



# Sustainability in Real Estate

Integrating Software Solutions for a Greener Tomorrow





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The Vertical Forest in Milan

The environmental implications of transportation and major industrial sectors are extensively documented and frequently cited. However, the real estate sector, which accounts for 39%<sup>1</sup> of global greenhouse gas emissions, tends to receive less attention. Within this sector, 28% of emissions are attributed to energy utilization in buildings, while 11% is associated with the production and application of construction materials.

Recognizing this significant footprint, it's crucial to drive innovation for a more sustainable real estate future.<sup>2</sup> The demand for cutting-edge smart home technologies and systems for efficient carbon and emissions management is critically important.

In this article, we'll explore the various software solutions designed to enhance sustainability in the real estate sector. Furthermore, we'll highlight the benefits of adopting sustainability practices, and pinpoint critical application areas to help you get started toward a greener future.



# What Is Sustainability?

Sustainability is the practice of meeting our current needs without compromising the ability of future generations to meet their own needs. It encompasses three main pillars:

## Environmental Sustainability

focusing on conserving resources and minimizing environmental impacts.

## Social Sustainability

aiming to improve quality of life, promote equity, and ensure human rights.

## Economic Sustainability

seeking stable growth that benefits all without harming the environment or depleting resources.

Together, these pillars form a balanced approach to sustainable development, considering the well-being of the environment, society, and economy.

## Sustainability in Real Estate

Sustainability in real estate refers to implementing environmentally friendly practices and technologies in the construction and operation of buildings. It involves using energy-efficient materials, renewable energy sources, water conservation techniques, and sustainable land use practices.

The goal is to minimize the environmental impact of buildings, reduce energy consumption and carbon emissions, and create healthier living and working spaces. Sustainable real estate practices<sup>3</sup> contribute to environmental conservation and result in cost savings for property owners and occupants, enhance property values, and improve the quality of life for the community.



# Showcase of Successful Sustainable Real Estate Projects

Sustainability in real estate is more than just a buzzword. Across the globe, there are already numerous buildings designed with eco-friendliness in mind. Here are a few examples.

- **The Bullitt Center, Seattle, USA**



Image source: [Bullitt Center](#)

Seattle's Bullitt Center, a six-story office building, aspires to be the world's greenest commercial structure. It redefines real estate by integrating solar panels, and rainwater harvesting achieving net-zero energy and water consumption. With composting, advanced ventilation, and energy efficiency, it exemplifies sustainable construction.



- **The Zero Carbon Building, Hong Kong, HK**



Image source: [CIC-Zero Carbon Park](#)

Hong Kong's Zero Carbon Building holds a platinum LEED certification. Energy-efficient and carbon-neutral, it integrates solar panels, a green roof, and rainwater harvesting for occupants' needs. This remarkable structure proves that sustainability and urban living can coexist harmoniously, setting a new green standard for city real estate.

- **The Museum of Tomorrow, Rio de Janeiro, Brazil**



Image source: [Bernard Lessa / Museum of Tomorrow](#)

Rio's Museum of Tomorrow maximizes rooftop solar energy collection. Rainwater catchers fuel air conditioning for visitors exploring climate change exhibits. A design tailored to sustainability showcases environmental concerns, inspiring visitors to reflect on sustainable living.



# Benefits of Sustainability in Real Estate

Sustainability in real estate brings the following benefits to property owners/ tenants:

## Lower Carbon Footprint

Utilizing energy-efficient materials, renewable energy sources, and water conservation techniques helps in minimizing the environmental impact of buildings. This is not only vital for the global effort to combat climate change but also often a requirement to meet increasingly stringent environmental regulations. According to the World Bank, a 36% reduction<sup>4</sup> in total CO2 emissions in the real estate sector is required by 2030 in order to achieve the 2°C goals set to combat climate change.

## Lower Operational Costs

Sustainability in real estate can reduce long-term operational and maintenance costs by up to 12%<sup>5</sup>. This is achieved through the use of energy-efficient materials, renewable energy, and water conservation techniques. Additionally, sustainability increases property values, makes spaces healthier for occupants, and reduces the environmental impact of buildings.

## Increase In Resale Value

Sustainable features in a property not only contribute to environmental conservation but also significantly enhance its resale value. According to JLL research, properties with sustainable features can increase the resale value by as much as 20%<sup>6</sup>. This makes sustainability not only an ethical choice but also a smart financial investment for property owners.

## Boosts Reputation

Embracing sustainable practices not only elevates an organization's image but also bolsters its reputation. Companies with a focus on sustainability tend to attract investors, tenants, and partners who prioritize eco-friendliness. This enhanced perception increases the credibility and appeal of the properties, benefiting all stakeholders involved.

## Healthier Environments

Sustainable designs and construction foster healthier living<sup>7</sup> and working spaces. Integrating green spaces and sustainable landscaping not only enhances visual appeal but also supports mental and physical well-being.

4. <https://www.weforum.org/>

5. <https://smart-cre.com/financial-benefits-of-green-buildings-are-they-expensive/>

6. <https://www.jll.co.uk/en/newsroom/environmentally-sustainable-real-estate-attracts-higher-prices>

7. <https://www.gsa.gov/real-estate/design-and-construction/sustainability/sustainable-design>





# Areas Where Real Estate Sustainability Can Be Applied



Image source: [green building canada](#)

## Construction

Sustainability can be applied in construction to transform the way we build, minimizing environmental impact and setting the stage for eco-friendly properties. Here is how:



### Building Sustainable Houses

This involves designing houses that use eco-friendly materials, energy-efficient techniques, and smart technologies. The designs save energy, minimize water use, ensure good indoor air quality, and harness renewable energy sources.

By blending eco-friendly practices like top-notch insulation, effective HVAC systems, and smart tech, property developers can shape homes that contribute to a greener and more sustainable future.



### ESG (Environment, Social, Governance)

In real estate, ESG involves practices that promote energy efficiency, sustainable design, community involvement, diversity, ethical governance, and investing responsibly. Embracing ESG<sup>8</sup> principles allows developers to reduce the environmental impact of construction activities, support social welfare, and run operations transparently and responsibly.





Image source: [Sustainable Architecture](#)

## Property Management

Real estate sustainability also extends to the management of constructed properties in the following areas:

### Carbon and Emissions Monitoring

Real-time tracking of carbon emissions throughout a property's lifecycle is a core part of sustainability. It helps find areas with increased ecological footprints and creates ways to counteract them. By using sensors and data analytics, property managers can measure and manage energy consumption, transportation emissions, and waste production. This monitoring enables informed decisions to reduce the overall carbon footprint.

### Energy Monitoring and Optimization

Efficient energy management contributes significantly to sustainability. Real estate managers can study energy patterns to find inefficiencies and apply energy-saving tactics. This might mean using energy-efficient lighting, upgrading insulation, installing smart meters and energy systems, and educating occupants on saving energy. Optimizing energy brings down costs, lowers environmental impact, and boosts property sustainability.

Applying sustainability practices in these areas not only benefits the environment but also enhances long-term financial viability.



# Software for Real Estate Sustainability

As the importance of environmental stewardship grows, so does the demand for software and technologies that help promote sustainable practices within the real estate industry. Here are some software and tools that can help boost sustainable real estate practices:

## Property Emission Monitoring and Reporting

Tracking, reporting, and planning software are vital for assessing a property's carbon footprint and emissions, enabling real estate stakeholders to implement effective reduction strategies.

### Key Features of Tracking Solutions

#### Real-Time Monitoring

Continuously monitor energy consumption, water usage, waste generation, and other environmental metrics, providing real-time data insights.

#### Benchmarking

Compares a property's sustainability performance against industry standards and best practices, identifying areas for improvement.

#### Emissions Reporting

Generates comprehensive reports detailing carbon emissions and environmental impacts, facilitating compliance with regulations and sustainability goals.

#### Predictive Analysis

Utilizes historical data to predict future emissions and resource usage, aiding in proactive planning for sustainability measures.



# Smart Home Solutions

Smart home solutions integrate technology to optimize energy usage and enhance comfort while minimizing environmental impact.

## Key Features of Smart Home Solutions

### Energy Management

Monitors and controls energy consumption through intelligent systems that adjust lighting, heating, cooling, and appliances based on occupancy and preferences.

### Remote Control

Enables residents and property managers to control home systems remotely via mobile apps, reducing unnecessary energy consumption.

### Demand Response

Integrates with energy grids to participate in demand response programs, adjusting energy usage during peak periods to reduce strain on the grid.

### Automated Efficiency

Through the use of smart thermostats, lighting, and appliance controls, energy usage is optimized by adapting to residents' habits and external conditions.

### Energy Analytics

Provides detailed insights into energy consumption patterns, helping residents make informed decisions about energy-efficient practices.



# Property Management Software

Property management software enhances the sustainability of residential properties by streamlining operations and facilitating eco-friendly practices.

## Key Features of Property Management Software

### Energy Analytics Dashboard

Provides real-time data on energy consumption patterns, highlighting areas for improvement and potential energy-saving opportunities.

### Smart Thermostat Control

Allows property managers to set energy-efficient temperatures and schedules, reducing unnecessary energy consumption.

### Transportation Management

Offers solutions like electric vehicle charging station installations, bike-sharing programs, and public transport information to encourage low-emission commuting.

### Tenant Engagement

Provides tools for educating tenants about sustainable practices, encouraging them to participate in reducing resource consumption.

### Solar Integration

Monitors and manages solar panel outputs, helping properties maximize their use of renewable energy sources.

### Green Building Materials Database

Provides information on sustainable construction and insulation materials, promoting eco-friendly renovations and builds.

### Carbon Footprint Calculator

Measures the overall carbon emissions of the property, taking into account all resources and utilities, and provides recommendations for carbon offsetting.

### Maintenance Optimization

Schedules preventive maintenance for HVAC systems, appliances, and other equipment to ensure optimal energy efficiency.

### Waste Management Solutions

Tracks waste production and offers insights into recycling, composting, and other waste reduction strategies.



# Workspace Management Software

Workspace management software contributes to sustainability in commercial real estate by optimizing office spaces for energy efficiency and resource conservation.

## Key Features of Workspace Software

### Occupancy Sensing

Utilizes IoT to detect occupancy, adjusting lighting, heating, and cooling accordingly to minimize energy waste in unoccupied areas.

### Room Booking

Enables employees to reserve meeting rooms and workspaces in advance, avoiding wasted energy in unused spaces.

### Space Utilization

Analyzes how workspace is utilized, helping organizations allocate resources effectively and reduce unnecessary square footage.

### Carbon Offsetting Integration

Offers options for organizations to calculate their carbon footprint and facilitate carbon offset initiatives to neutralize their impact.

Incorporating these software solutions not only drives sustainability but also enhances property value, tenant satisfaction, and operational efficiency. If you are considering to get a custom software product, that's where Oril comes in.





# ORIL's Case Study - gReenvision

At Oril, we have developed several software products for clients in the real estate sector. One of our recent successes involved creating an innovative online tool for gReenvision that allows users to reduce emissions and build a carbon-free world.



## What the Oril Team Did

In just six months, our experts at ORIL built the platform from scratch. A complex algorithm was created to calculate energy requirements for user-defined grids, as well as reveal the environmental impacts and costs of energy consumption.

## Main Features:

- Off-grid home calculator
- Carbon-free energy system designer
- Monthly electric bill estimation
- Mobile-friendly design

## Results:

Green Vision's platform currently serves as a powerful tool at seminars and conferences, advocating for carbon-free energy. Over 1,000 households have joined the journey toward a carbon-neutral future, exemplifying the shared goal of safeguarding our planet.

Green Vision and ORIL's collaboration highlights how technology can drive impactful change, one energy-conscious decision at a time.

To read more about this case study, [click here](#).



# The Future of Real Estate Sustainability

Now that more players in the real estate sector embrace the idea of sustainability, what exactly does the future hold for the industry? The future of real estate sustainability is being shaped by trends that leverage artificial intelligence, data analytics, and transformative designs.

Let's look at a few of them.

## AI Lease Extraction

Green leases, also known as "eco-friendly leases" or "sustainable leases," are lease agreements for commercial or residential properties that include provisions aimed at promoting environmental sustainability and energy efficiency. These leases typically address water efficiency and consumption, energy usage, waste reduction, and other sustainable practices.

In 2023 and beyond, software solutions will leverage artificial intelligence (AI) to automatically extract and analyze key green lease information from real estate contracts and documents like utility bills. This streamlines the process of identifying sustainability-related clauses, such as energy efficiency requirements or waste management guidelines, enabling better management and compliance with sustainability goals.

## Circular Economy Principles

There will be more emphasis on promoting circular economy principles in real estate. This involves integrating zero-waste thinking early in the project, designing buildings and spaces with materials that can be reused, repurposed, or recycled at the end of their life cycles, reducing environmental impact, and fostering sustainable practices.

## AI for Data-Driven Sustainability

Artificial intelligence will be used to analyze vast amounts of data related to energy consumption, water usage, waste generation, and more. By leveraging AI analytics, real estate stakeholders can identify opportunities for energy efficiency, resource optimization, and emissions reduction, leading to more sustainable operations.





### Smart Building Automation

Buildings will become smarter in the future, integrating IoT technology to optimize energy consumption and enhance occupant comfort. By utilizing sensors, data analytics, and automation systems, buildings can adjust lighting, heating, cooling, and other systems in real-time, conserving energy while providing a comfortable environment.

### Net-Zero Energy Buildings

More net-zero energy buildings will be built to meet up with the Net Zero 2050 Paris Agreement.<sup>9</sup> These are buildings that generate as much energy as they consume over a specific period. Through a combination of energy-efficient design, on-site renewable energy sources, and innovative software solutions leveraging AI, these buildings achieve a balance between energy consumption and production, effectively reducing their carbon emissions.

### Regenerative Designs

More and more developers will integrate regenerative designs into their buildings to achieve sustainability and actively restore and improve ecosystems. These designs incorporate elements like green roofs, rainwater harvesting, and biodiversity enhancement. The goal is to create spaces that contribute positively to the environment, enhancing natural resources and ecosystems.



## Conclusion

For a brighter, eco-friendly future, it's imperative for those in the real estate sector to not just follow, but lead the charge in sustainability.

A pivotal step in this direction is harnessing software tools that can accurately gauge and manage the environmental repercussions of construction, minimize carbon emissions, and enhance energy efficiency. By integrating these advanced tools, property managers and developers can make informed decisions that prioritize the planet's well-being.

Furthermore, as consumers become more environmentally conscious, properties that emphasize sustainability will not only benefit the environment but also attract a larger audience. Ultimately, the real estate industry has a significant role to play in shaping our planet's future, and with the right tools and commitment, it can set a benchmark for other sectors to follow.

## About ORIL

ORIL is an experienced software development company and design agency, enabling PropTech, HealthTech, and FinTech, among other industries, to optimize digital-first strategies with intuitive and easy-to-use digital solutions. Among the services that we specialize in include UI/UX design, product development, IoT development, digital transformation, and dedicated teams. Since 2015, we have built an expansive team that has delivered 50+ projects and managed to maintain a 2-year average client engagement rate.

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