

The Green Buildings 2023 Whitepaper

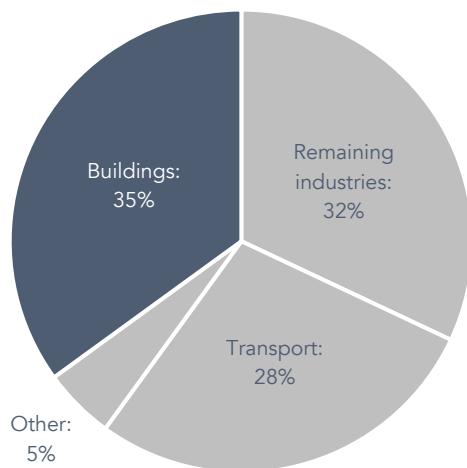
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Whether you are reading this in London, Barcelona, or Boston, you are most likely doing so from an office, house or coffee shop, all of which consume energy and release CO₂ in significant amounts that must be reduced. There is an undeniable need for green buildings. An industry, which is expected to reach a value of **USD 915 billion (bn) by 2030**, displaying a **CAGR of 12.3%** during the forecast period since 2023.¹ The green buildings industry addresses the whole process of designing structures and employing procedures that are ecologically responsible and resource-efficient. It recognises the complete life-cycle of a building, from the siting to design, construction, operation, maintenance, renovation, and deconstruction.

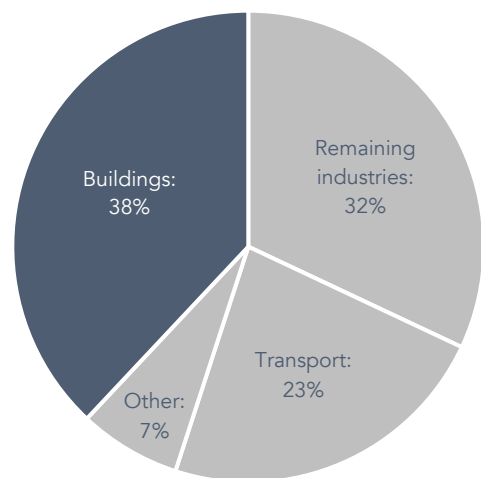
Why the building industry needs to change

- Globally, buildings account for about **35%** of the total **energy consumption** and contribute to about **38%** of **GHG emissions**.²
- Decarbonising the building industry is critical not just for meeting nationally mandated contributions and net-zero emissions targets, but also to make cities more liveable.
- Only **<1%** of the global building stock is achieving **net zero emissions**.³
- Many large cities in Asia suffer from **high levels of air pollution**, which reduces life expectancy, personal health, and quality of life.²
- In 2040 approximately **65%** of the global building stock will be buildings that exist today.⁴
- Without widespread decarbonisation of these existing buildings across the globe, they will still be emitting CO₂ emissions by then and it will be challenging to achieve the Paris Agreement’s 1.5°C target.
- Around **75%** of the current EU building stock is **energy inefficient**. This means that a significant portion of the energy utilised goes to waste.⁵
- To accommodate the predicted urban growth by 2060, **230 bn** of additional square meters are needed.⁶

Annual Energy Consumption²



Annual CO₂ Emissions²



The impact potential of green buildings

Green buildings contribute to multiple SDGs. They are designed to reduce the negative impact on humans and the environment, especially by:

- Efficiently using energy, water, and other resources
- Protecting occupant health and improving employee productivity
- Reducing waste, pollution, and environmental degradation

Investment opportunity






The industry provides a **USD 25 trillion (tn)** investment opportunity by 2030 across all cities in emerging market with populations greater than 500.000 people:⁷

- The majority of this investment potential – **USD 18 tn** - is concentrated in East Asia Pacific and South Asia, which will be home to more than half of the world's urban population by 2030.⁸
- The investment opportunity for residential construction is estimated at **USD 16 tn**, and accounts for **60%** of the market.⁹
- Emerging research suggests that green buildings are a higher-value, lower-risk asset than standard structures.¹⁰
- Green buildings can decrease operational costs by up to **37%**,¹¹ achieve higher sale premiums of up to **31%**,¹² and have higher rental income of up to **8%**.¹³



Certification as a green building

The Leadership in Energy and Environmental Design (LEED) certification system is a globally recognized rating system developed by the U.S. Green Building Council (USGBC) to measure the sustainability and environmental performance of buildings. It provides a framework for designing, constructing, operating, and maintaining green buildings that are energy-efficient, environmentally responsible, and healthy for occupants. LEED certification is awarded based on a point-based rating system, which evaluates buildings across the categories displayed below. Projects earn points for various sustainability features and practices, and the total number of points earned determines the level of certification, ranging from Certified to Platinum. ¹⁴

Category	Short definition ¹⁵
 Sustainable construction sites	This category encourages to reduce the environmental impact on the construction site and the surrounding environment and rivers. Points are awarded for good site management both during construction and throughout the existence of the building.
 Water efficiency	Refers to the promotion of the sustainable and efficient use of water while implementing solutions that enable comprehensive reductions in the waste of domestic water.
 Energy and atmosphere	This category encourages maximising a building's energy efficiency, employing renewable and alternative energy sources, and following to ozone protection standards. Given that the energy performance of the building is determined in this category, it is also where the most points can be earned.
 Materials and resources	This category refers to the employment of construction materials that have a lower environmental impact on the planet, as well as reducing and controlling waste and minimising the number of materials required. It promotes the use of products and commodities that have been cultivated, harvested, manufactured, and transported in a way that has a documented chain of custody.
 Indoor environmental quality	This category aims on ensuring good indoor air quality in any building structure. This can be achieved by removing, reducing, and controlling any source of air pollution within the building. Further, it requires a control device for the thermostat system to ensure comfortable temperatures and connections to the outdoor environment.
 Innovation in operations	Sustainable design strategies and measurements are always evolving and improving. Hence, new technologies are constantly being introduced to the market, and current scientific research has an impact on building design techniques. This category recognises projects for novel architectural elements as well as sustainable construction techniques and initiatives.
 Regional priority	Certain environmental challenges are specific to a region. Therefore, volunteers from USGBC chapters and the LEED International Roundtable have established different environmental priorities and credits that address issues within their respective regions. These regional priority credits motivate project teams to prioritize their local environmental concerns.

Synergies between LEED certification and SDGs

LEED categories can assist in meeting the SDGs by not only saving water, increasing energy efficiency, minimising carbon emissions (GHGs), and significantly reducing harmful air pollutants, but also by promoting education, creating jobs, improving health and well-being, enhancing community resilience, and much more. LEED and sustainable construction techniques can be used by policymakers, planners, and builders to achieve the UN SDGs. ¹⁶

Deep dive: Energy efficiency of real estate

Definition

Energy efficiency is an important component of the energy and environment category. It refers to utilising less energy to complete the same work or achieve the same outcome. Energy-efficient houses and buildings use less energy to heat, cool, and run appliances as well as gadgets. Energy-efficient manufacturing facilities generate items with less energy. Energy efficiency is one of the most cost-effective strategies to mitigate climate change, lower energy prices for consumers, and boost the competitiveness of companies. ¹⁷ Energy efficiency is also critical to achieving net-zero carbon dioxide emissions through decarbonization.

Impact Context

Typical power plants use fossil fuels, which emit greenhouse gases and contribute to air pollution. Hence, reducing energy use is critical in the fight against climate change. Energy-efficient homes and buildings are also better prepared to transition to renewable energy, which emits no harmful emissions. In terms of health advantages, reducing fossil fuel consumption results in cleaner air, water, and land, all of which have a direct impact on human health. This is particularly important for individuals in marginalised groups and those suffering from illnesses aggravated by pollution. The need for energy in residential structures will continue to rise as populations, affluence, and urbanization increase. Reducing the energy consumption in such buildings could contribute to reducing GHG emissions and mitigating climate change. Improving energy efficiency through controlling leakages and wastage and using gadgets that require less energy could help to minimise energy consumption. ¹⁸ Given the huge amount of existing buildings that need to be decarbonised, building retrofits have become an interesting area of the green buildings industry. Retrofitting a building involves changing its systems or structure after its initial construction and occupation.

Investment opportunities



Building retrofits



Energy management systems



Renewable energy



Solar panels by our portfolio company We Do Solar ¹⁹

Deep dive: Sustainable materials

Definition

As part of the materials and resources category, sustainable materials in construction are those that have little environmental impact during production, placement, and upkeep. They must be long-lasting, reusable, or recyclable, contain recyclable elements, and be sourced from the area where the building activity will take place. These local materials must also be natural and unaffected by cold, heat, or humidity. ²⁰

Impact context

Sustainable materials, such as timber or sustainable concrete, have a lower environmental effect and are more thermally efficient. When compared to modern or traditional construction materials, the manufacture of these building materials needs significantly less energy. The benefits of using sustainable building materials include the fact that they are not only economically viable but also minimise hazardous emissions, lowering total environmental impact. The use of sustainable materials and technologies not only decreases transportation and production costs, as well as carbon emissions but also provides opportunities for community members to get jobs and skill development. ²¹

Investment opportunities



Timber



Biodegradable materials



Sustainable concrete



Timber ²²

Challenges for green buildings

Achieving the Paris Agreement's 1.5C aspirations would need a total shift in the way we design, build, operate, demolish, and value our buildings and infrastructure. The financial investment will be immense — new sustainable buildings alone are expected to provide a USD 25 tn investment potential in emerging nations by 2030. ⁸ Therefore, removing obstacles to mass market involvement is critical. Besides access to construction materials and skilled labour force, followed by the high cost of low-carbon construction, the major challenges for green building implementation are the following:



Lack of awareness

A significant part of both consumers and developers are still uninformed of the benefits and significance of sustainable building approaches. People still regard it as an expensive alternative. Many developers are unfamiliar with various green building materials and continue to use traditional ways. People who are resistant to change find it tough to leave their comfort zone and choose a new building method. One of the most significant barriers to the expansion of the green construction business is a lack of public awareness. ²³



Policies

Most present policies solely focus on energy efficiency rather than green buildings as a whole. Promoting energy efficiency is not a replacement for green building policy since it does not encourage the production of low-carbon construction materials and activities. The construction and building industries play a significant role in achieving net-zero carbon emissions and other nationally mandated commitments, necessitating legislative support for green buildings. ⁴

Key players in the industry



The road ahead

Given climate change and the growing need to reduce GHG emissions to save precious resources, the notion of green building is becoming more acknowledged as a vital strategy to minimise humanity's carbon footprint and create a high-quality, ecologically friendly future. ⁴ To go from pledges to implementation and effect, driving investment in sustainable buildings requires an integrated approach across the whole value chain. Decision-makers have the capacity to expedite the construction sector's sustainable transition by seizing economic possibilities, minimising risk, and embracing social value creation. This transition from commitment to action may be sped with a pragmatic framework to provide economic benefits for green assets, such as increased access to investment, improved company reputation, increased asset value and investment resilience, and decreased risk. Growing at a CAGR of 12.3%, ¹ the market for green buildings presents a great focus for investment and is expected to attract more interest in the future.

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