



Achieving sustainability goals with BIM

How organizations can achieve their sustainability mandates by using Building Information Management (BIM)

A BSI whitepaper



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Introduction

BSI is firmly committed to promoting the use of BIM (building information modelling) in the built environment to achieve sustainable outcomes in the industry. We are therefore keen to highlight the benefits BIM can bring to these outcomes, to the organizations that pursue them, and to the communities they serve.

This BSI whitepaper focuses on how organizations can support their sustainability mandates by using BIM. It is informed by a BSI's interactions with key industry stakeholders, which have explored how fundamental elements of BIM can help drive and improve sustainability in the built environment.

With regards to sustainability goals, In general, the overall ambitions of clients and asset owners include:

- Reduction of construction and whole life costs
- Substantial decrease of environmental impact
- Prepared response to rapid global urbanization

Carbon sources in the built environment

Carbon sources in the sector are typically divided into two groups:

50% embodied carbons

The sources of which are materials, transportation, construction, and end of life actions.

50% operational carbons

The sources of which are energy and water usage.

We hope that as well as sharing key insights from industry peers, the paper will create greater awareness of the benefits of harnessing BIM to drive more sustainable outcomes, and encourages organizations to incorporate BIM into their wider digital transformation planning.



Explaining BIM?

While the history of BIM dates back several decades, its benefits really began in the mid-2000's as digitalization started to transform construction. BIM is an information management process underpinned by collaborative working and digital technologies. It uses a shared digital representation of an asset to facilitate design, construction and operation processes to form a reliable basis for decisions.

Greater efficiencies can be realized due to significant preplanning during the design and construction phases, providing comprehensive information at handover stage. BIM is all about collaboration – between engineers, owners, architects and contractors in a three-dimensional virtual construction environment – a common data environment – and it shares information across these disciplines.



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Digital technologies are the foundation of realising a vision of a more sustainable world. We're seeing more and more companies utilizing IoTs, sensors, and smart technologies to capture, measure and monitor carbon usage and productivity.

Supporting sustainability goals

This structured and collaborative environment is also critical to implement data-driven sustainability programs, allowing for greater transparency, efficiency, and control of building systems.

So, how is BIM supporting your sustainability goals?

In today's world, achieving sustainability goals has become a crucial aspect of the construction industry. The built environment is responsible for a significant percentage of the world's greenhouse gas emissions, and as such, it is imperative to find ways to reduce the impact of built assets on the environment.

- **Energy**
- **Water efficiency**
- **Waste reduction**
- **Quality**

BIM is a powerful tool that can help organizations achieve their sustainability goals by providing them with the necessary data and insights to make informed decisions throughout the lifecycle of a building, supporting goals in many key areas of sustainability, including energy and water efficiency, waste reduction, and others.

Energy

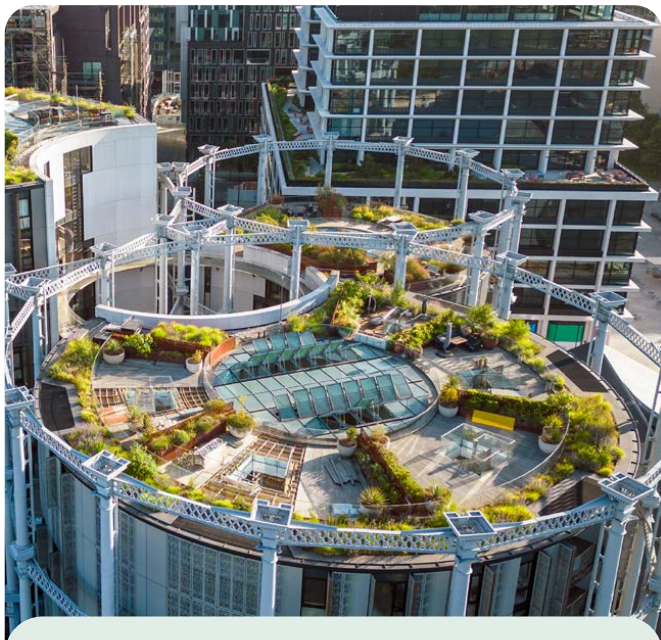
The energy efficiency of buildings is a critical area of concern for organizations looking to achieve their sustainability goals. BIM can support these goals by providing access to critical data that can help in the decision-making process. For instance, BIM can be used to ensure that the HVAC system is appropriately sized preventing a lifetime of overconsumption of energy. By using the information available in BIM, organizations can identify a multitude of areas where energy can be reduced, and reuse models to efficiency of future projects.

Organizations can also use BIM to set parameters for energy consumption and set energy goals. By advocating for these goals with clients, organizations can ensure that their buildings are built and operated with sustainability in mind. Using a simulator with a BIM model, organizations can configure schedules and weather based on local environmental conditions, occupancy types, and other factors, which can help reduce energy consumption.



BIM can help:

- Set parameters for energy consumption
- Identify multiple areas where energy can be reduced



BIM can help:

- Monitor water usage in real time
- Manage stormwater to make reuse more effective

Water

Water is another critical area where BIM can support sustainability goals. By using materials wisely and incorporating motion sensors, organizations can improve efficiency and reduce the amount of water used. BIM can also be used to establish green roofs, which can earn green credits, particularly in airports.

BIM can be used to monitor water usage in real-time, enabling organizations to identify areas where water usage can be reduced. By showing the owner the cost savings associated with these changes, organizations can encourage the adoption of sustainable practices. Additionally, BIM can be used to manage stormwater, reusing it in the construction process or using a predictive solution to manage it more effectively. Models of stormwater runoff can be created using BIM helping organizations plan for climate risk adaptation strategies including flood prevention.



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Our purpose is partnering with clients and accelerating progress towards a safer and more sustainable world. We can also empower the employees through training, so businesses can implement best practises. It's support every step of the way.

Waste

BIM's focus on efficiencies and reduction of waste can also support sustainability goals related to waste reduction in the built environment. The software allows for better collaboration among the entire construction team, from architects to contractors, to establish more efficient and sustainable building practices.

For example, BIM can be used to establish just-in-time planning for materials and scheduling, reducing waste during construction. The software can also support efficient responses to RFIs, with design changes documented and communicated across the entire construction team. By using the most accurate model in the BIM system, waste can be reduced by minimizing rework and reducing errors.

BIM can help:

- Just-in-time planning for materials reducing construction waste
- Waste reduction by minimizing rework and errors

Quality

Ensuring the quality of construction is another critical area where BIM can support sustainability goals. BIM enables general contractors to have a model that shows them what materials to use, which can help reduce waste. Collaboration between the entire construction team is critical to ensuring that the model is accurate and up to date. By scheduling just-in-time planning, organizations can ensure that materials are delivered to the construction site when they are needed, reducing the amount of waste produced.

BIM can also be used to respond to requests for information (RFIs) quickly. By making design changes based on team feedback, organizations can ensure that the final product meets sustainability goals. Using the most accurate model in the BIM process is critical to ensuring that the building meets sustainability goals.

BIM can help:

- Quick responses to RFIs
- Provide a model for general contractors to show what materials are to be used



Next steps: How BSI can help

BSI is committed to supporting the built environment industry in meeting its challenges, from prioritizing people and adopting sustainable practices to innovation and digital transformation. Encouraging the adoption of BIM in support of business sustainability is integral to this goal.

To provide confidence and trust in the implementation process for BIM, BSI has developed training programmes and a new management system certification scheme against the requirements of new international standards.

For further information on BSI certification and details of our portfolio of sustainability solutions for the built environment:

Visit: [bsigroup.com](https://www.bsigroup.com)



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About BSI


BSI is the business improvement and standards company that enables organizations to turn standards of best practice into habits of excellence, “inspiring trust for a more resilient world.” For over a century, BSI has driven best practice in organizations around the world. Working with over 77,500 clients across 195 countries, it is a truly global business with skills and experience across all

sectors, including automotive, aerospace, built environment, food and retail and healthcare. Through its expertise in Standards and Knowledge, Assurance Services, Regulatory Services and Consulting Services, BSI helps clients to improve their performance, grow sustainably, manage risk, and ultimately become more resilient.

Note: As an accredited certification body, BSI Assurance cannot offer certification to clients where they have also received consultancy from another part of BSI Group for the same management system. Likewise, we do not offer consultancy to clients when they seek certification to the same management system.



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