

Digital–Sustainability integration in UK Housebuilding: A Taylor Wimpey Case Study

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ABSTRACT

This research investigates how digital transformation supports sustainability outcomes in UK volume housebuilding, using Taylor Wimpey as a focused case study. Through a Systematic Literature Review (SLR), the study synthesises academic evidence, policy frameworks and corporate ESG reporting to examine the interactions between digital workflows, environmental performance, and regulatory pressures. Findings show that digital tools such as BIM, Common Data Environments and dashboards enhance carbon tracking, waste reduction and transparency. Regulatory mechanisms—including Biodiversity Net Gain (BNG) and the Future Homes Standard (FHS)—act as strong catalysts for digital adoption. While large developers demonstrate progress, industry-wide capability gaps remain. The study contributes a clearer understanding of digital–sustainability integration and highlights organisational governance as a critical enabler.

INTRODUCTION

The UK construction industry faces growing pressure to meet environmental commitments while adopting digital technologies to improve efficiency and compliance. Housebuilders are shifting toward data-driven workflows to meet new legal requirements for carbon, biodiversity, and energy performance. Taylor Wimpey provides a strong example of how a large developer integrates digitalisation with sustainability, supported by detailed annual ESG reports. This research aims to assess how digital tools influence sustainability outcomes and how regulation shapes organisational strategy.

SYSTEMATIC LITERATURE REVIEW (SLR)

A Systematic Literature Review was chosen to ensure academic rigour, transparency, and replicable results. The SLR followed PRISMA 2020 guidelines, enabling a structured comparison of diverse evidence across academic studies, government publications, industry reports and Taylor Wimpey’s corporate disclosures.

Search Sources Included: Google Scholar, Science Direct, Taylor & Francis, Emerald Insight, GOV.UK (DLUHC, DEFRA, DESNZ), and Taylor Wimpey Annual and Sustainability Reports (2019–2024).

Inclusion Criteria: 2020–2025 publications; UK focus; links to digitalisation, sustainability, housebuilding or ESG.

Exclusion Criteria: Non-English, opinion articles, marketing materials, pre-2019 sources (unless foundational).

PRISMA Output: 200 records identified - 65 screened - 52 reviewed - 45 included.

RESULTS

The findings combine evidence from the Systematic Literature Review and Taylor Wimpey’s 2019–2024 sustainability data. Results show that digital transformation has become a core driver of performance improvements across environmental, operational, and governance areas.

1. Environmental Performance Improvements

Digital tools significantly strengthened Taylor Wimpey’s environmental outcomes. Carbon emissions intensity dropped from 1.62 tCO₂e/100 m² in 2019 to 1.27 in 2024, despite temporary rises in 2020 and 2023 (figure 1). This reflects improved energy modelling, digital site monitoring, and more efficient materials scheduling enabled by BIM and CDE workflows. Digital waste-tracking systems improved segregation accuracy and reporting transparency.

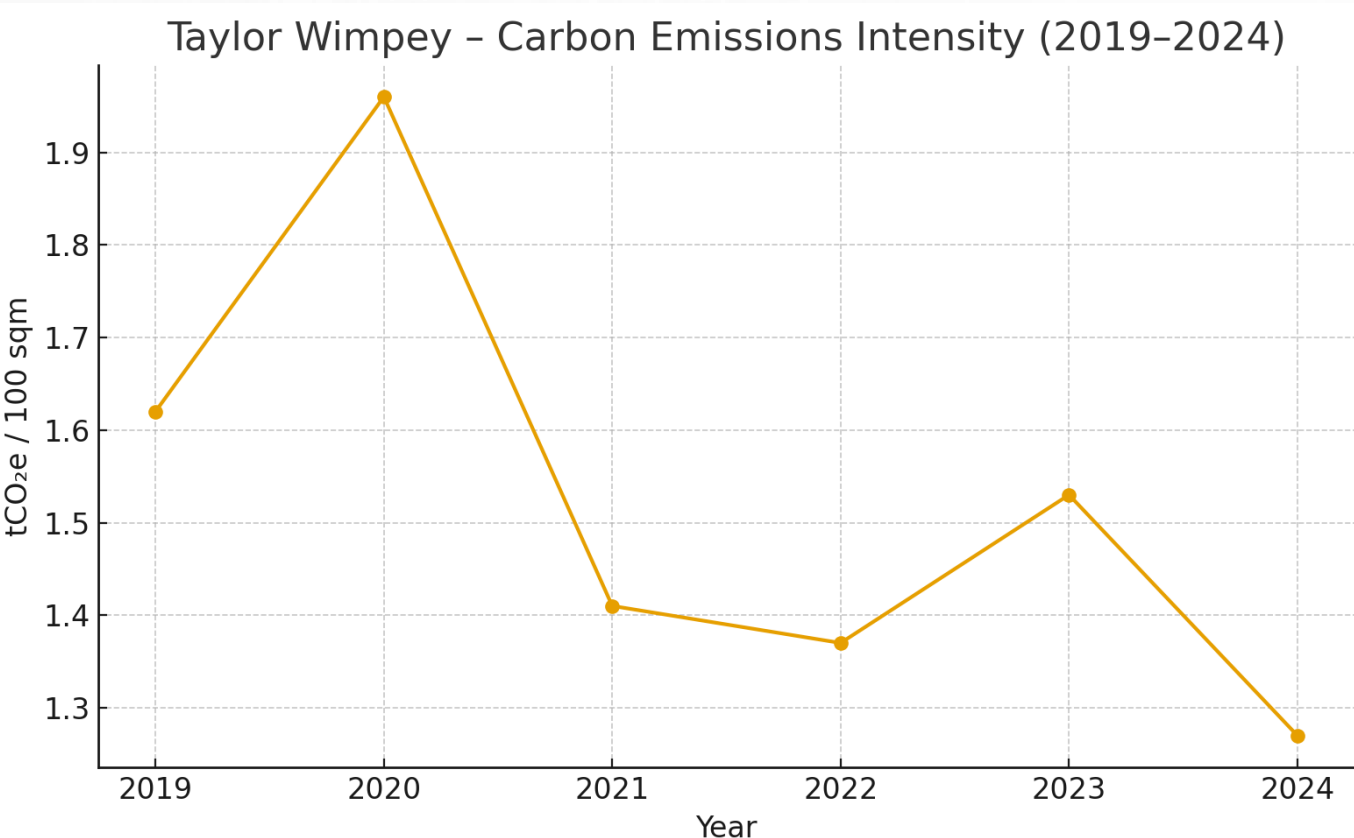


Figure 1. Taylor Wimpey’s environmental outcomes

2. Operational and Market Performance

Despite market volatility, Taylor Wimpey maintained resilience. Home completions recovered strongly after COVID-19—from 9,799 homes in 2020 to 14,154 in 2022, before stabilising around 10,900 in 2023–2024 (figure 2).

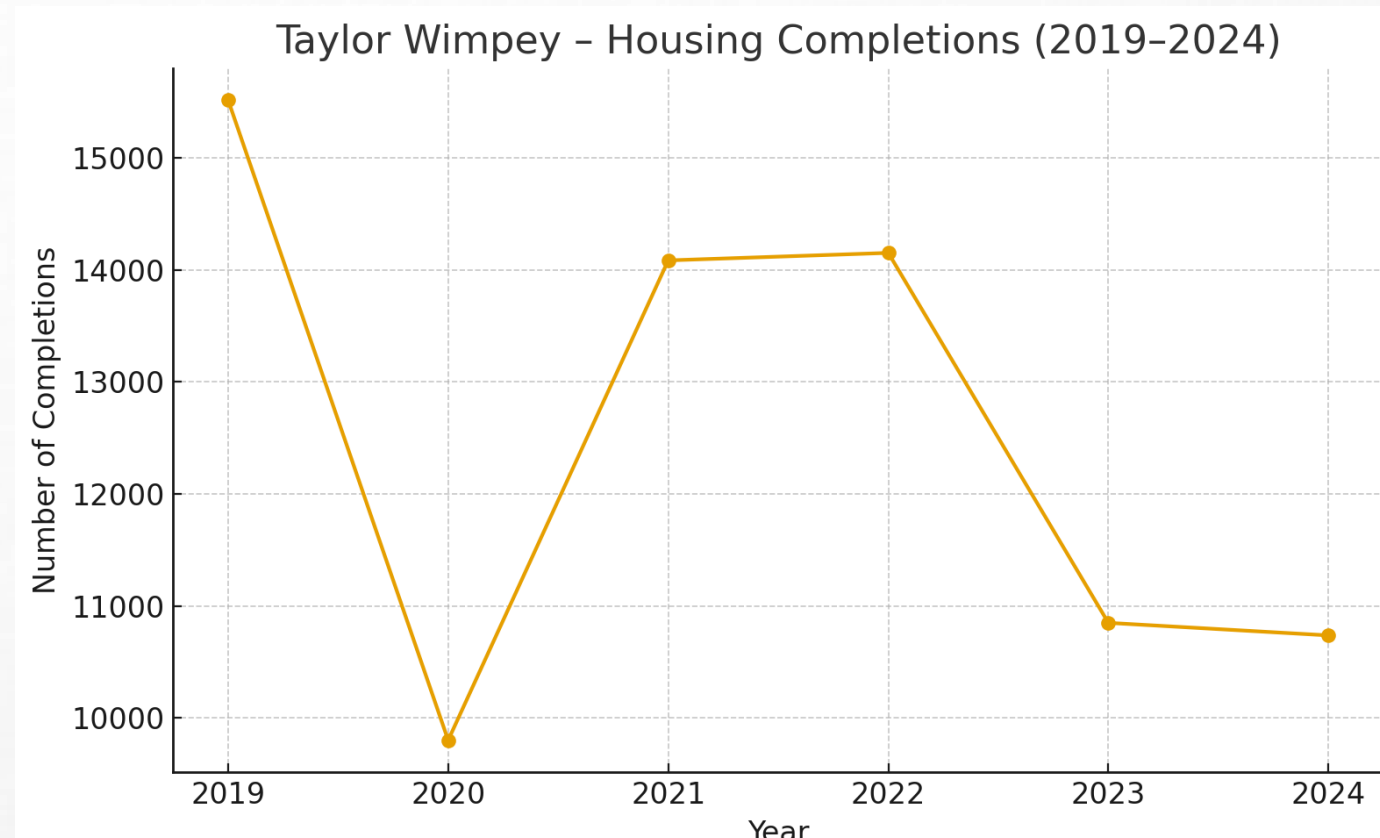


Figure 2. Taylor Wimpey’s housing completions

3. Governance and ESG Maturity

Sustainability governance strengthened significantly. Table 2 shows a steady rise in carbon reductions (30% → 61%), consistently 98% waste recycling, and improvements in the NextGeneration ESG ranking (Silver → Gold) between 2019–2024. Digital systems ensured higher reporting quality, supporting TCFD, SASB, and SBTi compliance by 2024.

METHODOLOGY

The review used a thematic coding approach to identify patterns across the selected literature. Key themes included:

- Digital transformation technologies (BIM, CDE, modelling)
- Environmental sustainability (carbon, waste, biodiversity)
- Regulatory frameworks (BNG, FHS, HEM)
- Governance and organisational capability
- Barriers to integration

Corporate ESG data from Taylor Wimpey was analysed in parallel to academic sources to illustrate real-world application.

4. Integration of Digital Workflows

BIM, CDEs, digital supply-chain tracking, and energy-modelling tools were widely adopted between 2019–2024 (Table 1). These systems improved design coordination, supported BNG habitat calculations, and ensured accurate energy-performance modelling for Future Homes Standard readiness.

Table 1. Taylor Wimpey’s digital adoption	
Year	Key Digital Adoption Milestones
2019	Early BIM coordination pilots; initial testing of Common Data Environment (CDE) workflows; standardisation of digital design files.
2020	Rapid shift to remote digital workflows due to COVID-19; expanded use of digital approvals, remote inspections and online customer communication platforms.
2021	Wider BIM integration for design coordination; introduction of digital health & safety dashboards; progress on data standardisation across regions.
2022	Large-scale CDE rollout; implementation of digital supply-chain tracking; analytics dashboards for programme, waste and energy monitoring.
2023	Launch of digital customer journey platform; deployment of digital energy-modelling tools; expansion of digital materials traceability.
2024	Advanced CDE integration; development of automation pilots; strengthening digital customer-service systems and data-governance processes.

Table 2. Taylor Wimpey’s environmental outcomes and benchmark rating

Year	Carbon Intensity Reduction vs 2013	Waste Recycling (%)	Next Generation ESG Benchmark Rating
Baseline			
2019	30%	96%	Silver
2020	35%	97%	Silver
2021	45%	97%	Silver–Gold Transition
2022	53%	98%	Gold
2023	58%	98%	Gold
2024	61%	98%	Gold

DISCUSSION

The findings show strong synergy between digital transformation and sustainability outcomes. Digital tools enable more reliable data, which supports regulatory compliance and drives operational improvements. However, challenges remain: inconsistent supplier data, digital skills shortages, and cost barriers for SMEs. Corporate governance emerged as a critical enabler of successful integration, influencing data quality and reporting accuracy. Industry readiness is uneven, indicating a need for digital skills investment and harmonised ESG reporting frameworks.

CONCLUSION

Digital transformation is essential for meeting environmental standards in UK housebuilding. Taylor Wimpey’s progress demonstrates the value of strong governance, strategic investment in digital systems and commitment to long-term sustainability targets. While the sector is moving in a positive direction, achieving consistent national performance will require upskilling, improved data harmonisation and stronger integration of digital tools across all stages of construction.