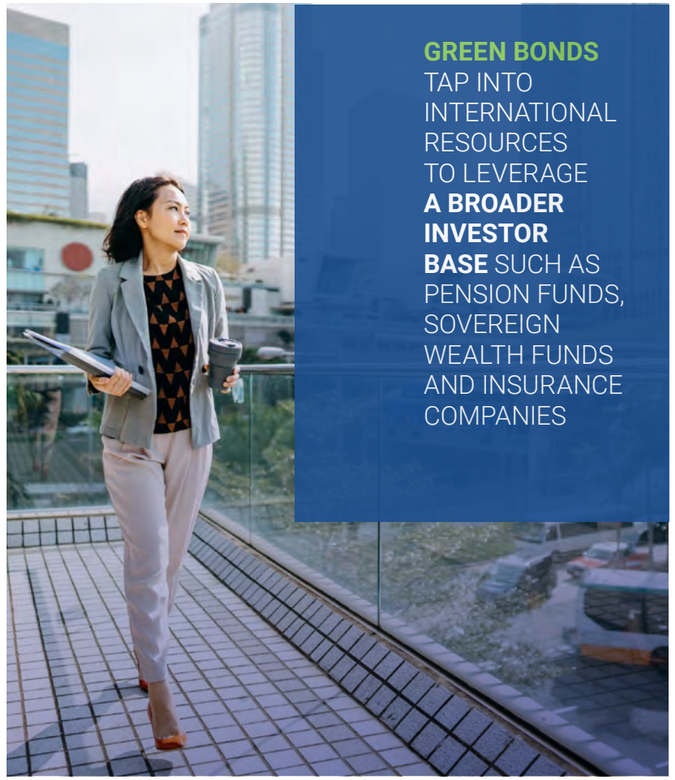
Greater Access To Finance - Bank and Lenders

Green finance is accelerating rapidly, and expected to overtake 'standard' finance in market size in the coming years[75] [76]. Real estate market actors who are committing to provide social and environmental benefits with their projects are therefore eligible for exclusive financial.

In the last decade, banks have begun to consider sustainability as strategically important for risk and opportunity management, increasingly inspired by the ESG agenda[77]. As a result, various financial products and opportunities have emerged: voluntary principles for sustainable lending and investment, enhanced environmental disclosure and governance requirements, and financial products such as green loans, green bonds, and green infrastructure investment funds.

Green bonds are finance packages, usually issued by banks and in some cases corporations, which fund projects that have positive environmental and sustainability benefits[78]. The green bond market is also benefiting from changing priorities at national and supranational level[79], including green investing as part of national COVID-19 recovery programmes or strategies[80], and has seen significant growth in recent years[81] - reaching USD $1 trillion in cumulative issuance by December 2020, since its market inception in 2007[82].

Green buildings have developed to be one of the most important asset classes in the green bond market[83]. In 2019, USD $66 billion of green bonds were used to finance or refinance green buildings or loans for green buildings - 28% of the total 2019 green bonds issuance[84]. ASEAN governments are also encouraging the use of this source of finance to address underinvestment in green buildings through both local currency and international green bonds and endorsing investment in green buildings through green building standards[85] [86].



GREEN BONDS TAP INTO INTERNATIONAL RESOURCES TO LEVERAGE **A BROADER INVESTOR BASE** SUCH AS PENSION FUNDS, SOVEREIGN WEALTH FUNDS AND INSURANCE COMPANIES

A key part of the value proposition for sustainable built assets for investors and developers is greater access to finance from banks and lenders, due to:

- Lender recognition that sustainable buildings can have a higher value than standard structures due to lower tax, regulatory, and reputational risks[87]
- Banks gaining access to new sources of capital through green bonds, green lines of credit, green securitisations and impact funds, enabling them to offer sustainable building financing and mortgages[88]
- By offering better financing terms, banks are driving both the supply and demand sides, enticing developers to green their buildings and generate interest from commercial tenants and homebuyers[89]
- Access to international resources from green bonds to leverage a broader investor base such as pension funds, sovereign wealth funds and insurance companies. Low-carbon buildings are one of eight sectors accepted for the use of income under the green bond taxonomy[90]. 2018 saw a record $167.4 billion in green bond issuance, bringing the total market size to $521 billion[91].

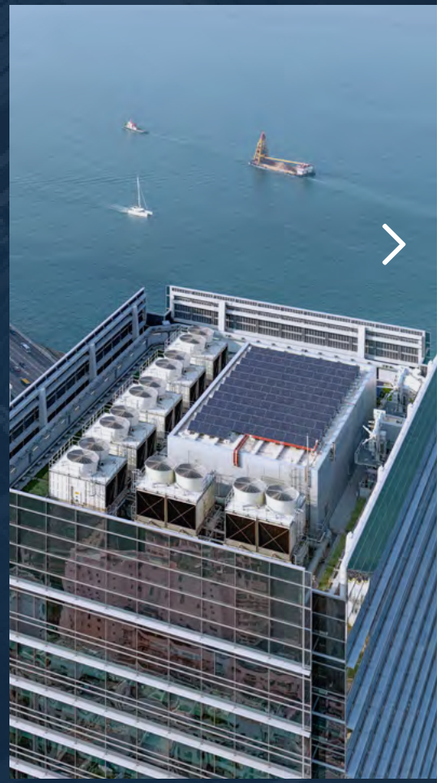
From an investor perspective, the increasing availability of green finance presents sustainable buildings and infrastructure as a favourable investment versus other comparable market products[92]. The real estate sector as a result has untapped potential to stimulate economic growth and advance sustainable development in geographies around the world due to the massive quantity of finance available. All real estate actors should therefore ensure that their sustainability commitments and ambition are in line with the Paris Agreement, SDGs and other international targets to facilitate the opportunity to access available finance for green projects.

CASE STUDY

A triple certified building with sustainability considerations integrated into its financing **One Taikoo Place, Hong Kong**

ONE TAIKOO PLACE IS THE FIRST TRIPLE PLATINUM RATED BUILDING UNDER LEED, WELL & BEAM PLUS IN HK SUPPORTED BY GREEN FINANCING

- 48-story commercial building in Hong Kong, achieving the first triple Platinum level certification under LEED, WELL & BEAM Plus in Hong Kong
- The project developer and owner, Swire Properties, is highly committed to integrating sustainability considerations into its financing mechanisms. Through launching Hong Kong's first certified green bond worth US$500 million, and a sustainability-linked loan with interest rate tied to the company's ESG performance, the company supports the transition to a low-carbon, more resource-efficient and sustainable economy, and demonstrates its commitment to designing and developing sustainable building projects that improve the wellbeing of building occupants and local communities
- As of September 2020, close to 80% of the net proceeds from a total of five green bonds had been allocated to green building projects
- Over HK$3,403 million of net proceeds had been allocated to One Taikoo Place. The availability of this finance has led to building-level sustainability credentials, including: sophisticated Internet of Things (IoT) building energy management and optimisation system has been adopted in the building through Artificial Intelligence (AI) and Building Information Modelling (BIM); tri-generation system running on bio-diesel converted from recycled cooking oil, plus 500m^2 of combined photovoltaic (PV) panels and green roof installed on the rooftop. An annual renewable energy of 135,500 kWh has been generated
- Taikoo Place has demonstrated innovation in financing the construction of a sustainable building.



Greater Access to Finance — Institutional and Private Investment

The market trends are clear — demand for sustainable investing in most markets worldwide is skyrocketing, and therefore providing preferential market opportunities for real estate owners, developers or investors. This is particularly prevalent in the private and institutional investment market.

Climate change is leading to a profound reassessment of the risk and value of financial assets[93]. Investors are increasingly recognising that climate risk is also an investment risk[94]. Since 2014, global sustainable and environmentally responsible asset investments have increased by 68% and now exceed USD $30 trillion[95]. Demand for sustainable funds and exchange traded funds reached record levels in 2020, with estimated net flows of USD $269 billion — a figure that increased tenfold over the past five years[96].

Sustainable investing is increasingly recognised as a strong foundation for allowing clients' portfolios to grow[97] having a positive environmental impact can go hand-in-hand with financial performance and provides ESG opportunity[98]. This is clearly demonstrated through the following trends, that continued strongly despite COVID-19 pandemic disruption to business-as-usual:

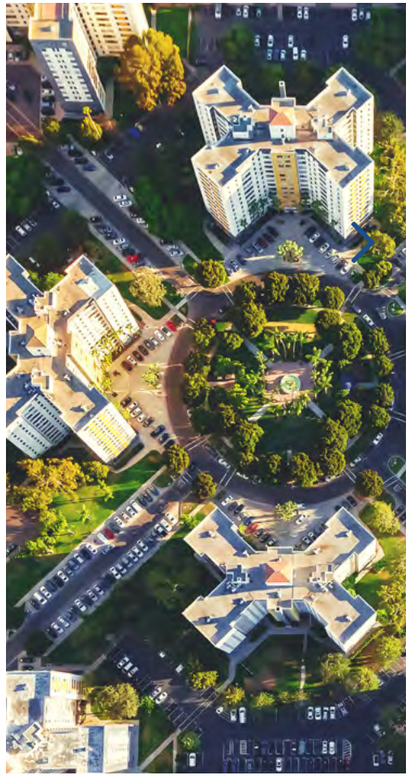
- From 2016-2018, Socially Responsible Investing (SRI) assets across the world's five biggest regional markets saw a 34% increase[99]
- Among global asset owners in 2019, 80% said they were actively integrating sustainable investing, a rise of 10% from 2017[100]
- During 2020, 81% of a globally-representative selection of sustainable indexes outperformed their parent benchmarks
- A 2017 study reported that from 2012 to 2015, the companies with the highest ESG ratings outperformed the lowest-rated firms by as much as 40%[101]
- From January to November 2020, investors in mutual funds and exchange-traded funds invested $288 billion globally in sustainable assets, a 96% increase over the whole of 2019[102]
- In 2019, a reported USD $12 trillion was invested in line with ESG factors, indicating a quarter of US assets under management.

Additional to a pattern of growth, the business opportunity is one of protecting against future exclusivity measures. Most institutional investors foresee a time when they will limit allocations exclusively to investment managers with a formal approach to sustainable investing[103]. Almost 43 global institutional investing firms have indicated that ESG was universally top of mind for these executives. These include the world's three biggest asset managers: BlackRock, Vanguard, and State Street; as well as, large asset owners such as the California Public Employees' Retirement System and the government pension funds of Japan, Sweden, and the Netherlands[104].

Alongside changing regulations and other drivers discussed earlier in this report, the UN-backed Principles for Responsible Investment (PRI) are driving the same engagement with sustainable investing. The PRI promotes ESG factors when analysing returns and managing risk, and its influence is rapidly growing — PRI is currently supporting over 2,300 signatories worldwide, representing roughly USD $80 trillion of sustainably invested assets[105].

Studies point to this trend developing in the building and construction sector specifically[106] [107], for example investment in energy-efficient buildings in all global markets increased to USD $152 billion in 2019[108]. Total investment in the global buildings sector is set to increase from around USD $ 4.9 trillion in 2017 to more than USD $ 5.4 trillion in 2050, with more than 70% of the investment expected to be for building construction and renovation. The investment opportunity is seen to be particularly strong in new residential buildings. The green residential sector is expected to grow at a compound annual rate of 10.9% between 2018 and 2023, with the non-residential segment of the market expecting compound annual rate of 9.3% growth over the same period[109].

Demand for sustainable funds and exchange traded funds reached record levels in 2020, with estimated net flows of USD **$ 269 billion**



The business case for the global real estate market to embrace sustainability for all assets is strong from both the investor and developer/owner perspective. For investors, market signals show that sustainable built assets are a good investment opportunity[110] [111]. In addition to strong market returns, the following opportunities are part of the current and future business case:

- Sustainable built assets offer alignment with Principles for Responsible Investment (PRI), which currently underpin many organisational ESG strategies
- There are specific opportunities within the real estate sector in certain geographies, (e.g. European Renovation Wave and associated policies to reduce EU emissions to 55% by 2030[112]) that will demand finance for built asset retrofit
- Lower investment risks and generate excess returns: socially responsible investing is a means to manage ESG-related risks, which can potentially mitigate risks and improve returns[113]
- Sustainability frameworks for buildings can provide investment benchmarks, compliance standards, and comparability in reporting, including sustainable building certifications, sustainability indexes such as the Dow Jones Sustainability Indices, or the UN Sustainable Development Goals (SDGs).
- Reputational risk: investors are becoming increasingly concerned about their reputation when being associated with unsustainable assets[114]. Sustainable investments are a safer option[115].

For all actors in the global real estate sector the increasing attractiveness of the business case for investment in sustainable built assets sends a clear signal. The trajectory of private and public investment is increasingly weighted towards socially responsible, sustainable investing. Institutional investors may soon be formally excluding investment opportunities that don't meet sustainability criteria[116]. Real estate developers, asset owners and managers in all geographies and typologies should ensure their ambition for new and existing built assets are aligned with global climate and sustainability targets to facilitate incoming investment that will both enhance profitability and contribute to the necessary transformation of our built environment.

"As the focus on climate issues intensifies, we are pleased to see more asset owner investors making net zero commitments. These commitments are incredibly important, and the first step on the road to investors putting a net zero investment strategy in place. We look forward to working with these asset owners on their net zero strategies and invite other climate-conscious asset owners to consider becoming signatories to the Paris Aligned Asset Owners pledge"

Stephanie Pfeifer, CEO,
Institutional Investors Group on Climate Change

Natural Capital

Natural capital can be defined as the world's stocks of natural assets which include geology, soil, air, water and biodiversity[117]. The continued, thriving existence of these natural resources are essential to supporting the ecosystem services that our survival on this planet, in both our urban and rural environments, ultimately depend on.

Natural resources and ecosystem services support many key economic activities, from farming, to energy generation, and material extraction for medicines or building materials[118]. With a particular focus on the built environment, nature also provides physical protection to numerous key human settlements, and is essential for climate regulation and the continued cycling of water, materials and chemicals, essential to our continued utilisation of the planet for human habitation. These benefits translate to better air quality, lower urban heat island effect, stronger nutrient cycle and also enhanced resilience to climate change impacts. However — the over-extraction of natural capital, without allowing adequate recovery of natural systems, poses a significant risk of local, regional or even global ecosystem collapse[119].

Natural capital is able to be financially quantified — and is valued at USD $145 trillion/year, twice as much as global aggregate GDP[120]. Many studies have quantified the value provided by nature in the built environment in economic terms — for example, street trees in California provide USD $ 1 billion per year in ecosystem services, through climatic regulation and flood prevention in urban environments, and Mexico's mangrove forests provide an annual USD $ 70 billion to the economy through storm protection and protecting the fishing industry[121]. Therefore, natural capital should be considered part of the business case for a sustainable built environment. Protecting ecosystems and biodiversity today can protect against future replenishment costs down the line, and also provide a range of benefits.

In the real estate sector, there is opportunity to enhance natural capital by supporting the continued availability of resources used for building construction and operation, such as:

- Timber, by increasing demand for sustainable materials, favouring re-use as far as possible
- Water, by promoting water efficiency at all stages of lifecycle and tracking and reporting during construction and operation phases
- Biodiversity, by actively increasing diversity of flora and fauna on-site and in local communities, and supporting ecosystem development for pollinators and other key species.

The protection of nature is also, undeniably, the right thing to do — but in a world of competing priorities it can be difficult to balance the environmental and the economic. Natural capital enables us to place a financial value on the invaluable natural services provided by our planet, with which we can hope the clarity of the business case will inspire preservation and regeneration of our natural ecosystems.

Higher Asset Values

"Research by JLL in 2020 identified that sustainable buildings in central London have a rental premium of 6–11% and that building occupancy was higher for buildings which achieved a BREEAM rating of Outstanding/Excellent compared to those that were rated Very Good."
JLL (2020)[122]

Evidence from the past decade suggests that sustainable buildings tend to have higher asset values than conventional buildings - encompassing higher rental values, lower operating costs, and higher occupancy rates[123]. In this section, higher rental values and occupancy rates are explored, with operating costs presented as a business case for the owner later in this chapter. The business case for the real estate market is clear however - invest, develop or design better and more sustainable buildings, and you should be financially compensated at point of sale or rental.

Market demand for green buildings has increased in the past decade due to environmental regulations, greater corporate and consumer engagement in sustainability, and the drive for healthier buildings - undoubtedly accelerated by the impact of the COVID-19 pandemic[124]. Demand for green buildings could double in many parts of the world in the near future[125] with additional evidence from global markets specifically pointing to an increasing demand for environmentally friendly homes[126] [127] [128].

Changing Consumer Demands

Awareness of global environmental issues is changing the habits of consumers. 8 in 10 consumers indicate sustainability is important for them; and for those who say it is very/extremely important, over 70% would pay a premium of 35%, on average, for brands that are sustainable and environmentally responsible[129]. These attitudes are driving global market choice for products that are 'cleaner', are sustainable and environmentally responsible, support recycling, or use natural ingredients[130], and are being reflected in market trends in real estate.

There is strong evidence that sustainable built assets positively affect both capital and operational expenses[131]. In the commercial sector in particular, tenants are increasingly willing to pay a premium for more sustainable spaces[132], often demonstrated with a certification or building rating. The 2021 'World Green Building Trends' report has shown that about two-thirds of owners and developers believe that green building will increase a new building's asset value by 6% or more[133]. Premium certified buildings have been seen to command a greater than 12% rental premium in some markets[134].

Reasons for this premium at sale or rental point include:

- International investors are now demanding buildings with sustainability certifications[135]. Trends show that today's real estate investors are willing to spend more for real estate that is energy efficient and environmentally friendly[136].
- Green accreditation of real estate can help to increase occupancy rates by attracting more tenants, thus lowering vacancy rates[137] [138].
- New generations of renters and aspiring sustainable homeowners are concerned about health and sustainability within buildings[139].

The 2021 **'World Green Building Trends'** report has shown that about two-thirds of owners and developers believe that green building will increase a new building's asset value by 6% or more

Evidence shows that green assets command higher asset values, in most markets of the world[140]. For developers and investors, this trend creates a clear business case — there is heightened financial opportunity from asset value of sustainable buildings. Committing to action on sustainability across all built assets makes financial sense.

ASSET VALUES | INVESTMENTS

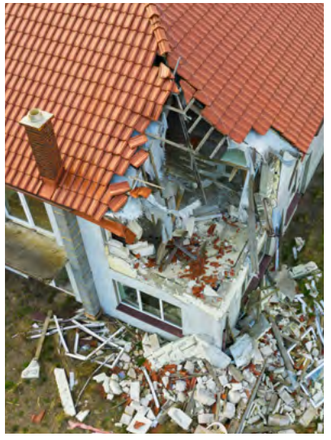
Reduced Risk of Stranded Assets

Stranded assets are defined as assets that suffer from unexpected and often premature financial devaluation, often warranting to a loss of investment[141]. The risk of stranded assets in the built environment caused by environmental factors, such as the impacts climate change, both physically on the asset itself and via associated policies to tackle the climate crisis, has become a topic of increasing importance[142]. In recent years, climate-related stranded assets have received international attention from the UN, OECD, G20 Financial Stability Board, plus a number of key financial institutions and national governments[143].

Focusing on the built environment, stranded assets present a major risk to both existing building and infrastructure assets, plus those under construction. Extreme weather events can damage or delay projects in construction processes, disrupt supply chains and delay work programmes, can cause physical damage and system stresses to existing assets, and impact insurance premiums — all with financial repercussions. Additionally, increasing policy requirements can lead to non-compliant assets suffering from plummeting value, which is a growing concern for asset managers in countries like the UK, where minimum EPC rating requirements are set to be raised to counter climate change[144].

The potential impact of climate change related effects risk value for residential real estate assets alone would be USD $16 trillion, plus USD $5 trillion for global commercial assets[145]. Therefore a sustainable building or infrastructure project that has resilience measures embedded within it, both in terms of physical climate impacts but also future-proofing against future compliance measures, presents a lower risk in terms of 'stranded assets'[146] [147] .

Extreme weather events can damage or delay projects in construction processes, disrupt supply chains and delay work programmes, can cause physical damage and system stresses to existing assets



Business Case for Designers & Construction

Sustainable buildings have typically been considered premium developments, associated with higher costs

There is growing evidence showing that there is not always a cost premium for sustainable buildings or developments, especially during theconstruction stage.

Design techniques and technologies for constructing sustainable buildings are increasing in accessibility and cost competitiveness[148]. Design include passive design principles, energy-efficient equipment and storage, carbon-negative materials and a combination of onsite and offsite production of clean energy. Construction principles include prefabrication, modular construction, lean construction, fossil fuel free construction site equipment, more efficient welfare, temporary accommodation and site services. The mass market utilisation of these processes could substantially reduce demand for virgin materials and energy, facilitate the development of the circular economy, and create a business case through lower cost of construction and material sourcing.

AS MUCH AS **32%** OF LANDFILL WASTE COMES FROM CONSTRUCTION SITES, WITH **13%** OF MATERIALS DELIVERED TO A CONSTRUCTION SITE BEING SENT DIRECTLY TO LANDFILLS WITHOUT HAVING BEEN USED

Reduced Build Costs

In recent decades, the construction sector is recognising a number of trends that provide opportunity for significant impact in reducing the environmental impact of the sector. Prefabrication and modular construction are both experiencing a significant expansion, as the construction industry seeks to improve safety, productivity, quality, cost, schedule and sustainability performances[154].

Modular construction can demonstrate a series of benefits over traditional construction for appropriate projects, for example, reduced build cost and overall lifetime cost of the building through accelerated build schedules[155]. Recent modular projects have already established a solid track record of accelerating project timelines by 20–50%, however this is still exceptional rather than normal practice[156].

As the market value for modular in new real-estate construction alone could reach USD $130 billion in Europe and the United States by 2030[157], it is feasible that economies of scale and greater cost savings could be realised. Currently, prefabricated housing has achieved a foothold in a few locations, including Scandinavia and Japan[158]. Modular construction could scale to an industry that represents more than USD $100 billion in US and European real estate, delivering USD $20 billion in annual savings[159].

Additionally, sustainable buildings that protect human rights across the lifecycle can protect lower build costs via risk mitigation. For example ensuring adequate participation of surrounding communities, avoiding harm to workers on site and through supply chains, and ensuring accessibility on site can avoid costly delays, disruption and adjustments during design or construction stages. Further to mitigating the potential loss of value, these interventions also generate positive social value.

THE MARKET VALUE FOR MODULAR IN NEW REAL-ESTATE CONSTRUCTION ALONE COULD REACH **$130 BILLION** IN EUROPE AND THE UNITED STATES **BY 2030**

Economic Value Retained Through Material Banking

Reducing waste in the construction process — both by sourcing re-used materials at point of construction, and by returning functional materials to the market at end of life point, offers financial opportunity versus standard building construction practice.

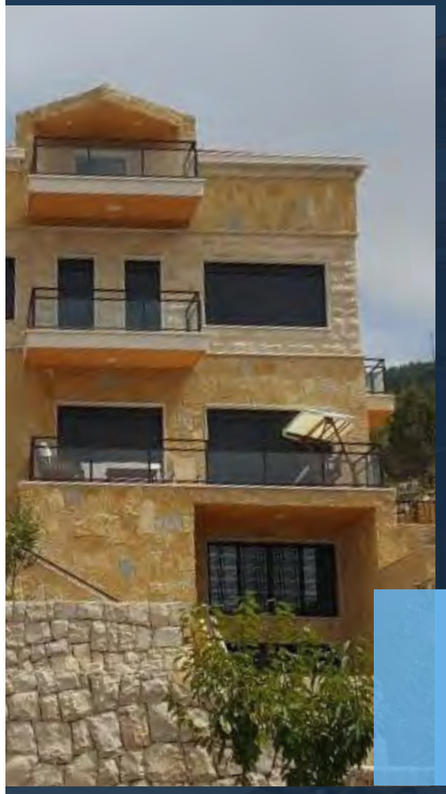
Business as usual in many geographies today is that excess building materials — both surplus in the construction process to those available at end of life stage — end up as waste[149]. The US Environmental Protection Agency found that total waste from construction-related projects was double that of municipal waste from households and businesses[150]. As much as 32% of landfill waste comes from the construction site, with 13% of materials delivered to a construction site being sent directly to landfills without having been used[151]. However, sustainable building efforts can help the construction industry substantially reduce waste generation[152].

With the transition to a circular economy, buildings, infrastructure and the materials that create them are considered reusable assets, with lasting value. Flexibly designed buildings become banks of valued materials, able to be extracted without damaging or degrading the material and facilitating reuse in another project — thereby slowing resource use to a pace that is sustainable for the planet. Materials banking represents a source of additional financial value as a resource to be realised once the building reaches the end of its use. For example, re-using asphalt and concrete has been shown to save up to 25% on material costs[153].

For the asset owner, realising maximum value depends on choosing the right materials and construction techniques that are low cost to dismantle, reuse and recycle. This approach can also be applied in a similar way to existing assets. For example, if the building is examined in advance with the goal of capturing value at the end of its use, the owner will be aware of the materials that have potential value and how they should be dismantled to preserve it. With this approach, financial value is embedded within the fabric of the building, to be accessed at point of deconstruction.

CASE STUDY

Economic value retained through material banking **Mansour Residences, Aytou Village, Lebanon**



- Mansour residences are three residential houses that have been built in Aytou Village, Lebanon
- Built at an altitude of 1,100m using 'Design for Life' principles, the development included a range of sustainability strategies to optimise material efficiency, such as structural waste reduction and reuse of excess materials, extended material life span due to use of durable concrete and local stone facade cladding, plus energy efficiency measures leading to reduction in CO_2 emissions
- Through these interventions, the project demonstrates optimal financial value at the residential scale: the residences were 8% cheaper than similar projects due to waste reduction and reuse of excess materials, and present a 12% cost reduction due to energy and material optimisation and circular design principles
- The project also contributes to local resilience measures with features such as a water harvesting system, that can store up to 460m^3, plus over 100 trees that both contribute to biodiversity and to feeding residents. This case study demonstrates that sustainability principles can be implemented in all climates, geographies and typologies — and the business case benefits experienced at both large and small scales.

THIS PROJECT WAS **8%** CHEAPER THAN SIMILAR PROJECTS

CASE STUDY

Adaptive reuse of a historic industrial building, saving resources and enhancing social value
Acciona Ombú, Madrid, Spain

- The Acciona Ombú development in Madrid comprises over 10,000 square metres of new office space, combining private and public land with green landscape, by restoring an abandoned listed industrial building built in 1905
- The restoration of an existing building has offered substantial financial and environmental benefits. By retaining the existing building, specifically the reuse of masonry walls and primary steel, 30% of the embodied carbon related to structures and 50% of the embodied carbon related to the façade was avoided with an overall reduction in embodied carbon (included allowance for future refurbishment) of 25% across the whole life cycle compared to a typical new office building designed. The restoration of the historic building reused 10,000 tons of brick
- When comparing the cost of demolition and new construction with restoration of the existing building the restoration was the optimum solution
- The return on investment from energy efficiency is highly significant in this development: 35% energy savings over ASHRAE baseline equates to savings of around EUR €60,500 per year, which results in a savings of around EUR €3.5 million over the life cycle of the building
- These financial benefits from energy efficiency are boosted by a further 10% saving considering both waste and water savings
- Combining the 35% energy efficiency with 100% renewable energy supply avoids close to 5,700 tonnes CO_2 being released into the atmosphere. Furthermore, the new internal timber structure will store 1,640 tonnes CO_2 and is recyclable and demountable
- The development has also increased social value and community benefit by creating a positive multiplier effect in an important and accessible area of the city that had been previously deprived. Through net social impact modelling, it is estimated that 800 jobs in the local community have been provided by this development
- The net asset value of the building has increased substantially, considering both operational savings and refurbishment measures.

36% ENERGY SAVINGS OVER BASELINE EQUATES TO SAVINGS OF AROUND EUR €60,500 PER YEAR

Business Case For Owners & Occupiers

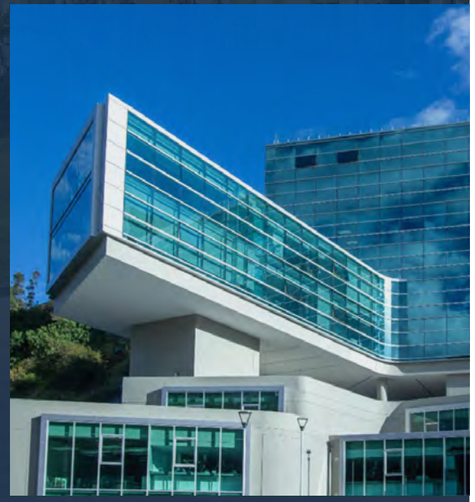
Sustainable buildings do not always cost more, and uplift is often negligible

Evidence across diverse geographies demonstrates that sustainable buildings do not always cost more — or where they do, price uplift is often negligible. Once operational, sustainable buildings can offer owners a faster and better term return on investment versus a standard asset, offering a future-proofed and resilient investment.

CASE STUDY

13 year return on investment plus social value creation **UDLAPARK, University of Las Américas campus, Quito Ecuador**

- UDLAPARK is an 8-story education facility extension project in Quito, Ecuador's capital city, certified with a preliminary EDGE Advanced certificate due to access to green credit and green loans
- Developed in a former landfill, the UDLAPARK campus demonstrates the regeneration of urban space. The landfill site was recovered by planting native species, which receive irrigation from the wastewater treatment plant
- Diverse sustainability features, including energy-efficient design with on-site solar renewable energy generation, recycled water treatment plant and water conservation technologies, façade technology with aerators and natural ventilation, passive design strategies to reflect solar radiation and help reduce the urban heat island effect plus large areas of green space
- The facility achieved 46% energy savings (close to 250 tonnes CO_2 per year) and 38% less embodied energy in materials, plus 71% water savings, when compared with a traditional building located in Quito. A 10% saving in material use and waste generation was quantified using BIM processes
- Additionally, environmental resilience has been future-proofed by leaving more than 50% of the site with no built footprint or hard surfacing, to promote the infiltration of rainwater and to protect the public sewage system from flood risk
- The campus supports social value through provision of services for community benefit, including a gym, auditorium, restaurants, multiple use spaces, a bar and cafeteria, as well as the educational facilities
- The EDGE Certification tool calculated an approximate 13 year payback period for all green installations on site, at which point the sustainability features will contribute to development lifetime profit and heightened asset value.



Lower Operating Costs Outweigh Cost Uplifts to Create Return On Investment

A fundamental part of the business case for sustainable buildings and infrastructure is improved operational efficiency, and consequently lower operating costs[160]. These operational cost savings can, in many cases, negate any cost uplift associated with design and translate to a stronger and faster return on investment — and have been consistently reported in global green building market trends in the past decade[161].

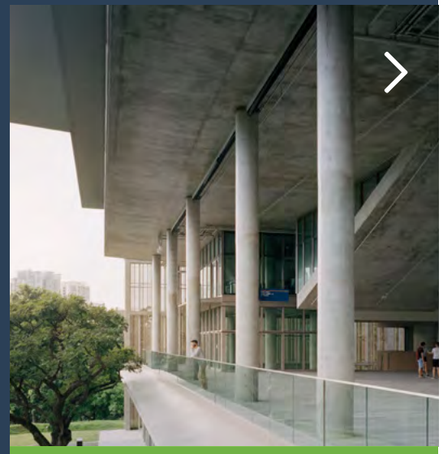
Sustainable built assets of all types are typically perceived to be more expensive than standard. However a growing body of evidence suggest that, if any, cost uplift can be far lower than the market expects[162]. These costs can be negated at point of sale, or can also be feasibly recouped through lower overhead costs, due to enhanced energy efficiency, energy generation on site, and lower thermal conditioning requirements. Recent research from UKGBC highlights that sustainable buildings can result in rental value increases of 6-11% plus lower void periods that could potentially offset increases in capital costs[163]. Plus, estimates reveal that the rental premium and yield compression could take a typical scheme from 15% profit on cost to over 20%[164].

Studies have also shown that operating costs for sustainable assets are close to 9% lower for retrofitted building projects[165]. Therefore these assets can offer preferential payback opportunities due to these reduced overheads, and better return on investment[166]. Net zero carbon buildings can provide a positive financial return over a 25-year period, inclusive of incoming carbon pricing, and require only a modest capital cost premium[167]. Operating costs for sustainable assets are over 13% lower for new construction and close to 9% for retrofitted building projects[168]. With a focus on retrofits, the World Green Building Trends 2021 study showed that 18% of respondents who had retrofitted buildings believe that this will lower operating costs by more than 15% over the next year and 35% over the next five years[169]. Over an asset's 50+ year life expectancy, this financial payback trajectory period can offer substantial savings versus a standard development. The return on investment for green buildings has been evidenced for over a decade[170], and is also likely that the financial proposition will strengthen in the future, as explained in Chapter Six, offering even higher return on investment opportunity.

CASE STUDY

Net zero emissions with eight year payback period **National University of Singapore School of Design and Environment campus redevelopment**

- The National University of Singapore redevelopment of the SDE4 building represents the first purpose-built net zero energy building in Singapore
- It exceeds current standards for environmental quality by ensuring equitable access to views, daylight, air, greenery, and community spaces
- The development has achieved certification from a range of local and international rating tools including BCA Green Mark Platinum, BCA Green Mark Design Prototype — Net-zero energy, WELL Certification Gold, WELL HSR Rating and ILFI Zero Energy certification
- The development has been designed to be highly energy efficient and climate-sensitive, consuming only as much energy as it creates, utilising solar roofs, a hybrid cooling system, innovative ventilation systems, and passive architectural structures that provide shade. The renovation wraps the original structure, modulating solar radiation, natural ventilation, and rain, and hosting a full array of photovoltaic panels to meet the energy demands of the building
- The project demonstrates a commitment to reduced material expenditure and embodied carbon by using the original structural frame
- The project has helped challenge negative assumptions around comfort and cost of sustainable buildings in the equatorial region, presenting evidence that it has limited additional cost compared to similar, industry-standard models. The cost premium to include sustainability features within similar public buildings in Singapore was described as 'marginal'. The return on investment for the rooftop photovoltaic system has been calculated to be 8 years, at which point it will offer operational cost savings
- Preliminary occupant survey results have also shown high levels of occupant satisfaction with the environmental conditions created within the building.



DESIGNED TO BE HIGHLY ENERGY EFFICIENT AND CLIMATE-SENSITIVE

Preferential Insurance Premiums

A sustainable built environment offers greater social and economic resilience to expected future climate change impacts[171]. More resilient buildings and infrastructure are less likely to be at risk from physical and systemic stresses of extreme weather or climate events, including heatwaves, flooding, droughts or fire events[172]. This is in-turn reflected in reduced insurance premiums for building owners or occupiers[173], offering lower operational overheads in comparison to a less sustainable and resilient alternative asset.

A range of specific market insurance options exist to endorse sustainable built asset purchase and retrofit, ranging from differential premiums based on environmental characteristics and performance; to products specifically tailored for clean technologies and emissions reducing activities[174], such as discounts for certificatied buildings or rewards for eco-friendly material replacement[175]. These opportunities can incentivise the uptake of sustainable building strategies by reducing financial barriers and providing guidance and opportunities for building owners or occupiers.

Preferential insurance opportunities also exist for private sector organisations, including for developers, due to the availability of renewable energy-related insurance products, such as carbon emissions credit guarantees, focused on enabling private entities to participate in offset projects and emissions trading[176].

A RANGE OF SPECIFIC MARKET **INSURANCE OPTIONS** EXIST TO ENDORSE **SUSTAINABLE** BUILT ASSET PURCHASE AND RETROFIT

A NEW SUSTAINABLE BUILDING, OR AN **ENERGY-EFFICIENT** RETROFIT OF AN EXISTING BUILDING, OFTEN IMPROVES MANY FACTORS OF OCCUPANT **HEALTH AND COMFORT**

Return on Investment through Enhancing Health and Productivity

Sustainable buildings can provide owners or occupants with financial co-benefits by facilitating better indoor environmental quality that both protects health and enhances wellbeing. WorldGBC and other voices have published numerous studies in the past decade that have demonstrated sustainable buildings stimulating higher occupant productivity, particularly in a commercial setting, including the notable CogFX studies undertaken by the Harvard School of Public Health[177] [178] [179] [180].

A new sustainable building, or an energy-efficient retrofit of an existing building, often improves many factors of occupant health and comfort. Design or retrofit strategies can enhance both mental and physical health and consequently improve productivity, reduce absenteeism, lessen 'presenteeism', and have even been suggested to lessen staff turnover and consequential recruitment and training costs - presenting a return on investment against any cost uplift in implementing health-focused design interventions[181].

In a commercial organisation, where 90% of typical overheads are spent on human capital, even a minor improvement in productivity can substantially impact company turnover and profit[182]. Research has shown in numerous geographies and typologies that subjects occupying sustainable buildings are healthier, happier and more productive[183]. These improvements to health and productivity can translate to substantial financial gains[184]. Increasing occupant health, happiness and productivity is a highly sought after building attribute in a commercial environment, but also invaluable in an education, learning or healthcare setting.

CASE STUDY

Return on investment through enhancing occupant health and productivity. **Saint-Gobain North American corporate headquarters in Malvern, Pennsylvania**

- The 277,000-square-foot building, which is LEED Platinum certified for both commercial interior and core and shell, was created through adaptive reuse of a dormant office building, with 15% classified as new construction and 85% percent as renovation
- Approximately 800 employees are based out of the next-generation headquarters, which features collaborative spaces for work and activities, including a fitness centre, walking trails and reclaimed water feature installation
- The health-oriented design elements in the development are based on Saint-Gobain's holistic occupant experience (OX) principles, and include views of nature, increased access to daylight with electrochromic glazing to manage glare, biophilic design, variable airflow and thermal conditions, and fresh air ventilation. In addition, acoustic absorption and diffusion includes sound-absorbing surfaces plus high-performance exterior facades and interior partitions supported by the use of white noise in the key open work areas. Interior solutions like wall coverings and ceilings that absorb VOCs and systems that offer superior mould resistance were also employed.

- Saint-Gobain collaborated with the High Performance Environments (HiPE) Laboratory to provide third-party verification and assessment protocols that measure and visualize the impact of the new building design on employee comfort and performance. HiPE lab consultants employed PROBE™ and SPEQ™ to quantify and visualize improvements in the physical environment and employees' perceived comfort and indoor environmental quality in a longitudinal study before and after the move.
- Results of these assessments systematically quantified employees' perceptions of productivity, comfort, and satisfaction at work have dramatically improved. These are real results that go straight to a company's bottom line as a healthier, happier workforce leads to a more profitable company. For example:
  - Employees reported a 56.4% overall improvement in visual comfort in the new headquarters
  - Average occupant acoustic comfort improved by more than 42%
  - Employees experienced a 91.6% improvement in collective indoor air comfort in the new headquarters compared to the former location.
- Overall, occupants' satisfaction with indoor environmental quality or IEQ (a measurement composed of employees' ratings of temperature, lighting quality, acoustics, air quality, smell, ergonomics and space function) improved by close to 50% in the new space. During the first three weeks of occupancy, the productivity of Saint-Gobain's Call Center increased by 140%, with no changes in hours or staff.
- Employees also find the new building to be supportive of their health and wellbeing and reported a 54% increase in perceived health based on improved IEQ. Additionally, the average frequency of employees suffering from Sick Building Syndrome (SBS) symptoms decreased by close to 30% in the new headquarters compared to the previous facility. The building is undergoing further studies to statistically analyze the collective eco-system of occupant experience improvements on employee's productivity, health, and well-being.

EMPLOYEES ALSO FIND THE NEW BUILDING TO BE **SUPPORTIVE** OF THEIR **HEALTH** AND **WELLBEING** AND REPORTED A **54% INCREASE** IN PERCEIVED **HEALTH** BASED ON IMPROVED INDOOR ENVIRONMENTAL QUALITY

GOVERNMENTS AND PUBLIC AUTHORITIES ARE KEY STAKEHOLDERS IN EMBEDDING REQUIREMENTS FOR DEVELOPMENT PROJECTS TO PRIORITISE ASSET AND MATERIAL REUSE

Opportunities for Circularity

INVESTMENTS | FINANCE | THE WIDER ROLE OF BUSINESS

Summary of 'The business case for **circular buildings**: Exploring the **economic**, **environmental** and **social value**'

World Business Council for Sustainable Development (WBCSD) has recently published a report on the "Business case for circular buildings: Exploring the economic, environmental and social value", supported by the World Green Building Council. The report articulates qualitative and quantitative research identifying how to derive value from pursuing circularity in the built environment, and who could capture that value.

The case studies of circular projects analysed in the report illustrate the following results to support the emerging business case:

- A lease price advantage from increased flexibility and lower costs resulting from changing interiors or workplaces, which opens the potential for increased rental prices and lowers operational costs at tenant turnover
- Market differential and rapid sales through enhanced branding and local community buy-in
- Increased value by residual material valuation and component value after deconstruction
- Close to 30% emissions reductions and social value from jobs created using old building material, plus keeping the buildings ahead of impending future legislation
- Developments avoid costs from new land acquisition and landfilling costs by prioritizing existing building land use
- Overall decrease in acquisition and maintenance costs, compared to a standard building.

Despite the illustrated economic, environmental and social advantages of implementing circular economy solutions, these remain difficult to measure quantitatively. Stakeholders across the supply chain increasingly need to measure and better quantify the benefit or consequence of their activities on the wider industry or community, reducing negative environmental impacts such as pollution, carbon emissions, and on biodiversity, and understanding performance and progress.

Yet, established industry approaches need to evolve in order to better measure the benefits of circular solutions quantitatively.

We call on business to measure circularity by adopting established industry approaches such as whole-life carbon assessment and life-cycle costing early in a project's decision-making process, including the accounting for residual value of solutions, components and materials, and reductions in operational expenditures, demolition or (future) carbon costs. This will help to:

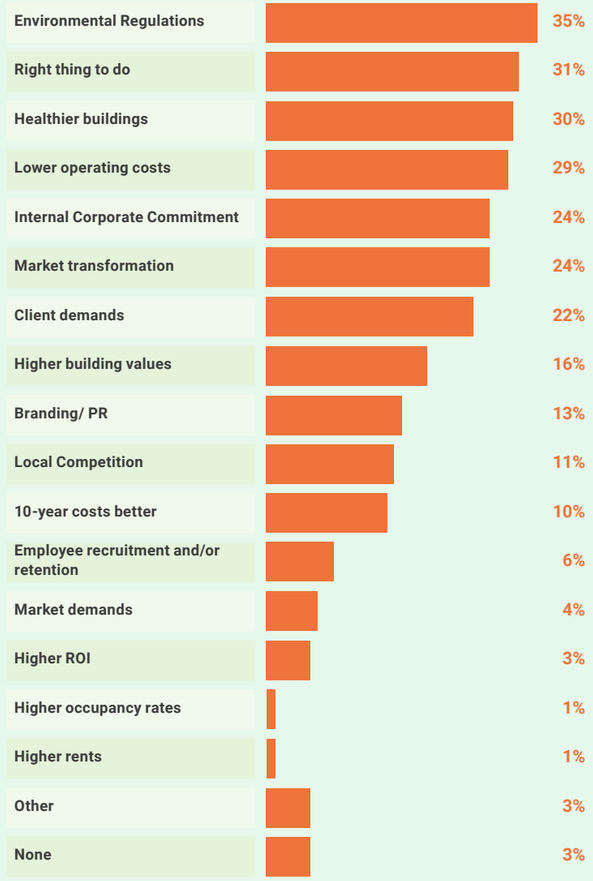
- Identify a consistent set of whole-life carbon and cost benefits related to a circular economy;
- Articulate and understand the business case following the steps described;
- Develop a supportive ecosystem across the value chain for circular solutions.

Governments and public authorities are also key stakeholders in embedding requirements for development projects to prioritise asset and material reuse. This will in turn help to strengthen the business case, catalyse the market and create supply demand for projects and their supply chains through clear, consistent and long-term regional policies on circular economy directives. Such directives would enshrine requirements for developments that address circular economy thinking and make investing more attractive, as well as incentives for innovation and new collaborations to catalyse uptake.

Stakeholders across the **supply chain** increasingly **need to measure** and **better quantify** the benefit or consequence of their **activities** on the wider industry or community

The Drivers of Green Buildings

In the 2021 Dodge Data & Analytics 'World Green Building Trends' report, environmental regulations, being the "right thing to do", healthier buildings, and lower operating costs are the top factors motivating green building, each reaching at least 29% in 2021. Internal corporate commitments, market transformation, and client demands are second-tier drivers. These drivers represent a mixture of financial business case and social value case, illustrating that it's the combination of both economic and ethical drivers that are catalysing the increased market engagement with sustainable buildings.



Most Important Benefits of Green Buildings, per Region

	Global Average	Top 5 Countries				
Lower operating costs (energy costs, total lifecycle costs)	66%	Canada 87%	Cameroon 85%w	USA 80%	Singapore 75%	Colombia 69%
Improved occupant health and well-being	62%	Canada 79%	USA 75%	Colombia 71%	Cameroon 67%	Singapore 64%
Future-Proofing assets	33%	Australia 57%	India 52%	Saudi Arabia 49%	South Africa 43%	Canada 38%
Documentation and certification providing quality assurance	32%	Saudi Arabia 49%	Singapore 41%	India 41%	China, People's Republic 40%	Australia 40%
Education of occupants about sustainability	32%	Cameroon 67%	Brazil 42%	China, People's Republic 38%	Singapore 36%	South Africa 35%
Fulfilling corporate and/ or shareholder reporting requirements	28%	Australia 47%	Singapore 34%	China, People's Republic 33%	Mexico 32%	India 31%
Higher value at point of sale	26%	Mexico 42%	Brazil 36%	China, People's Republic 36%	Germany 30%	Singapore 28%
Increased productivity for tenants	22%	Saudi Arabia 40%	India 39%	Australia 27%	South Africa 26%	Cameroon 26%
Flexibility of design built into green buildings	20%	Saudi Arabia 46%	Cameroon 33%	South Africa 31%	Singapore 26%	India 26%
Higher rental rates	18%	Mexico 28%	Saudi Arabia 26%	Brazil 24%	Singapore 24%	India 22%
Higher occupancy rates	16%	Saudi Arabia 34%	India 33%	Singapore 25%	Mexico 23%	China, People's Republic 20%

Graphs data reference: Dodge Data & Analytics. 2021. World Green Building Trends 2021.

Strengthening the Case: Social Value

The Social Value case is the benefit the built environment can bring to people and the planet

Although not yet financially quantified within market value of a built asset, the provision of social value strengthens the business case for sustainable buildings - as presented in the following chapter of this report. Real estate sector awareness of social value has increased massively in certain geographies in recent years, and within this chapter we explain how and why.

"IN THE CONTEXT OF THE BUILT ENVIRONMENT, SOCIAL VALUE IS CREATED WHEN BUILDINGS, PLACES AND INFRASTRUCTURE SUPPORT ENVIRONMENTAL, ECONOMIC AND SOCIAL WELL BEING, AND IN DOING SO IMPROVE THE QUALITY OF LIFE OF PEOPLE. EXACTLY WHICH ENVIRONMENTAL, ECONOMIC AND SOCIAL OUTCOMES CREATE SOCIAL VALUE WILL DEPEND ON THE BEST INTERESTS OF THE PEOPLE MOST IMPACTED BY THE PROJECT OR BUILT ASSET."

UKGBC, FRAMEWORK FOR DEFINING SOCIAL VALUE[188] (2021)

What Is Social Value?

Social value is the creation of direct, positive impacts on people and communities

Although finances, budgets and value engineering remain essential components of any new or retrofit development, in today's context there are additional considerations. The generation of social value - of creating positive social impact and inclusive growth, facilitating restorative environmental benefit, and ensuring that economic growth benefits everyone[185] - has become a responsibility of all sectors, particularly the built environment. Social value is the creation of direct, positive impacts on people and communities by protecting human rights, dignity, and health and wellbeing, providing community benefit and committing to social justice and equity[186]. This includes indigenous rights, gender equality, diversity and inclusion, that would provide long term value to communities and improve local quality of life[187].

Social value should be considered at all stages of the lifecycle, from risk mitigation and maximisation of social outcomes for the project at siting, planning and financing stages, to taking a longer-term view of the social value and economic benefits generated through operation and use.

Social value is an increasingly popular trend around the world[190], adapting to different contexts, becoming a tool for measurement, and contributing to a broader value proposition and sustainable development - now, and in future. WorldGBC recognises differing trends around the world, however the common drivers presented below are increasing scrutiny on social value across multiple geographies, particularly for the built environment sector that shapes the fabric of our society.

"In the context of the built environment, **social value** is created when buildings, places and infrastructure support **environmental**, economic and social well being, and in doing so improve the quality of life of people. Exactly which environmental, economic and social outcomes create social value will depend on the **best interests of the people most impacted by the project** or built asset."

UKGBC, FRAMEWORK FOR DEFINING SOCIAL VALUE[188] (2021)

Defining terms: Social value, equity, impact and justice

The term Social Value may be differently interpreted across different geographies, and the definition presented in this report is often interchanged with social equity, justice or impact. These terms have been defined by the BRE as[188]:

- **Social Equity** - the equitable access of all people to resources and opportunities and full participation in the social and cultural life regardless of background
- **Social Justice** - the fairness in achieving advantages and opportunities for each citizen.
- **Social Impact** - the effects on people and communities as a consequence of the built environment related to action or activity
- **Social Value** - a cumulative benefit of all social impacts from the built environment to individuals, communities and local businesses

Based on the above definitions, this report will use Social Value as the main term due to its collective meaning broadly encompassing the collective definition of the other terms. The priorities of enhancing equity and justice for all people at all stages of the supply chain are synonymous across all terms, and remains the fundamental aim of the sustainable built environment movement.

The Impact Of COVID-19

"Everything we do during and after this **COVID-19 crisis** must be with a strong focus on building more equal, inclusive and sustainable economies and societies that are more resilient in the face of pandemics, **climate change**, and the many other global challenges we face."

UN Secretary-General António Guterres

One of the impacts of COVID-19 has been a dramatic increase in interest and awareness on social value, particularly around health and equity. In the era of the pandemic, it has become increasingly clear that the world can no longer justify tackling issues indirectly and individually, but that a collective approach addressing the total impact on people's quality of life should be prioritised[191]. The effects of the COVID-19 pandemic are reshaping the profile of sustainable building demand, while influencing the occupancy patterns and prospects of urban spaces and the needs of occupants, owners and managers[192].

The COVID-19 pandemic has not only devastated economies but has greatly accelerated the impact of inequality. Inequalities between high and low income countries, employment status, population group and income levels have heightened[193]. A survey conducted in 37 countries indicated that 3 in 4 households were suffering declining income, with 82% of low-income households being affected. This can be seen prominently in the USA, where over 44 million people lost their jobs and unemployment surged towards 15% during the early months of the pandemic[194]. While high-income countries found over USD $7 trillion to sustain their businesses, retain jobs and reinforce safety nets, low-income countries had little capacity to do the same[195]. Consequently, we expect public sector institutions and corporates will be under pressure to ensure their investments reflect genuine value to society. An estimated 25% of consumers and 22% of investors cite a "zero tolerance" policy toward companies that tolerate questionable practice on the social value front[196].

For the real estate sector specifically, a notable aspect highlighted by the pandemic has been the increased awareness of the need for buildings to provide healthy indoor environments. Fundamentals of healthy indoor environmental quality are outlined in WorldGBC's Health & Wellbeing Framework, and include: air quality and ventilation, thermal comfort. acoustics, lighting, mental health and access to nature, amongst many others[197]. Poor indoor air quality and ventilation are associated with increased symptoms of sick building syndrome, increased risk of transmission of infectious diseases and reduced cognitive function[198]. More than 1.6 million COVID-19 infections worldwide are believed to have occurred due to poorly ventilated indoor spaces[199] [200]. Indoor environmental quality is closely linked to income status and equity — lower quality buildings and housing are often poorly designed and constructed with cheaper materials, and hence often overcrowded and occupied by the most vulnerable populations — putting occupants at higher risk of mental and physical health impacts, further exacerbating the inequality of disease transmission[201] [202].

COVID-19 mitigation measures have not only raised awareness of social value, but also challenged the sector to rethink building and urban design, serving as a market stimulus that a healthy, equitable built environment should be an expectation[204].

WorldGBC implores organisations supporting economies struggling to rebuild in the wake of the pandemic to prioritise health and social value in the creation and maintenance of the built environment. We also call on governments and policy makers to address the recovery from the pandemic in harmony with the climate crisis.

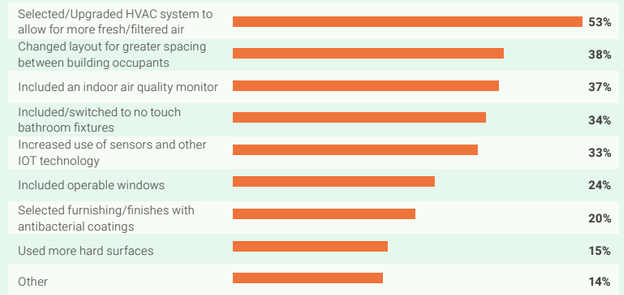
RISK MITIGATION | THE WIDER ROLE OF BUSINESS

"Following our collective experience of the global coronavirus pandemic, we are asking ourselves how places need to change, to be resilient to future challenges including the risk of prolonged social isolation that can clearly exacerbate what is already an epidemic of loneliness in our cities. Consciously designing our homes, workplaces and public spaces with connectedness in mind is critical to ensure we are creating places that are fit for the future."

Paul King — Managing Director, Sustainability and Social Impact — Lendlease Europe

Changes in Building Projects due to COVID-19 Pandemic

In answer to the question, 'What changes have you made to or seen on your building projects (new or renovation) specifically in response to the COVID-19 pandemic?' as part of the World Green Building Trends 2021 survey, changes to the HVAC system to allow for fresh air is the most frequent change made or seen on building projects[203].



Increased Focus on Social Value In Private Sector

73% of investors surveyed in a UK study state efforts to **improve the environment** and society play into their investment decision-making

Social value is increasing in the private sector as organisations recognise market expectations, industry competitiveness, staff retention opportunities and increased reporting expectations. Programs of social and environmental responsibility within the construction sector have unlocked opportunities for more ambitious sustainability measures throughout the value chain, such as equitable and formal labour practices that have increased the economic development of more communities[205]. Organisations including the users and community needs within the design and construction process have also experienced improved value of building assets[206] [207].

Such results have increased awareness of social value, and consequential corporate pressure on their supply chain to demonstrate and disclose ethical and environmental good practices via Corporate Social Responsibility (CSR) reports. This rise in CSR is also driving social value. Due to increasing expectation on reporting and ethical action, there is increasingly quantified and ambitious target setting around social value indicators.

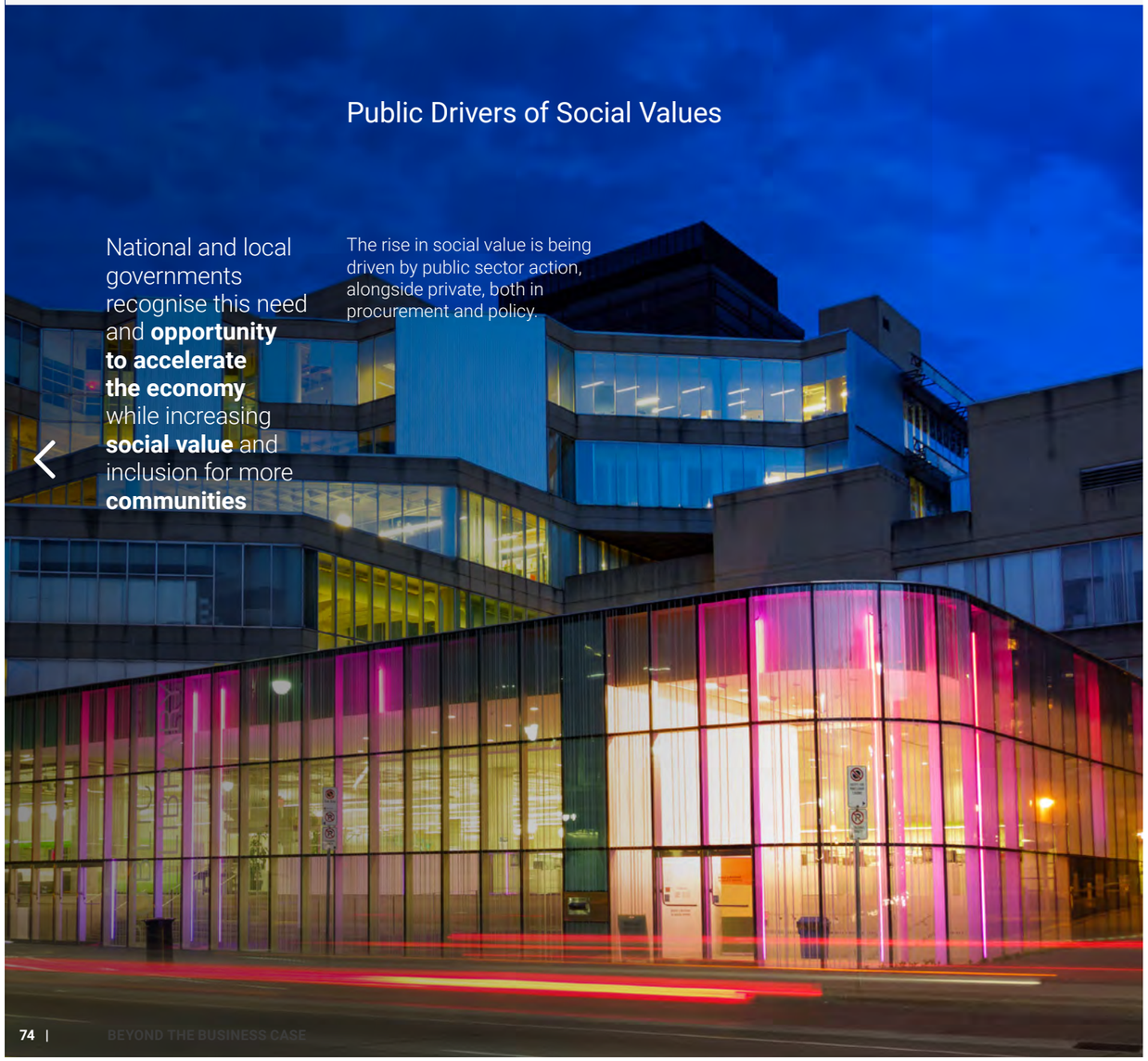
73% of investors surveyed in a UK study state efforts to improve the environment and society play into their investment decision-making[212]. With better returns and better investment opportunities, social value is therefore becoming a competitive advantage in the real estate sector[213]. For instance, in the UK, within a 15-year period, social indicators were noted to increase shareholder value by almost USD $1.7 billion, with CSR reports predicted to help companies increase market value by 4-6%[214].

For developers in certain markets, social value has evolved to become a tool of measurement to quantify the impact that built asset developments have on local communities and wider society. In these regions, notably the United Kingdom, Europe, USA, Canada and Australia, the real estate organisations operating in these markets will have to engage more formally with social value through dedicated assessments, which are becoming increasingly sought after by investors and lenders, or in some cases, enforced by local authorities and regulation[215] [216]. Social value assessments quantify benefits to community through parameters including jobs and employment opportunities, and health benefits[217]. Compliance with current or incoming policy requirements is another catalyst for increasing social value.

WITH BETTER RETURNS AND BETTER INVESTMENT OPPORTUNITIES, SOCIAL VALUE IS THEREFORE BECOMING A COMPETITIVE ADVANTAGE IN THE REAL ESTATE SECTOR

The Rise of CSR

Business leaders are no longer satisfied solely with financial performance; transparency and progress on environmental, social and governance issues are increasingly becoming relevant[208]. An estimated 90% of companies on the S&P 500 index published a CSR report in 2019, compared to just 20% in 2011, with nearly 99% of CSR professionals believing COVID-19 has impacted their CSR efforts and initiatives[209]. The consumer market is transitioning to one which values responsibility, and sustainability[210]. As consumers increasingly embrace environmental and social causes, they seek products and brands that align with their values. The upward trend in Corporate Social Responsibility reporting demonstrates the growing expectations, noted as a worldwide trend, of generating social value being a core business objective[211].



Public Drivers of Social Values

National and local governments recognise this need and **opportunity to accelerate the economy** while increasing **social value** and inclusion for more **communities**

The rise in social value is being driven by public sector action, alongside private, both in procurement and policy.

FINANCE | OCCUPANT BENEFITS

Public Procurement

Public procurement generates expenditure by governments and state-owned enterprises on services and assets, including buildings, infrastructure, and other key services in our communities[218]. The current global value of public procurement is estimated at USD $13 trillion[219]. With such economies of scale, co-benefits of such sizable investments can generate massive benefits to a local community. National and local governments recognise this need and opportunity to accelerate the economy while increasing social value and inclusion for more communities[220]. By placing a significant weighting on social value and following that through with contractual obligations to report and deliver, governments are promoting a bottom-up systemic change[221]. Generating and measuring social value is increasingly becoming an expectation within procurement contracts.

In the built environment, a compendium of examples from within the EU demonstrate socially responsible procurement in construction. In the UK, the Public Services (Social Value) Act 2012 requires local authorities to prioritise social value when procuring and awarding contracts[222]. In the last decade, the importance of social value has increased in procurement tenders, with weighting of the social value elements in procurement contracts risen from 5% up to 40% today[223]. UK city councils have put forward a value of over USD $10 million for the adoption of strict measures that will create social value and community resilience[224].
A public sector that can demonstrate a strong commitment to social value has been seen to create strong economic benefits and multiplier effect, with institutions managing to increase their spending in the city's local economy from by 300% between 2013 and 2017[225]. Organisations who want to be involved in public procurement processes or public-private partnerships should see enhancing social value as an opportunity to enhance their competitiveness, to access to more contracts, financial schemes, training programs, and visibility[226].

A **public sector** that can demonstrate a strong commitment to **social value** has been seen to create **strong economic benefits**

Policies and Incentives

The public sector plays a key role in both setting an example through procurement but also driving the market transformation through policies and incentives. Clear messages have been sent at international level, with a visible momentum underway from European governments passing legislation on mandatory human rights and environmental due diligence[REF]. For instance, the European Commission directly includes social goals through initiatives such as the EU Taxonomy and the national development strategies[227]. Other notable examples include the UK Public Services (Social Value) Act 2012 which requires all public sector organisations, and their suppliers, to look beyond the financial cost of a contract and consider how the services they commission and procure might improve the economic, social and environmental well-being of an area[228].

Available evidence suggests that regulation around social value is most mature in Europe and UK, however there is evidence to suggest that policies around social value, both in procurement and more broadly, have precedent in non-regulatory guidance in markets such as Canada[229]. We therefore see increasing likelihood of legislative action on social value, which could be particularly relevant for built environment actors through local planning policies or building codes. Organisations looking to future-proof their compliance should be considering and enhancing social value at all stages of the lifecycle.

Organisations looking to **future-proof** their **compliance** should be considering and **enhancing social value** at all stages of the **lifecycle**

The **public sector** plays a key role in both setting an example through **procurement** but also driving the market **transformation** through policies and **incentives**

The Social Value Case

Providing and enhancing **social value** is both the right thing to do, and **strengthens** the financial business case for **investment** in sustainable buildings

The built environment that shapes the fabric of our lives has the opportunity to enhance social value in many ways - both through assets in operation and throughout the lifecycle. Although these are not currently financially quantified within market value of a built asset, the provision of social value can enhance the desirability of a project and aligns with corporate social responsibility targets that are increasingly expected in developed markets[230].

Providing and enhancing social value is both the right thing to do, and strengthens the financial business case for investment in sustainable buildings. There is growing expectation that companies respect human rights throughout their operations and supply chains, as set out in the UN Guiding Principles on Business and Human Rights and the OECD Guidelines (both of which are included in the `safeguards' provisions in the EU Taxonomy).

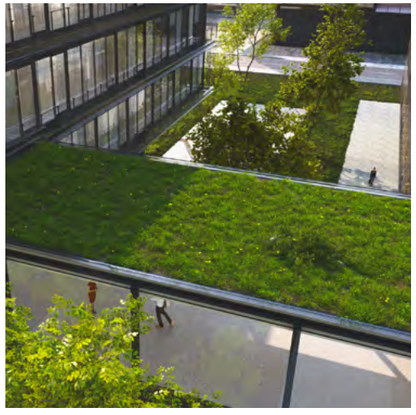
There are three scales at which the built environment should add value to people's lives: buildings, community, and supply chain. In the below sections, opportunities to do so are presented for the global real estate industry.

Guidance on maximising social value across the lifecycle can be found in IHRB's 'Framework for Dignity in the Built Environment'.

Social Value at Building Scale: Enhancing Occupant Health and Wellbeing

People spend an average of **90%** of their time inside buildings

The built environment affects both our physical and mental health, amplified by the fact that people spend an average of 90% of their time inside buildings[231]. The buildings in which we live, work and learn can both enhance our quality of life and protect our health, but more commonly are attributed to negative impacts. WorldGBC has a wealth of past research on this topic, demonstrating the link between better buildings and occupant and community health in a range of typologies and geographies — including offices, schools, retail and the residential sector[232] [233] [234] [235] [236] [237].



SUSTAINABLE BUILT ENVIRONMENTS THAT **PREVENT** OR **REDUCE** THESE PROBLEMS PROVIDE SOCIAL VALUE THROUGH THE **IMPROVEMENT** OF **HEALTH** AND **WELLBEING** FOR BUILDING **OCCUPANTS**

Social value can be created by enhancing health and wellbeing of occupants at building level, with strategies including;

- Design, construct and operate buildings to tackle common physical health risks stemming from poor indoor environmental quality: fatigue, stress, loss of productivity, and illness can result from poor indoor air quality, thermal conditioning, lighting and other specific building aspects[238], which can be reduced as far as possible through strategic building design and education of building occupants. Pollutants such as particulate matter and Volatile Organic Compounds can cause adverse health effects, and exacerbate respiratory conditions such as asthma and allergies, but concentrations can be substantially lowered with adequate ventilation and healthy, non-toxic material or furnishing choices[239].
- Reduce transmission of infectious disease: air pollution represents an important factor increasing the risk of mortality from COVID-19, as estimates suggest that particulate air pollution contributed 15% to COVID-19 mortality worldwide[240]. Better building design to enhance air circulation, and access to nature and green infrastructure to encourage occupants to have a healthier lifestyle, can all contribute to overall occupant health[241].
- Support occupant mental health: sustainable buildings should prioritise the protection of mental as well as physical health, creating positive psychological and social experiences; the International WELL Building Institute claim that buildings can significantly improve cognitive and emotional health through design, technology and treatment strategies[242]. Urban living is associated with greater stress response in areas linked to emotional regulation, depression and anxiety in the brain, seen through a 21% increase in anxiety disorder, and 39% increase in mood disorders n comparison to people living outside urban environments [243] - therefore design and urban planning could play a role in reducing stress and mental health risk.

Sustainable built environments that prevent or reduce these problems provide social value through the improvement of health and wellbeing of building occupants. However, as the predicted impacts of forthcoming climate change will likely generate severe health impacts and social repercussions, the challenge of maintaining health will likely heighten in future.

THE BUILDING IS DESIGNED TO **MAXIMISE THERMAL PERFORMANCE** AND ENERGY EFFICIENCY — BOTH NOW, AND DURING FUTURE CLIMATE EVENTS

CASE STUDY

Future-proofing health and wellbeing for a warming world. **2 Redman Place, London, UK**

- A nine-story office building, developed by Lendlease, in Stratford's International Quarter London, is a flagship example of sustainable development that enhances occupant, community and planetary health — both today and with the future impacts of climate change
- 2 Redman Place has achieved BREEAM Outstanding and WELL Gold certification, and at the time of award, the score of 94% was the second highest ever BREEAM score in the UK for a commercial building (New Construction 2014 in the UK for Post Construction certificate). Achieving BREEAM Outstanding puts 2 Redman Place in the top 1% of sustainable new commercial buildings in the UK
- The building is designed to maximise thermal performance and energy efficiency – both now, and during future extreme climate events. Energy efficiency features such as a triple glazing are combined with on-site energy generation from solar panels, amounting to 304 tonnes of carbon savings each year – approximately the same amount as would be produced by running 3,000 fridges. Building owners DWS utilise the building's innovative design and technical solutions to deliver optimal thermal comfort for occupants. Temperatures remain between 22-24 degrees with the help of the building's active façade system which includes automated blinds that operate within a triple glazed system. This lets an abundance of natural light in from the floor-to-ceiling windows, without compromising internal temperatures or increasing cooling requirements. Coupled with 100% fresh air through air conditioning systems, 2 Redman Place offers indoor environmental quality that supports productivity and wellbeing.
- The development encourages active design and efficient resource use. Sustainable transportation for those visiting and working at 2 Redman Place is encouraged through provision of showers, changing facilities and storage facilities for over 200 bicycles. Rainwater harvesting saves the equivalent of 4.5 Olympic-sized swimming pools of drinkable water annually
- Biodiversity on site offers biophilic mental health benefits to occupants, plus localised environmental benefits. The pre-development area had no vegetation on-site, but the operational project features one of London's largest "living walls", a 2,000m^2 habitat for wildlife comprising thousands of native plants and benefitting local air quality and carbon sequestration
- Social value was created during the construction process through meaningful community engagement, including participation from local school pupils with biodiversity design challenges, plus receiving mentoring from occupier Cancer Research UK. Lendlease also hosted over 300 children for education sessions around the regeneration of the once derelict Queen Elizabeth Olympic Park.

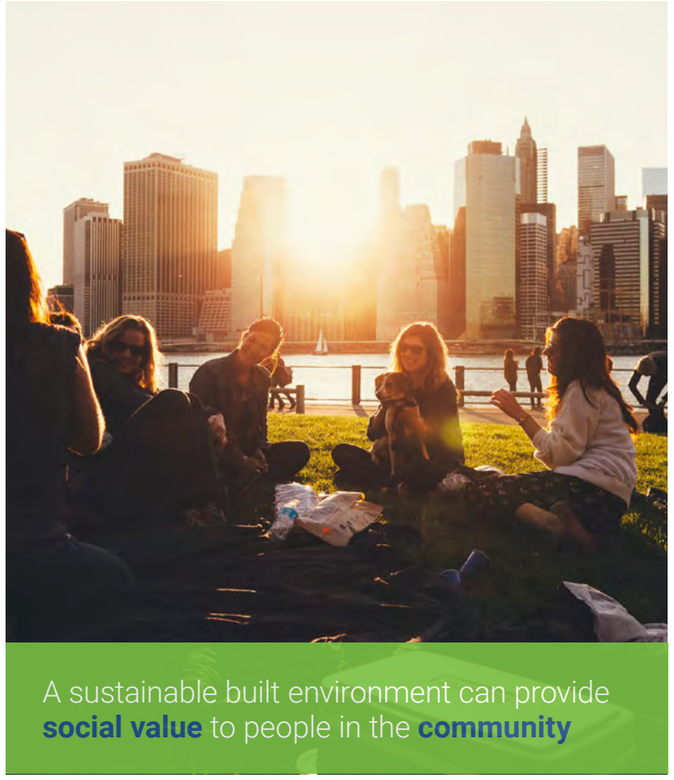
Supporting Social Value in the Community

At community level these benefits can be realised through increased jobs, community benefit, resilient infrastructure, protecting biodiversity and ecosystem services through enhancing natural capital, and more

The social value case for the real estate sector is the benefit the built environment can bring to people - economically, socially and environmentally. At community level these benefits can manifest as increased jobs, community health and benefit, resilient infrastructure or protecting biodiversity and ecosystem services through enhancing natural capital.

Often, the interests and resources of all social groups are not equally integrated into policy and decision making in the built environment[244] — the risk being that the outcomes will not be socially equitable and just, especially to vulnerable groups. Lower income or disadvantaged areas are recognised to impact community health and quality of life[245], further reinforcing the existing inequality in the health of low-income citizens. A core component of social value is that benefits are realised by the entire community.

As per the UKGBC Framework for Defining Social Value, the local community can be defined as "the people who are most impacted by a building, infrastructure asset or place… and will include residents, local business owners, workers and visitors"[246]. The Framework also highlights that 'community' should include future stakeholders, and in some cases future generations. USGBC's 'Social Equity in the Community' pilot credit in LEED v4.1, calls for "fairer, healthier, and more supportive environments … that responding to the needs of the surrounding community to promote a fair distribution of benefits and burdens, promoting fair trade, respect for human rights, and other equity practices among disadvantaged communities"[247]. In both the UK and US market, and many other countries in which social value is advancing in importance, the benefits and impact on the aforementioned community groups can be quantified by social value assessment, or social equity assessments[248].



A sustainable built environment can provide social value to people in the community, such as:

- Jobs and employment opportunities, addressing skills gaps and providing opportunities in high growth sectors[249] — for example a shift to a greener economy could create 24 million new jobs globally by 2030 if the right policies are put in place, according to the International Labour Organization (ILO)[250]
- Improved environmental quality, from environmentally conscious construction practices which result in a lower amount of dust, pollution, congestion and noise[251] or interventions such as reduced vehicular pollution and enhanced green infrastructure. Neighbourhood restoration can also be provided through building renovation
- Economic development from regenerating brownfield sites[252], plus the presence of workers who make financial transactions in the community, contributes to a positive multiplier effect
- Resilient building and infrastructure design should protect the wider community in face of extreme weather events and future climate impacts[253].

In general terms, these improvements will likely contribute to improved public health, safety, and wellbeing, plus providing economic stimulus to an area - contributing to social value and improving the quality of life in cities at community level.

CASE STUDY

Net zero buildings that enhance community health and social value
Peace Slum Institute (Instituto Favela da Paz), São Paulo, Brazil

- The 'Favela de Paz', or Peace Slum, is located within the informal favela settlements located in the city of São Paulo, Brazil
- Recognized worldwide as an 'Urban Ecovillage', the mixed-use development consists of three net zero energy residential buildings and one music studio, rated with Zero Energy Pre-Certification from the Green Building Council of Brazil (and will be re-certified annually)
- The buildings are actively generating positive localised social, economic and environmental impact, by enhancing educational programs, offering community locations such as studios for local musicians, and encouraging the wider community to replicate sustainable practices
- Specific sustainability interventions include:
  - biodigestion systems and organic waste turned into biogas for cooking,
  - rainwater harvesting and reuse,
  - vertical gardens for biodiversity inclusion and,
  - energy efficiency and renewable generation measures- including replacing electric showers with homemade recycled solar systems to heat water, LED lamps for lighting systems, and a grid-connected micro solar energy generator
- A major positive social implication of this project is the financial opportunity these buildings create within the context of their neighbourhood. Inflation in Brazil is leading to high costs for lighting and natural gas for cooking[254]. The social impact of this situation is tremendous in low-income communities, leading to occupant energy poverty in many cases. In the net zero buildings, occupants report little to no expenditure on energy or gas bills — demonstrating the direct financial benefit to the occupant of renovating and occupying a sustainable, net zero building.

OCCUPANT BENEFITS | OPERATING COSTS

THE BUILDINGS ARE ACTIVELY GENERATING POSITIVE LOCALISED SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACT, BY **ENHANCING EDUCATION PROGRAMS** AND LOWERING UTILITY COSTS

Social Equity Throughout The Whole Lifecycle

OCCUPANT BENEFITS | THE WIDER ROLE OF BUSINESS

Millions of workers are directly employed in the construction sector worldwide

"Almost all modern construction projects around the world are subsidised with slavery, due to unchecked forced labor that permeates thousands of raw and composite materials sourced locally to globally."[261]

Design for Freedom, 2020

Social value is often focused on building occupants or the local community in the built environment. However enhancing health, equity, employment opportunities and human rights at all stages of the lifecycle must also be considered.

International human rights standards, including the Universal Declaration, and ILO Fundamental Principles on Rights at Work, encompass areas such as worker rights and freedoms, mitigation of risks of forced labour and modern slavery, secure working conditions with fair remuneration, gender equality (including equality in pay), the right to adequate housing, and duties to the community. The UN Guiding Principles on Business and Human Rights set out the duties of governments with regards to private sector actors, the responsibilities of business, and principles on access to remedy. Millions of workers are directly employed in the construction sector worldwide — approximately 7% of the global workforce — and the protection and enhancement of their health and quality of life must be a priority to the global real estate sector[255] [256].

WorldGBC recognises increasing attention on human rights and modern slavery across the built environment industry in recent years, especially within the material supply chain and construction sector where human rights violations are known to be endemic within the sector[257] [258].

Forced labour and human trafficking is an estimated USD $150 billion industry, holding 25 million people in modern slavery[259]. Research tells us that modern slavery occurs in every region of the world and underpins the material supply chain upon which the built environment and construction sector relies[260]. The scale of industry, its lack of modernisation and fragmentation down the supply chain makes tracing the journey of materials in the construction industry very difficult. Increasing industry awareness is a necessary first step for action.

Additionally, at the construction stage of the building lifecycle, worker welfare and human rights is also a key social value consideration. Construction workers have a high risk of developing diseases from a

number of health issues[262]. Exposure to hazardous substances, such as asbestos or silica dust, is a recognised cause of the heightened risk of lung and other cancers, as well as broader respiratory and cardiovascular health issues[263]. In the UK, construction accounts for over 40% of occupational cancer deaths and cancer registrations[264].

Construction workforces are, in most geographies, predominantly made up of migrant workforces. In all regions, evidence shows construction workers frequently face dangerous working conditions, meagre or even unpaid wages, and other forms of exploitation on construction sites[265]. In some regions of the world, such as the Gulf States in the Middle East, the majority of construction firms have not been disclosing what measures they have in place to meet local labour laws in recent years[266]. It is expected that scrutiny will therefore be increasing, catalysed by the growth of awareness around human rights violations within the construction sector and the rise of campaigns such as the Design for Freedom movement. Increasing awareness and expectations on transparency across the supply chain is called upon from private sector organisations and policy makers by leading voices[267]. Market demand may soon likely reflect this developing consumer expectation.

Opportunities to address to enhance social equity are:

- Ensure the protection of rights of vulnerable social groups in the labour market and within the construction sector, such as migrant workers, that do not enjoy the same protection as others[268] through supply chain audits, specifications in tenders and subcontracting requirements.
- Tackling inequalities in diversity: organisations should also promote diversity within the sector, as it is well known that the built environment lacks gender equality.
- Promoting a just transition: the process of decarbonisation can also risk the increased vulnerability of marginalised low-income groups[269], for example by forced movement into low-income neighbourhoods. Social value with sustainable development means protecting the livelihoods of all as we transition to a decarbonised society.
- Raise awareness of social value challenges outside of current stakeholder influence, particularly human rights and modern slavery within the supply chain.

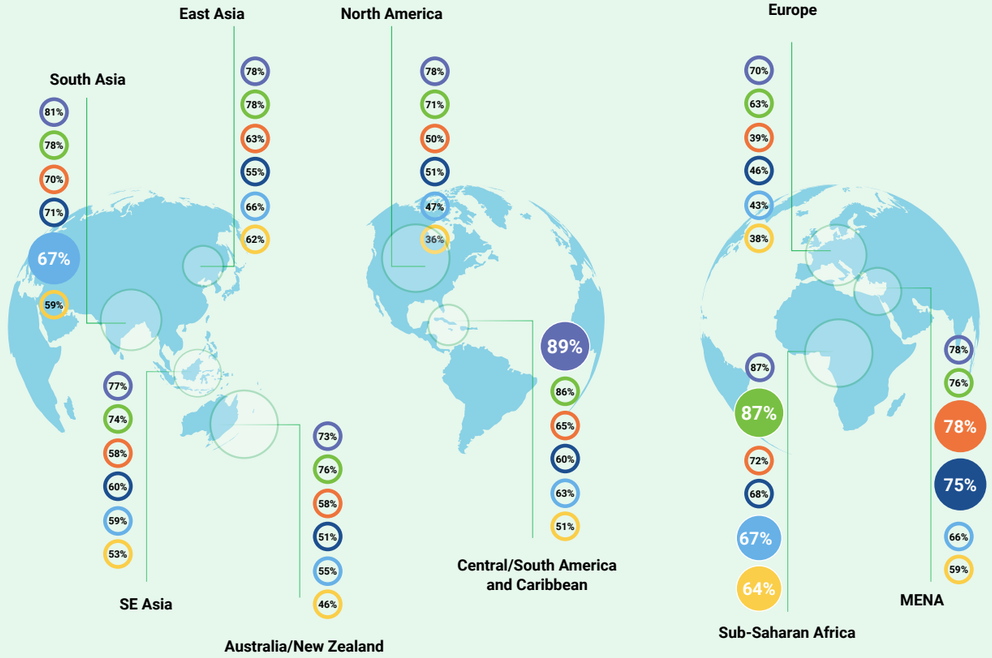
Organisations are now signing on for greater transparency in the supply chain. In recent years, a growing number of multinationals have committed to working only with suppliers that adhere to social and environmental standards[270]. The transition to a sustainable future needs to serve and benefit everyone, leaving no one behind. There can be no sustainable transition without a just transition.

Changes in Building Projects due to COVID-19 Pandemic

Excerpt from World Green Building Trends 2021: How important are the following social and environmental reasons for your organisation to be engaged in green building?

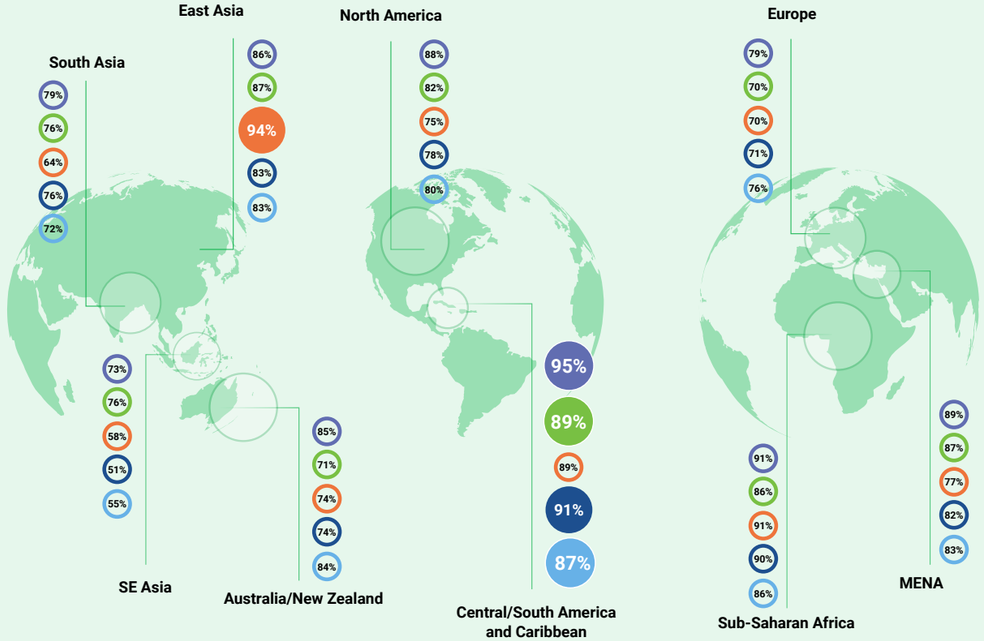
Social: Research suggests Central/South America and the Caribbean are more likely than other regions to value promoting better occupant health and wellbeing. Sub-Saharan Africa most often prizes encouraging sustainability in business practices, and MENA (Middle East and North Africa) places more importance on greater worker productivity and supporting the domestic economy.

Promotes improved occupant health & well-being | Encourages sustainable business practices | Increases worker productivity | Supports the domestic economy | Creates a sense of community | Is aesthetically pleasing



Environmental: Reducing energy consumption is considered the most important environmental reason for green building with 66% of respondents rating this aspect as very important. Respondents located in Central/South America and the Caribbean rated four of the five environmental reasons higher than all other regions. South Asian respondents placed high importance on protecting natural resources.

Reduce energy consumption | Improve indoor air quality | Protrct natural resources | Reduce water consumption | Lower greenhouse gas emissions



Environmental Action is part of Social Value

Almost **half** of the world's **population** already live in areas that are potentially **water scarce** at least one month a year

Part of the social value case for the built environment is the environmental improvement made by decarbonisation and climate action in our buildings, infrastructure and cities. Environmental action in the built environment is increasingly high profile - shown by recent research that net zero carbon buildings are considered in the 'World Green Building Trends 2021' as the most important concept to improve the building and construction industry's sustainability, followed by controlling embodied carbon on projects[271]. As with social considerations, environmental actions must also be considered across all stages of the building and construction lifecycle.

Opportunities of taking environmental action as part of a real estate social value strategy include:

- Improving ambient air pollution, with localised and global benefit from the reduced combustion of fossil fuels, and the reduced urban heat effect in cities and communities
- A lesser risk of fuel poverty due to energy efficiency measures
- Efficient use of natural resources, including water - of key importance given water consumption has grown twice as fast as the human population over the last century[272], and almost half of the world's population already live in areas that are potentially water scarce at least one month a year[273]
- Sustainable building and infrastructure assets can offer superior physical and systemic resilience to current and future climate change impacts
- Protection and enhancement of biodiversity and enhancing stocks, of natural capital, during material sourcing, construction phase and operation and end-of life lifecycle phases
- Decarbonisation today will increase likelihood of compliance with future policy change, alignment with commitments on net zero and science-based performance targets, and act as a risk mitigation strategy for corporate reputation in time of changing consumer and financial sector expectations.

WorldGBC directs readers of this report to our extensive body of research and industry guidance on climate action in the built environment in all typologies and geographies[274].

Environmental action is part of the definition of social value[275]. And although social value imperatives are not yet reflected in financial parameters, with increasing quantification of social value outcomes WorldGBC expects these soon to be reflected in asset values.

CASE STUDY

Providing social value with resilience and sustainability **Ward Village, Hawaii, USA**

OCCUPANT BENEFITS | RISK MITIGATION | THE WIDER ROLE OF BUSINESS

DESIGNED WITH RESILIENCE TO WIND AND HURRICANES

- Ward Village is a 60-acre master-planned community village pre-certified to LEED Platinum under LEED for Neighborhood Development located in Hawaii
- The project is committed to sustainability in building operation with energy and water-efficient design, and the use of sustainable materials. Urban planning and design interventions facilitate low carbon and healthy user behaviours through provision of sustainable infrastructure, including electric vehicle charging stations, bicycle lanes, rideshare drop-off points, and walkways that allow residents to reduce transportation carbon emissions
- Ward Village assets have been designed with resilience to wind and hurricanes for the waterfront neighbourhood, whilst also preserving local water quality and enhancing quality of life of the local community. The development guards against seawater penetration into the utility infrastructure by installing detention basins for natural filtration systems with dry wells as a part of regional infrastructure improvement initiatives. This development plus best management practices have led to improved water quality and habitats by reducing the leading cause of pollution, which is urban stormwater runoff
- Sales for Ward Village began in 2014 and this thoughtful approach has led to the sale of as of Q3 2021 3,133 closed or under contract homes to date. Ward Village has subsequently received many recognitions, including 'Master Planned Community of the Year, 2018' by the National Association of Home Builders and 'Best Planned Community in the United States' by Architectural Digest.

CASE STUDY

Protecting water resources through the built environment **UN Offices, Gigiri, Kenya**

OCCUPANT BENEFITS | OPERATING COSTS | RISK MITIGATION

- The UN Offices in Gigiri house the Headquarters of the UN Habitat and UN Environmental Program offices, located in the Gigiri region of Nairobi, Kenya
- In a nation facing both a growing population and depleting water resources, drought remains a high-risk environmental issue to millions of Kenyan people[276]. Water efficiency is therefore both an environmental requirement and social value consideration to preserve limited resources for people
- Through a design committed to water efficiency and quality, the UN Gigiri offices have implemented sustainability measures to combat both water shortages and contamination issues. These include:
  - Rainwater collection, with 7.5 million litres of rainwater collected from the roof, with excess trickling into the lagoon, also used to irrigate landscaped areas, sustaining biodiversity
  - Wastewater treatment, using a modern plant for water recycling and natural purification before being fed into the lagoon
  - Water efficient features, including dual flush cisterns, saving up to ten litres of water compared to older models
- Other sustainability features include; enhancing health and comfort for office users with interior air flow, access to nature and views, and internal overheating measures through passive material specifications
- On-site reduction of greenhouse gas emissions has been achieved through the installation of 6,000 solar panels that generate 100% of the overall energy use of the development - which is estimated to be 750,000 kWh annually
- This development contributes to social value and environmental action by preserving water resources, restoring the natural environment, and creating a healthy environment for occupants and the local community.

7.5 MILLION LITRES OF RAINWATER COLLECTED FROM THE ROOF

Measuring Social Value

RISK MITIGATION | ASSET VALUES | THE WIDER ROLE OF BUSINESS

WorldGBC calls for investor requirements for social value as the built environment sector is starting to mainstream action on sustainability

Measuring social value has become a vital part of communicating and committing to social value creation across the development lifecycle. However, the measurement of social value in the built environment is a rapidly evolving area of practice.

Financial actors look to compare the social value of development proposals to help inform investment decisions in a quantified and consistent way[277] [278]. Hence, asset managers must begin reflecting the social value of portfolios using data that is easily collected and aggregated across different asset types and geographies[279]. Common measurement approaches include cost-benefit analysis and wellbeing valuation, with useful databases and tools already in place such as the New Manchester Economy Unit Cost Database or the HACT Social Value Bank[280]. WorldGBC expects the increase in the ability to measure social value within and between geographies to support a continued rise in importance of social value within ESG assessments, private sector sustainability targets, public procurement targets, policy directives and more. Although currently not reflected in asset value or other financial parameters, WorldGBC suggests the increased ability to quantify social value will initiate this change, and catalyse market momentum which favourably values built assets that advance social value across the supply chain. WorldGBC calls for investor requirements for social value as the built environment sector is starting to mainstream action on sustainability.

Future-Proofing the Value Proposition

The business case needs to be considered across the lifespan of a building or built asset

Through this report, WorldGBC has endeavoured to demonstrate that in today's market, undertaking the urgent transition to a decarbonised and sustainable building portfolio makes strong business sense from both a financial and social value case. However the business case needs to be considered across the lifespan of a building or built asset — approximately 50 years, but often far higher for infrastructure assets.

Transporting us to 2050, the below tables demonstrate the outcomes of research and analysis undertaken through dedicated future scenario modelling workshops, carried out for the purpose of this report. An exploration of future scenarios, based on 2050 IPCC projections, analyses two contrasting but feasible situations around climate change mitigation, and development of social value, health and welfare. This analysis is presented through the structure of the seven key themes of this report.

Through these future scenarios, is it clear that the value proposition for a sustainable built environment is stronger than an unsustainable future — from both the financial and social value case.

DEMONSTRATED, THROUGH **FUTURE** SCENARIO MODELLING, IS IT CLEAR THAT THE **VALUE PROPOSITION** FOR A SUSTAINABLE BUILT ENVIRONMENT IS **STRONGER** THAN AN UNSUSTAINABLE FUTURE - FROM BOTH THE **FINANCIAL** AND **SOCIAL VALUE** CASE

This assessment assumes a base scenario where climate action broadly follows a 2°C trajectory. Our worst and best case scenarios, aligned with IPCC projections, represent increased and decreased emissions from today until 2050, leading to 3 degree or 1.5 degrees of warming respectively.

Even in **1.5 degree** scenario, there will still be impacts from **extreme weather** on buildings and infrastructure. **Sustainable assets** are more **resilient** with **lower costs** from climate impacts.

The outcome of Low, Medium or High for each statement represents the analysis of the business case in this situation, as it relates to the below themes

Occupant Benefits
Extent to which climate change affects building occupant productivity and health & wellbeing.

Costs
Extent to which climate change affects building costs including supply chain, construction and operation costs.

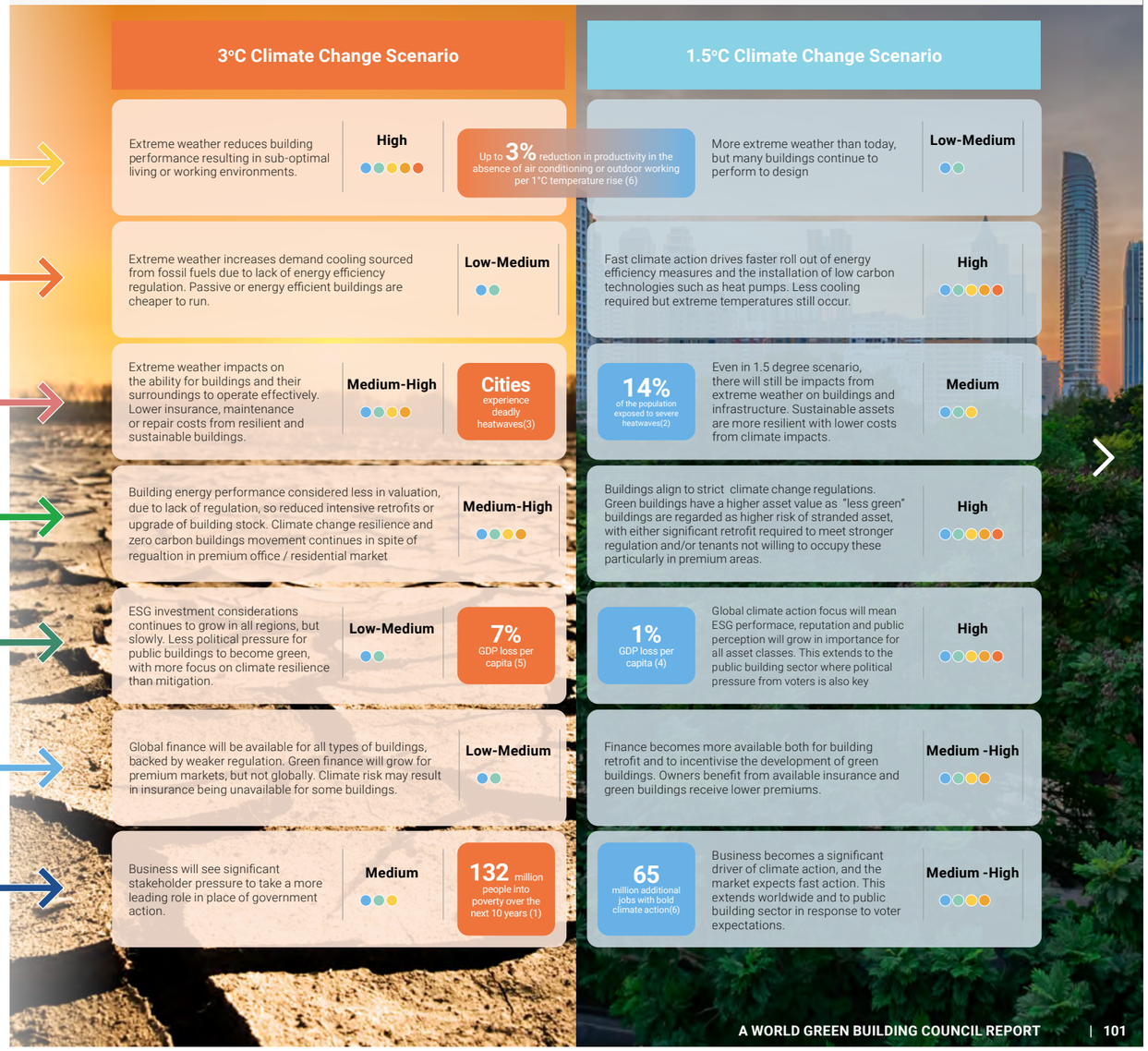
Risk mitigation
Extent to which climate change impacts, such as extreme weather events, or sea level rise, affects buildings and their environments.

Asset Values
Extent to which climate change affects the value of built environment assets.

Investors and Reputation
Extent to which climate change will affect building investment decisions.

Finance
Availability of finance for green buildings.

Wider role of business
Beyond finance, how does the wider role of business support the business case for green buildings.



This assessment assumes a base scenario where health and wellbeing broadly follows existing regulation and policies on health and social value in the built environment. An unhealthy world scenario is where health and wellbeing action is significantly less than this. A healthy world scenario is where action is greater than this.

Global health and wellbeing focus will mean **ESG** performance, reputation and public perception **grow in importance** for all asset classes. This extends to public buildings due to political pressure

The outcome of Low, Medium or High for each statement represents the analysis of the business case in this situation, as it relates to the below themes

Occupant Benefits
Extent to which the built environment affects building occupant productivity health, wellbeing, and social value.

Costs
Extent to which health, wellbeing and social value trends affects building costs including supply chain, construction and operation costs.

Risk mitigation
Extent to which health, wellbeing and social value trends affects risks for building investors, developers, owners or occupiers.

Asset Values
Extent to which health, wellbeing and social value trends affects the value of buildings.

Investors and Reputation
Extent to which health, wellbeing and social value trends will affect building investment decisions.

Finance
Availability of finance for healthy buildings and assets that enhance social value.

Wider role of business
Beyond finance, how does the wider role of business support the business case for healthy buildings

Conclusion

The built environment has a critical role to play in tackling the climate crisis and advancing sustainable development

The urgency of the situation cannot be overstated, and the time for transformational action is now.

The value proposition for this action is broader now than ever before - looking at the business case and beyond by showing how the economic argument is strengthened by social value and climate action. The future value proposition, across a diverse range of scenarios, shows the business case for sustainability in the built environment will only continue to grow.

Through this report, WorldGBC has presented why the global real estate sector cannot afford not to act on climate change and invest in a sustainable future.

The themes that underpin the value proposition have consistently been presented throughout the financial and social value case within this report, as we recognise that a sustainable built environment provides seven co-benefits that underline the broader business case:

- **Social benefits**, to building occupants through health, productivity and wellbeing
- **Lower or equal costs at supply chain**, construction, and operational phases
- **Risk mitigation**, providing resilience to inevitable climate impacts, environmentally and financially, as well as future-proofing against legislative changes or corporate expectations and reputational risk
- **Higher asset values** linked both to performance and asset desirability
- **Investment opportunities** through a rapidly transitioning finance sector protecting investments, supporting share prices, and increasing requirements on ESG
- **Access to finance** due to availability of finance for green buildings, from banks, bonds and institutional investors
- **The wider role of business**, where organisations recognise they must engage with sustainable development, including environmental action and social value, and commit to considerations broader than profit margins.

The current and future trends presented in this report demonstrate concentrated efforts are being undertaken to advance the triple bottom line of sustainability within our built environment. There is much to be optimistic about, but so much more still to be done. Urgent action will be needed from all players - governments, the private sector, civil society, and residents - to achieve a more sustainable future for the built environment, and for all of us who live within it.

JOIN US, IN CREATING SUSTAINABLE BUILDINGS FOR EVERYONE, EVERYWHERE. **YOU CAN'T AFFORD NOT TO**

Through the World Green Building Council network and global sustainable buildings movement, we will continue to challenge the trailing actors in the building construction sectors to mitigate damaging practices and enhance sustainable development. Join us, in creating sustainable buildings for everyone, everywhere. You can't afford not to.

THE URGENCY OF THE SITUATION CANNOT BE OVERSTATED, AND THE **TIME FOR** TRANSFORMATIONAL **ACTION IS NOW**

Recommendations

The World Green Building Council network has published an immense quantity of thought leadership and guidance for the building and construction sector to guide the transformation of the built environment, at a global level and through the 70 national Green Building Councils.

WorldGBC encourages all readers to reach out to national GBCs for specific market content and thought leadership.

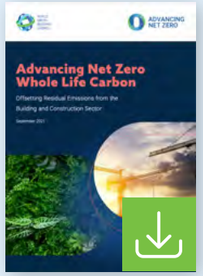
The following materials from the WorldGBC can be accessed here:

Climate Action

The Net Zero Carbon Buildings Commitment

Bringing Embodied Carbon Upfront

Advancing Net Zero Status Report 2021



Advancing Net Zero Whole Life Carbon: Offsetting Residual Emissions from the Building and Construction Sector

Health, Wellbeing and Social Value

Health & Wellbeing Framework

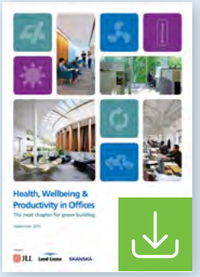
Building the Business Case: Health, Wellbeing and Productivity in Green Offices

Doing Right by Planet and People Case Study report

Healthier Homes, Healthier Planet

Green and Healthy Schools

Health, Wellbeing and Productivity in Retail



Health, Wellbeing & Productivity in Offices

Acknowledgements

With thanks to the report funders, partners, Taskforce, Expert Review Panel and the WorldGBC network

FUNDERS

Laudes Foundation

CONSULTANTS (pro bono)

WSP

Johnson Controls | IHRB | BURO HAPPOLD | Foster + Partners | SAINT-GOBAIN | Kingspan | lendlease | CBRE | MOTT MACDONALD | SOM | GBC | Green Building Council Australia | CCCS | HKGBC | EmiratesGBC | USGBC | Green Building Council Italia | Green Building Council Finland | GBCCR

Expert Review Panel

Usha Iyer-Raniga
RMIT University

Clay Nesler
WRI

Victor Martinez
Architecture 2030

Cristiana Ciaraldi Jolivet -
WBCSD

Jana Hock
ShareAction

Nora Steurer
UNEP

Cassie Sutherland
C40

WorldGBC Advancing Net Zero
Steering Committee

WorldGBC Better Places for People
Steering Committee

WorldGBC Established GBC
CEO Network

Authors:

Catriona Brady
Director of Strategy & Development, WorldGBC

Victoria Burrows
Director of Advancing Net Zero, WorldGBC

Ahmad Al-Musa
Advancing Net Zero Project Officer, WorldGBC

Sara Kawamura
Better Places for People Project Officer, WorldGBC

Carolina Montano Owen
Projects and Grants Officer, European Regional Network, WorldGBC

Arianna Palmieri
Project Manager, WorldGBC

References

1 JLL, 'Why social awareness at companies is on the rise' (2020)
2 IPCC, 'Climate Change 2021: The Physical Science Basis' (2021)
3 IPCC, 'Climate Change 2021: The Physical Science Basis' (2021)
4 WEF, 'COVID-19 is increasing multiple kinds of inequality' (2020)
5 UN Foundation, 'The shadow pandemic: how the COVID-19 crisis is exacerbating gender inequality' (2020)
6 UN, 'Population 2030' (2015)
7 McKinsey, 'McKinsey on Climate Change' (2020)
8 Yale, 'Climate Change in the American Mind' (2021)
9 UN, 'Transforming our world: the 2030 Agenda for Sustainable Development' (2015)
10 CNBC. 'Amsterdam bet its post-Covid recovery on 'doughnut' economics — more cities are now following suit' (2021)I
11 Architecture 2030, 'The 2030 Challenge' (2020)
12 GlobalABC, 'Global Status Report for Buildings and Construction' (2021)
13 Architecture 2030, 'Why the Building Sector?' (2019)
14 GlobalABC, 'Global Status Report for Buildings and Construction' (2020)
15 Transparency Market Research, 'Construction Waste Market - Global Industry Analysis, Size, Share, Growth, Trends, and Forecast 2017-2025' (2021)
16 UNEP, 'As buildings and construction sector grows, time running out to cut energy use and meet Paris climate goals' (2017)
17 Global Infrastructure Basel Foundation, '4th GIB Summit Report' (2014)
18 McKinsey, 'Reinventing Construction: a route to a higher productivity' (2017)
19 EPA, 'Report on the Environment (ROE): Indoor Air Quality' (2021)
20 UN, 'World Urbanization Prospects' (2018)
21 Taskforce on Climate-Related Financial Disclosures, 'Climate change presents financial risk to the global economy' (2021)
22 IPCC, 'Summary for PolicyMakers' (2018)
23 IPCC, 'Summary for PolicyMakers' (2018)
24 IPCC, 'Summary for PolicyMakers' (2018)
25 Science, 'Anthropogenic environmental changes affect ecosystem stability via biodiversity' (2015)
26 GlobalABC, 'Global Status Report for Buildings and Construction' (2020)
27 IFC, 'Green Buildings: a finance and policy blueprint for emerging markets' (2020)
28 WEF, 'Making Affordable Housing a Reality in Cities' (2019)
29 UNEP 'Building sector emissions hit record high, but low-carbon pandemic recovery can help transform sector – UN report' (2020)
30 IFC, 'Green Buildings: a finance and policy blueprint for emerging markets' (2020)
31 Dodge Data & Analytics, 'World Green Building Trends' (2021)
32 Stanford Social Innovation Review. The Next Phase of Business Sustainability. (2018)
33 GlobalABC, 'Global Status Report for Buildings and Construction' (2020)
34 GlobalABC, 'Global Status Report for Buildings and Construction' (2021)
35 Climate Analytics. '1.5 Degree C National Pathways' (2021)
36 UN, 'NDC Synthesis Report' (2021)
37 UNIDO, 'Sustainable Cities' (2016)
38 C40 (2021) 'From LA to Bogotá to London, global mayors unite to deliver critical city momentum to world leaders tasked with keeping 1.5 degree hopes alive at Glasgow's COP26'
39 C40, 'C40 Mayors' Statement for a Green and Just Recovery' (2020)
40 WorldBank, 'State & Trends of Carbon Pricing 2021 Executive Summary' (2021)
41 WorldBank, 'State & Trends of Carbon Pricing 2021 Executive Summary' (2021)
42 Ibid
43 Ibid
44 WorldBank, 'State & Trends of Carbon Pricing 2021 Executive Summary' (2021)
45 UKGBC, 'Building the case for Net Zero' (2020)
46 EU, 'Taxonomy: Final report of the Technical Expert Group on Sustainable Finance' (2020)
47 EU, 'Taxonomy: Final report of the Technical Expert Group on Sustainable Finance' (2020)
48 NATIXIS, 'Sustainable Taxonomy development worldwide: a standard-setting race between competing jurisdictions', (2021)
49 WEF, 'A Framework for the Future of Real Estate' (2021)
50 Grantham Research Institute, 'Climate change and the just transition' (2018)
51 GlobalABC, 'Global Status Report for Buildings and Construction' (2020)
52 Edie. 'HSBC sets 2050 net-zero financed emissions target for £36bn UK pension scheme' (2021)
53 Harvard Business Review, 'The Investor Revolution' (2019)
54 International Finance Corporation (2019), Green Buildings: A Financial and Policy Blueprint for Emerging Markets
55 Harvard Business Review, 'The Investor Revolution' (2019)
56 Columbia School of International and Public Affairs for United Nations Development Programme, 'ESG INVESTING: HOW TO INCREASE ESG INVESTING IN DEVELOPING COUNTRIES' (2018)
57 OPEC Fund for International Development, 'ESG and Development' (2020)
58 Harvard Business Review, 'The Investor Revolution' (2019)
59 PRI, 'TCFD for Real Assets Investors' (2021)
60 GRESB, 'The Business Case for ESG in Real Estate', (2020)
61 Harvard Business Review, 'The Investor Revolution' (2019)
62 PWC, 'Embracing ESG transformation. How asset managers are leveraging regulation to drive value creation' (2021)
63 Harvard Business Review, 'The Investor Revolution' (2019)
64 G&A, 'Flash Report Russell 1000® - Trends on the sustainability reporting practices of the Russell 1000 Index companies' (2020)
65 Harvard Business Review, 'The Investor Revolution' (2019)
66 KPMG, 'SFDR - a Snapshot' (2021)
67 UL, 'Why ESG Reporting Is Essential For Your Business' (2020)
68 Ibid
69 UNEP FI, 'Global ESG Real Estate Investment Survey Results' (2020)
70 WorldGBC, 'Annual Report 2020' (2020)
71 Dodge Data and Analytics, 'World Green Building Trends' (2021)
72 GRESB, 'Real EstateReference Guide' (2021)
73 Ramboll, 'Sustainable Buildings Market Study' (2021)
74 Dodge Data & Analytics, 'World Green Building Trends 2018' (2018)
75 IISD,' Sustainable Investing Shaping the future of finance' (2020)
76 S&P Global, 'Green Finance: the Next Driver of Real Growth?', (2017)
77 EY, 'How banks are defining and internalizing sustainability goals' (2020)
78 Climate Bonds Initiative, 'Explaining Green Bonds' (2021)
79 Climate Bonds Initiative, 'Sovereign Green, Social, and Sustainability Bond Survey The ultimate power to transform the market' (2021)
80 OECD, 'Making the green recovery work for jobs, income and growth' (2020)
81 NN Investment Partners, 'Sovereign Green Bond fund: financing the green recovery' (2021)
82 Climate Bonds Initiative, 'Explaining Green Bonds' (2021)
83 Environmental Finance, 'Green Buildings and Green Bonds' (2020)
84 Environmental Finance, 'Green Buildings and Green Bonds', (2020)
85 ADBInstitute, 'The viability of green bonds as a financing mechanism for green buildings in asean', (2020)
86 Ibid
87 IFC, 'Green Buildings: a finance and blueprint for emerging market' (2020)
88 Climate Bonds Initiative, 'Sovereign Green, Social, and Sustainability Bond Survey The ultimate power to transform the market' (2021)
89 GlobalABC, 'Global Status Report for Buildings and Construction' (2020)
90 Climate Bond Initiative, 'Green Bonds: The State of the Market' (2018)
91 Climate Bonds Initiative, 'Sovereign Green, Social, and Sustainability Bond Survey The ultimate power to transform the market' (2021)
92 Harvard Business Review, 'The Investor Revolution' (2019)
93 Fink, 'Annual Letter to CEO's' (2021)
94 Fink, 'Annual Letter to CEO's' (2021)
95 IBM, 'Meet the 2020 consumers driving change' (2020)
96 Morningstar, 'Sustainable Funds U.S. Landscape Report' (2021)
97 Fink, 'Annual Letter to CEO's' (2021)
98 WEF, 'Why a healthy planet and a healthy economy go hand-in-hand' (2020)
99 Rathbones, 'Why sustainable investing is here to stay' (2019)
100 Morgan Stanley, '7 insights from Asset Owners on the Rise of Sustainable Investing' (2020)
101 Harvard Business Review, 'The Investor Revolution' (2019)
102 Blackrock, 'Here to stay' (2021)
103 Morgan Stanley, '7 insights from Asset Owners on the Rise of Sustainable Investing' (2020)
104 Harvard Business Review, 'The Investor Revolution' (2019)
105 Rathbones, 'Why sustainable investing is here to stay' (2019)
106 Dodge Data & Analytics. 'World Green Building Trends 2021'. (2021)
107 Ramboll. 'Sustainable Buildings Market Study' (2019)
108 GlobalABC, 'Global Status Report for Buildings and Construction' (2020)
109 IFC, 'Green Buildings: a finance and policy blueprint for emerging markets' (2020)
110 Colliers, 'Building the Green Way: Opportunities in Green Building Development' (2020)
111 Better Buildings Partnership. 'Sustainability in buildings makes for a better investment' (2015)
112 European Commission. 'Renovation Wave: doubling the renovation rate to cut emissions, boost recovery and reduce energy poverty' (2020)
113 Research Affiliates, 'Unlocking the Performance Potential in ESG Investing' (2018)
114 Raconteur, 'Should investors be wary of stranded assets?' (2019)
115 Ramboll, 'Sustainable Buildings Market Study' (2021)
116 Morgan Stanley, '7 insights from Asset Owners on the Rise of Sustainable Investing' (2020)
117 Natural Capital Forum, 'What is Natural Capital?' (2021)
118 Ibid
119 Ibid
120 Paladino, 'The Economic Value of Natural Capital in the Built Environment' (2020)
121 Natural Capital Forum, 'What is Natural Capital?' (2021)
122 JLL (2020), The impact of sustainability on value. Developing the business case for net zero buildings in central London
123 Real Assets IPE, 'The future of green building ratings' (2018)
124 Dodge Data and Analytics 'World Green Building Trends 2021' (2021)
125 Dodge Data and Analytics, 'World Green Building Trends 2018: Europe' (2018)
126 Savills, 'Does demand for green buildings lead to a premium?' (2021)
127 Savills, 'Does demand for green buildings lead to a premium?' (2021)
128 Panasonic, 'Green housing trends in Malaysia' (2016)
129 IBM, 'Meet the 2020 consumers driving change' (2020)
130 IBM, 'Meet the 2020 consumers driving change' (2020)
131 Schneider Electric, 'Why invest in high-performance green buildings?' (2012)
132 JLL, 'Why companies are willing to pay more to go green' (2021)
133 Dodge Data and Analytics. 2021. World Green Building Trends 2021.
134 Knight Frank, 'The Sustainability Series' (2021)
135 Ramboll, 'Sustainable Buildings Market Study' (2021)
136 Forbes, 'The Increased Importance Of Environmental Sustainability In Real Estate' (2019)
137 Savills, 'How green is your workplace?' (2021)
138 Building Engines 'Attract and Retain Tenants with Green Building Certification' (2021)
139 Forbes, 'The Increased Importance Of Environmental Sustainability In Real Estate' (2019)
140 Dodge Data & Analytics. 'World Green Building Trends 2021' (2021)
141 Lloyds 'Stranded Assets' (2021)
142 Muldoon-Smith and Greenhalgh. 'Suspect foundations: Developing an understanding of climate-related stranded assets in the global real estate sector' (2019) Energy Research & Social Science
143 Energy Research & Social Science, 'Suspect foundations: Developing an understanding of climate-related stranded assets in the global real estate sector' (2019)

144 Building, 'Sustainability: How EPC requirements could leave buildings at stranding risk' (2019)
145 Energy Research & Social Science, 'Suspect foundations: Developing an understanding of climate-related stranded assets in the global real estate sector' (2019)
146 GRESB. 'Addressing stranded asset risk in real estate investment' (2016)
147 OECD. 'Climate resilient infrastructure' (2018)
148 Ramboll, 'Sustainable Buildings Market Study' (2021)
149 EEA, 'Construction and Demolition Waste - Challenges and Opportunities in a Circular Economy' (2020)
150 BigRentz, '23 Construction Waste Statistics & Tips to Reduce Landfill Debris' (2021)
151 Designing Buildings, 'Construction waste', (2021)
152 Lu, Chen, Peng and Liu. 'The effects of green building on construction waste minimization: Triangulating 'big data' with 'thick data'(2018) Waste Management.
153 Park Enterprise Construction Co. Inc., 'Recycled Construction Materials Can Save You Money & The Environment' (2020)
154 Dodge, 'Prefabrication and Modular Construction 2020' (2020)
155 McKinsey, 'Modular construction: From projects to products' (2019)
156 McKinsey, 'Modular construction: From projects to products' (2019)
157 Ibid
158 McKinsey, 'Modular construction: From projects to products' (2019)
159 McKinsey, 'Modular construction: From projects to products' (2019)
160 Dodge Data & Analytics. 'World Green Building Trends 2021' (2021)
161 Ibid, and Dodge Data & Analytics. 'World Green Building Trends 2018' (2018)
162 UKGBC, 'Delivering Building Performance' (2016)
163 UKGBC, 'Building the Case for Net Zero' (2020)
164 UKGBC, 'Building the Case for Net Zero' (2020)
165 Dodge Data & Analytics. 'World Green Building Trends 2018' (2018)
166 Dodge Data & Analytics. 'World Green Building Trends 2021' (2021)
167 CaGBC, 'Making The Case For Building To Zero Carbon' (2019)
168 Climate Action & Schneider Electric, 'Why invest in high-performance green buildings?' (2012)
169 Dodge Data and Analytics. 2021. World Green Building Trends 2021.
170 Climate Action & Schneider Electric, 'Why invest in high-performance green buildings?' (2012)
171 UNEP, '5 ways to make buildings climate change resilient' (2021)
172 UNEP, '5 ways to make buildings climate change resilient' (2021)
173 Forbes, 'Can You Make Your Insurance Green?' (2021)
174 Green Finance Institute, 'Financing energy efficient buildings:the path to retrofit at scale', (2020)
175 Forbes, 'Can You Make Your Insurance Green?' (2021)
176 Green Finance Institute, 'Financing energy efficient buildings:the path to retrofit at scale', (2020)
177 Harvard University, 'The impact of green buildings on cognitive function' (2018)
178 WorldGBC 'The Business Case for Green Building report' (2013)
179 WorldGBC 'Building the Business Case: Health, Wellbeing and Productivity in Green Offices' (2016)
180 WorldGBC 'Doing Right by Planet and People' (2018)
181 WorldGBC, 'Health, Wellbeing & Productivity in Offices' (2014)
182 WorldGBC 'Building the Business Case: Health, Wellbeing and Productivity in Green Offices' (2016)
183 IEA, 'Energy Efficiency 2020' (2020)
184 WorldGBC 'Doing Right by Planet and People' (2018)
185 Supply Chain Sustainability School, 'Social Value in the Built Environment' (2020)
186 Social Value UK, 'What is Social Value?' (2021)
187 Ibid
188 BREEAM, 'Encouraging positive social impact and equity using BREEAM' (2020)
189 UKGBC, 'Framework for Defining Social Value' (2021)
190 Business Growth Hub, 'Social Value: what it is and why it's more important than ever' (2020)
191 Buro Happold, 'Defining social value in a greener built environment' (2020)
192 Ramboll, 'Sustainable Buildings Market Study' (2021)
193 WEF, 'COVID-19 is increasing multiple kinds of inequality. Here's what we can do about it' (2020)
194 WEF, 'COVID-19 is increasing multiple kinds of inequality. Here's what we can do about it' (2020)
195 Financial Times, 'Covid-19 has made fighting inequality more critical than ever' (2021)
196 Impact, 'A handy list of social value statistics' (2021)
197 WorldGBC, 'Health & Wellbeing Framework Report' (2020)
198 HarvardTHChan, 'Buildings for health' (2021)
199 WorldGBC, 'Can we achieve healthy indoor air quality and net zero during a global pandemic?' (2021)
200 medRxiv, 'Indoor transmission of SARS-Cov-2' (2020)
201 Inside Housing, 'The housing pandemic: four graphs showing the link between COVID-19 deaths and the housing crisis' (2020)
202 Frontiers, 'Poverty and Covid-19: Rates of Incidence and Deaths in the United States During the First 10 Weeks of the Pandemic' (2020)
203 Dodge Data and Analytics 2021. World Green Building Trends 2021.
204 MDPI,COVID-19 Could Leverage a Sustainable Built Environment, 2020
205 World Bank Group - World Development Report 2019: The Changing Nature of Work.
206 Oxford Brookes University's School of the Built Environment & Trowers & Hamlins: Highly Valued, Hard to Value: Towards an integrated measurement of real estate development.
207 International Living Future Institute (2013) The Economics of Change:
Integrated Policy Approaches to Unlocking the Value of a Restorative Built Environment
208 Harvard Business Review, The Investor Revolution, 2019
209 Impact, 'A handy list of social value statistics', 2021
210 Business Wire, 'Consumers expect the brands they support to be socially responsible' (2019)
211 International Journal of CSR, A literature review of the history and evolution of corporate social responsibility, 2019
212 Harvard Business School Online. '15 EYE-OPENING CORPORATE SOCIAL RESPONSIBILITY STATISTICS' (2021)
213 Faithful+Gould, 'Embedding Social Value within the Built Environment', 2016
214 Impact, A handy list of social value statistics, 2021 https://impactreporting.co.uk/social-value-stats/
215 RICS 'Measuring social value in infrastructure projects' (2020)
216 UKGBC 'Defining Social Value- Measurement' (2020)
217 Public Health England. Social Value Briefing. 2015
218 OECD. 'Public procurement' (2021)
219 Spend Network. '$13 Trillion – The Global Value Of Public Procurement' (2021)
220 ICLEI. 'Making Socially Responsible Public Procurement Work' (2020)
221 Osborne Clark. 'Government's new procurement policy accelerates delivery of social value' (2020)
222 Business Growth Hub. 'Social Value: what it is and why it's more important than ever' (2020)
223 Ibid
224 UCL Institute of Health Equity, 'Using the Social Value Act to reduce health inequalities in England through action on the social determinants of health' (2015)
225 UCL Institute of Health Equity, 'Using the Social Value Act to reduce health inequalities in England through action on the social determinants of health' (2015)
226 https://www.gov.uk/government/news/new-measures-to-deliver-value-to-society-through-public-procurement
227 Local Government Association. (2021) 'Achieving community benefits – social value'
228 https://www.local.gov.uk/our-support/financial-resilience-and-economic-recovery/procurement/achieving-community-benefits
229 Social Value Portal. 'Social Value in Canada' (2017)
230 Institute of Civil Engineers. 'Maximising Social Value from Infrastructure Projects' (2020)
231 EPA, Report on the Environment (ROE): Indoor Air Quality, 2021
232 WorldGBC 'The Business Case for Green Building report' (2013)
233 WorldGBC 'Building the Business Case: Health, Wellbeing and Productivity in Green Offices' (2016)
234 WorldGBC 'Doing Right by Planet and People' (2018)
235 WorldGBC, 'Healthier Homes, Healthier Planet' (2018)
236 WorldGBC, 'Green and Healthy Schools' (2017)
237 WorldGBC, 'Health, Wellbeing and Productivity in Retail' (2016)
238 EPA, Report on the Environment (ROE): Indoor Air Quality, 2021
239 EPA: https://www.epa.gov/indoor-air-quality-iaq/volatile-organic-compounds-impact-indoor-air-quality
240 ESC, Regional and global contributions of air pollution to risk of death from COVID-19, 2020
241 WorldGBC, 'Health and Wellbeing Framework' (2020)
242 WELL Standard: https://standard.wellcertified.com/mind
243 The Guardian, Could bad buildings damage your mental health?, 2016
244 Ramboll, 'Social Equity in the Decarbonisation of the European Built Environment', 2021
245 Ade Kearns, Elise Whitley., Are housing and neighbourhood empowerment beneficial for mental health and wellbeing? Evidence from disadvantaged communities experiencing regeneration, 2020
246 UKGBC. 'Framework for Defining Social Value' (2021)
247 USGBC 'Social Equity in the Community: (2021)
248 USGBC 'Social Equity Planning and Assessment Tool' (2021)
249 GOV.UK 'The Social Value Model' (2020)
250 United Nations. 'Green economy could create 24 million new jobs ' (2019)
251 Office of Energy Efficiency and Renewable Energy - Department of Energy USA - The Social Benefits of Sustainable Design (2021)
252 One Planet Network. 'Global State of Play for Circular Built Environment,' (2021)
253 USGBC. 'Why green building is synonymous with resilience' (2019)
254 Bloomberg (2021) 'Brazil Economists see Faster Inflation, Higher Key Rate in 2022'
255 McKinsey, 'Reinventing Construction: a route to a higher productivity,' 2017
256 OECD Insights. 'The Global Construction Sectors Needs a Big Push on Corporate Responsibility' (2016)
257 Design for Freedom, 2021 'The Facts'
258 UN, Universal Declaration of Human Right
259 Ibid
260 Design for Freedom, 2021 'The Scope of the Problem' 2021
261 Design for Freedom,. 'A Call to Action for practicing professionals within the ecosystem of the built environment'. (2020)
262 HSE, 'Construction health risks: key points' (2020)
263 HSE, 'Construction dust', (2020)
264 HSE, 'Construction health risks: key points' (2020)
265 IHRB. 'Human RIghts and the Built Environment - A Call for Action' (2019)
266 Business and Human Rights Resources Centre. 'The construction industry must step up on human rights - Our outreach to firms' (2016)
267 IHRB. 'Human RIghts and the Built Environment - A Call for Action' (2019)
268 ILO, 'Migrant Work & Employment in the Construction Sector', (2016_
269 Ramboll, 'Social Equity in the Decarbonisation of the European Built Environment' (2021)
270 Harvard Business Review, 'A More Sustainable Supply Chain' (2020)
271 Dodge Data and Analytics. 2021. World Green Building Trends 2021.
272 UN, 'Water Scarcity Facts' (2018)
273 UN, 'Water Scarcity Facts' (2018)
274 WorldGBC 'Our Work' 2021
275 National Social Value Taskforce. 'Getting the most from Social Value' (2020)
276 The Guardian (2021) 'Drought puts 2.1 million Kenyans at risk of starvation'
277 Good Finance. 'Measuring Social Impact' (2021)
278 Stanford Social Innovation Review. 'Measuring Social Value' (2010)279
280 Ibid

WORLD
GREEN
BUILDING
COUNCIL

www.worldgbc.org