

## RESEARCH ARTICLE

# Sustainability assessment frameworks for delivering Environmental, Social, and Governance (ESG) targets: A case of Building Research Establishment Environmental Assessment Method (BREEAM) UK New Construction

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## Abstract

Due to the potential role of the construction industry in addressing the global challenge of climate change, stakeholders are beginning to develop the environmental, social and governance (ESG) framework. Prior to this, several assessment frameworks such as the building research establishment environmental assessment methods (BREEAM), LEED, and Green Star Certification amongst others have evolved to evaluate a development against an array of sustainability indicators. Through document analysis, this paper explores the extent sustainability assessment frameworks can help UK construction companies demonstrate their commitment to ESG targets. Findings show that although the BREEAM assessment framework captured environmental and social aspects to some extent, there appears to be much desired in its consideration for governance issues. Subsequent versions of the assessment frameworks should attempt to include some of these credits that are not currently included in the framework to guarantee stakeholders that the uptake of the framework in the decision-making process would help to deliver ESG targets.

## KEYWORDS

BREEAM UK new construction, climate change, construction industry, decision-making, ESG, stakeholders, sustainability assessment framework, UK

## 1 | INTRODUCTION

The 2022 United Nations (UN) Intergovernmental Panel on Climate Change (IPCC) conference presented a picture of the current condition in the battle for sustainable development. It noted that humanity is at crossroads requiring timely decision to secure a liveable future (UNEP, 2023). Prior to this, there have been several interventions to reduce the various but connected sustainability challenges. At the global level, the UN adopted the sustainable development goals (SDGs) and the New Urban Agenda (UN, 2015;

UN, 2016). In addition, is the Urban Sustainability Framework published by the World Bank Group to help cities understand their sustainability status and define a vision with priorities (WBG, 2018). This shows that there is general global concern about the environment that the different goals and frameworks are keen to address. At the national level, several countries have demonstrated commitment to deliver sustainability targets. In 2019, the UK government initiated the world's most ambitious climate change target to reduce carbon emissions by 78% by the year 2035 (DBEIS, 2023), and 100% (net zero carbon) by 2050. In fact, all companies bidding

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for government contracts more than £5 m must now commit to net zero by 2050.

Although the need for sustainable futures has been advocated in several industries such as finance, accounting, healthcare, mining, and transportation, the perceived demand on (and significance of) the construction industry as a potential driver for change is not surprising (Sanchez-Planelles et al., 2022; van Zanten & van Tulder, 2021) despite the limited knowledge about the progress towards SDGs at the organisational level (Heras-Saizarbitoria et al., 2021). It has been documented that buildings are responsible for 40% of global energy consumption, a quarter of global water usage, and a third of greenhouse gas emissions (Edwards, 2014). It is noteworthy that this goes beyond environmental concerns to social and governance aspects. It extends to other issues relating to health and wellbeing; community participation; equality, diversity, and inclusion amongst others. This agrees with the definition that sustainability should promote and deliver places where people can live and enjoy good quality life involving not just the product but must be clear in the processes and procedures (Barton et al., 2010).

To this end, several methodologies have evolved in the construction industry to deliver sustainability targets—one is the recently developed environmental, social and governance (ESG) framework which helps to report the ESG impacts of a company's business activities. Similarly, several assessment frameworks have emerged in various countries through which the sustainability credential of a proposed development can be determined. These include building research establishment environmental assessment methods (BREEAM) UK; Leadership in Environmental and Energy Design (LEED), US; Green Star Certification in South Africa; and CASBE in Japan etc. Because sustainability solutions are context driven as argued by Fischer and Onyango (2012), these assessment frameworks have continued to thrive in countries where they have been developed.

With several stakeholders in the construction industry currently exploring ESG reporting—a mechanism which according to Sciarelli et al. (2021) and Aliani et al. (2024) has the potential to influence the decision-making process of investors (on whether or not to engage in a business transaction with a company), it is important to explore how well the uptake of an assessment framework can help a construction business deliver on ESG targets. The key question is that, how does the assessment framework map with the ideals and key aspects of ESG reporting from the perspective of the construction industry?

The rationale of this paper is quite clear. According to Wortley et al. (2022), not every stakeholder in the construction industry may want to develop a unique or distinct ESG reporting framework. This is because, some may wish to implement one of the various ESG-related initiatives such as the assessment frameworks. This idea has not only been adopted in the UK but also in countries like Canada where the Leadership in Energy and Environmental and Design (LEED) and Investor Confidence Project are being implemented. To this end, as explored in other contexts, it is important to investigate how an assessment framework (BREEAM in this instance) aligns with ESG targets in the UK context. Whilst several studies such as Wangel et al. (2016); Sharifi et al. (2021); Amoah-Korsah et al. (2022) have explored

the significance of assessment frameworks in delivering sustainability targets, there appears to be no evidence of a study to explore assessment frameworks from the perspective of the ESG reporting framework for construction businesses. This is a gap that this paper seeks to address.

Established in 1990, BREEAM is the first assessment framework globally which has attracted wide acceptance and usage in UK and in some European countries through the national scheme operators (NSO). Whilst BREEAM has remained a voluntary tool used in the UK, some local councils and boroughs are now making this mandatory for new developments to demonstrate political willingness towards enhancing sustainability strategy. For example, Doncaster Metropolitan Borough Council requires developers to achieve the 'very good' rating whilst Camden Council and others require the 'Excellent' rating.

The aim of this paper is to explore the extent to which assessment frameworks could deliver on ESG targets for construction company using the case of BREEAM UK New Construction. How would the uptake of BREEAM UK New Construction UK help construction businesses deliver on environmental social and governance targets is the main question that this article seeks to answer. This is to support or dispel the claim that assessment frameworks can help to achieve ESG targets for construction. More importantly, it is to identify gaps that needs to be addressed in the revision of BREEAM UK New Construction so that the framework would serve as a one-stop shop for achieving overall sustainability concerns for construction businesses.

This paper is therefore structured as follows; Section 2 presents the discourse in UK construction industry and the quest for sustainability; it gives an overview of the BREEAM methodology; and concludes the ESG reporting a concept in the construction industry. Section 3 delivers the methodology for this study while Section 4 presents the results and findings. The discussion and conclusion are presented in sections 5 and 6, respectively.

## 1.1 | Meaning of sustainable construction

The Rio Earth Summit of 1992 heralded the concept of sustainability as a public agenda (Myers, 2004) which has been explored in various disciplines such as accounting, finance, transport, tourism, and health care etc. The construction industry which has been quite beneficial in providing social and physical infrastructure is not left out because of its huge contribution to greenhouse gas emission, biodiversity loss, and resource scarcity. In the UK, the construction industry accounts for up to 50% of energy consumption with energy usage in buildings being more than 50% of all carbon emissions (Climate Change Committee, 2020). Besides this, is the consumption of land space (Opoku & Ahmed, 2013); 12%–16% of available water, and 32% of renewable and non-renewable resources (Darko et al., 2017). This is not to mention the creation of up to 19% of total UK waste materials (Wang et al., 2014).

To this end, the term sustainable construction emerged which Opoku and Ahmed (2013) defined as the construction that delivers

the required performance with the least unfavourable ecological impacts while encouraging economic, social and cultural improvement at local, regional and global levels. It a process with the incorporation of the triple bottom line (TBL) to achieve sustainable outcomes with a high sense of responsibility to the environment, social awareness, and economic prosperity to the wider environment (Durdyev et al., 2018; Khalfan, 2006). Overall, the practice involves various aspects relating to engineering, planning, regulations, supply chain, procurement, innovation, skills, economics, and market effect amongst others (Ravetz, 2008).

## 1.2 | UK construction industry and strategies for sustainability

The UK construction industry witnessed series of reform strategies and government initiatives tailored towards sustainable construction in the first decade of the 20th century as documented in Egan (1998), Fairclough report (Fairclough, 2002) and Office of the Deputy Prime Minister (2003). The dominant theme in all these is the need to deviate from the traditional fragmented process of doing things and adopt more innovative and sustainable approaches that would enhance safety on site, promote efficient resource management whilst reducing wastes, and encourage discussion with critical stakeholders amongst others for a more sustainable outlook. According to Myers (2005), there are urgent concerns for the construction industry to be able to deliver both social and environmental benefits. Some of the ways to operationalise this in the UK context include:

1. Minimising energy consumptions (Gottsche et al., 2016);
2. Reuse and recycling of construction materials (Essex & Whelan, 2010), sustainable procurement and use of sustainable building material (Brooks & Rich, 2016), and so forth.

Undoubtedly, the environmental aspect has attracted the widest attention with the call for net zero carbon building becoming a recurring theme in the UK construction industry. To this end, the quest for sustainable outcome of a building project from cradle to grave has continued to gain momentum in the UK. Recently, the new building regulations took effect with the following key changes to the existing one; new-build homes will need to deliver at least 31% less carbon emissions encouraging the use of electric heating systems combined with renewable energy sources. Secondly, new non-domestic builds will need to achieve at least 27% less carbon emissions with similar low energy measures to the previous in place. The changes also address minimum energy efficiency standards recommended in domestic builds, U-value for walls will be 0.18 W/m<sup>2</sup> K, windows, roof lights, and doors will be 1.4 W/m<sup>2</sup> K. Also, the new approved document 'O' introduces glazing limits in new build homes, care homes, schools, and student accommodation to reduce unwanted solar gain with new levels of cross-ventilation (Williams, 2022).

Also, it is important to note the Energy Company Obligation (ECO) which has been in operation since 2013 as a government

energy efficiency scheme to obligate large suppliers to deliver energy efficiency measures to domestic premises in the UK. Through this scheme, medium and larger energy suppliers fund the installation of energy efficiency measures in British households by working with installers to introduce certain efficiency measures in homes such as cavity wall insulation, loft insulation, and gas boiler replacement amongst others. Although recently closed, the Domestic Renewable Heat Incentive (DRHI) as another strategy is a governmental financial incentive to promote the use of renewable heat which can help reduce carbon emissions and meet the UK's renewable energy targets with claims for biomass boilers, solar water heating, and certain heat pumps. It is however important to note that the Energy Performance of Building Directive (EPBD) which requires energy performance certificate (EPC) and display energy certificate (DEC) for small and large buildings is to make the energy efficiency of the buildings transparent. The initial requirement as of April 2018 is that any properties rented out in the private rented sector is to have a minimum EPC of E. However, the government made changes to this in late 2021 that by 2025, all rental properties will need an EPC rating of C to ensure that homes are energy efficient in line with net-zero carbon target by 2050.

As observed, besides government interventions, several institutes in the built environment have expressed their interest to ensure that sustainable construction thrives in the UK whilst also enhancing the delivery of the SDGs as highlighted hereafter.

1. UK Green Building Council (UKGBC) presented a framework for the UK construction and property industry with a vision that all new and existing buildings are to become net zero carbon by 2050 in agreement with the Paris Climate Agreement (UKGBC, 2019).
2. The Royal Institute of British Architects (RIBA) 2030 climate challenge was developed to set targets for architectural practices on how they could contribute to carbon reduction (RIBA, 2021). RIBA (2019) noted that the UN SDGs is achievable in practice by categorising the goals under four overarching themes of human rights (SDG1, SDG2, SDG3, SDG4, SDG6, and SDG17); labour laws (SD5, SDG8, SDG9, SDG10, and SDG17); the environment (SDG7, SDG11, SDG12, SDG13, SDG14, SDG15, and SDG17); anti-corruption and bribery (SDG16 and SDG17). The institute reported what architects can do to deliver each of the themes. For instance, through review of business and employment policies; implementing standards and guidance; developing construction strategies; commitment to support an ethical supply chain; and producing a slavery and human trafficking statement SDGs related to labour laws.
3. The Chartered Institute of Building Services Engineers (CIBSE) came up with the CIBSE Climate Action Plan having recognised the crucial role of building services engineers in ensuring that buildings are environment friendly and energy efficient (CIBSE, 2022). The plan for instance advocated the need to produce a large range of new and updated guidance on topics related to heat pumps, embodied carbon, and building performance modelling.

4. The Royal Institution of Chartered Surveyors (RICS) is also championing and encouraging practices that are sustainable having alluded to the fact that the built environment is responsible for around 40% of global carbon emissions (RICS, 2022a). RICS sustainability strategy supports 6 out of the 17 strategies (RICS, 2022b). These are: SDG9: industry, innovation, and infrastructure; SDG10: sustainable cities and communities; SDG12: responsible consumption and production; SDG13: climate action; SDG15: life on land; and SDG17: partnerships for the goals.

Consequently, to demonstrate adherence to sustainability targets, most companies in the construction industry have begun to present what is known as ESG reporting which is explored in the next section.

### 1.3 | ESG reporting in the construction industry

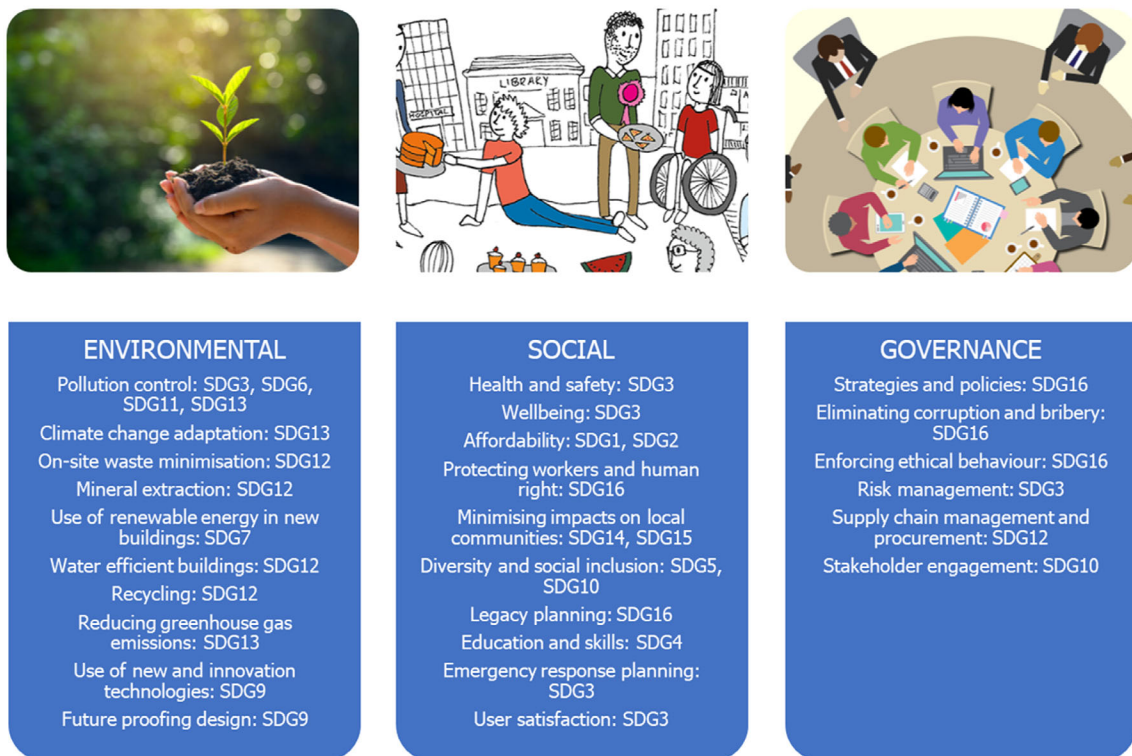
ESG reporting is a process of analysing the environmental, social, and governance practices of a company (Morrison, 2022). It is a comprehensive framework which enables an organisation's business practices and performance to be evaluated across a range of sustainability and ethical issues (Gillan & Starks, 2021). According to GlobalData (2021), the environmental performance measures the energy a company consumes, the wastes generated, use of natural resources, and the effects on the ecosystem and habits. Social performance measures capture stakeholders' engagement, relationship with local communities,

diversity and inclusion, and health and safety amongst others. Governance assesses the policies, practices, and procedures taken by a company to inform business decisions whilst complying with the law and meeting obligations. With a more holistic view, ESG reporting can enhance corporate information quality, increase alignment with societal norms regarding accountability, transparency and sustainability objectives whilst improving reputation and corporate image (Reber et al., 2022).

Although whilst this concept is relatively new in the construction industry, it has gradually been gaining momentum in other disciplines such as management and financial studies as reported in Ma (2023). Although there some differences, it is most at times used interchangeably for corporate social responsibility (CSR) which are activities which help companies to manage their resource utilisation, emissions, and waste (Chang et al., 2021). However, Karwowski and Raulinajtys-Grzybek (2021) noted ESG is a result of the further development of CSR. Overall ESG reporting provides stakeholders with visual evidence of their commitment to green development and sustainable development efforts (Li et al., 2018; Yang & Han, 2023).

Broadly, ESG considerations in the context of construction industry entails the following aspects as illustrated in Figure 1:

It is of note that the uptake of these in the planning, design and delivery of buildings has some key benefits as documented in literature. These are tax credits, performance guarantees, financial savings derived from sustainable projects, conservation of natural resources, and minimisation of carbon output (Batsche & Reizen, 2022).



**FIGURE 1** Conceptualising environmental, social and governance (ESG) targets in the context of the construction industry and the associated Sustainable Development Goals (SDGs). Source: Adapted after UN (2015), Forristal et al. (2021) and Allianz (2022), Taylor Wimpey (2021).

It is important to emphasise that prior to the emergence of ESG reporting and its subsequent campaigns which has been triggered by global impacts of climate change, several concepts have emerged to address environmental, social, and governance concerns. It is predicted that ESG initiatives will continue to increase as government and all relevant stakeholders continue their quest and desire to reduce emissions, deliver more sustainable outcomes, and most importantly providing investor stability (Forristal et al., 2021).

However, according to Richardson (2021), most construction companies are still at the learning phase in developing a suitable methodology to track the ESG metrics across their construction portfolio and how to measure the impact and success of ESG. Nevertheless, there has been intensified efforts to ensure that construction industry is not left isolated in this movement where companies are enjoined to address the social and environmental impacts of their activities. Moreover, Low et al. (2023) noted that investors are now keen to do business with companies with strong ESG reporting and can demonstrate resilience, improved efficiency, decreased resource efficiency, whilst also attracting new customers and employee.

Before ESG and even till now, most companies as a means of measuring sustainability adopt the corporate social responsibility (CSR) reporting to provide information relating to social, environmental, and economics performance to respective stakeholders. Besides the CSR, the use of assessment frameworks such as BREEAM has been adopted by some construction industry in their projects to demonstrate their commitments to environmental social and governance goals to improve image with the public, stakeholders, and employees. Whilst some do not go through the certification process, the uptake of some of the categories has been helpful in the decision-making process of development projects. It is envisaged that perhaps the assessment frameworks could serve as a starting point for the construction industry where the ESG reporting is still at the conceptual stage.

However, the extent to which the assessment framework could help deliver ESG target is an area yet to be explored which is the focus of this paper.

## 1.4 | The BREEAM methodology

BREEAM is the world's first and leading sustainability assessment and certification scheme for the built environment. Established in 1990 by the Building Research Establishment (BRE) global limited, BREEAM through its holistic approach aims to deliver buildings that achieve net zero carbon, whole life performance, health and social impact, circularity and resilience, biodiversity conservation (BRE, 2021). As a sustainability assessment strategy, it has been a useful tool and mechanism to support the decision-making process in planning for urban sustainability for different building types and at various scales of spatial planning. The choice of BREEAM methodology is quite strategic which is because of its affiliation with the UK- one of the first countries to pass laws to end its contribution to the global warming by 2050 through policies and legislations.

To date, it has been applied in over 78 countries to certify over half a million buildings across the building life cycle. It has found wide application for new construction, refurbishment and fit out, in-use, and communities under the following schemes (BREEAM, 2019):

1. BREEAM Communities for master-planning of a larger community of buildings.
2. BREEAM New Construction for new build, domestic and non-domestic buildings.
3. BREEAM New Construction (Infrastructure) for new build infrastructure projects.
4. BREEAM In-Use for existing non-domestic buildings in-use.
5. BREEAM Refurbishment and Fit Out for domestic and non-domestic building fitouts and refurbishments.

This paper will focus on the BREEAM New construction which is the mostly used of the BREEAM family. By its design, it can be used to assess proposed developments that falls under the following non-domestic dwellings categories: office; industrial; retail; education; healthcare; prison; law court; residential institutions; non-residential

**TABLE 1** Building research establishment environmental assessment methods UK new construction assessment categories.

Categories	Weighting			
	Fully fitted out (%)	Simple building (%)	Shell and core (%)	Shell only (%)
Management	11	7.5	11	12
Health and wellbeing	14	16.5	8	7
Energy	16	11.5	14	9.5
Transport	10	11.5	11.5	14.5
Water	7	7.5	7	2
Materials	15	17.5	17.5	22
Waste	6	7	7	8
Land use and ecology	13	15	15	19
Pollution	8	6	9	6
Total	100	100	100	100
Innovation (additional)	10	10	10	10

Source: BRE (2019).

institutions; and assembly and leisure, amongst others. According to BRE (2019), the framework is to help mitigate the life cycle impacts of new development on the environment using a robust and efficient manner. By appointing a licenced BREEAM Assessor, the performance of a building and the anticipated rating can be realised at the early stages of the project—a time where there is greater flexibility and options in implement design solutions.

The BREEAM new construction assessment framework comprises of 10 assessment categories which provides an overarching theme for assessing new developments. These include management; health and wellbeing; energy; water; materials; waste; land use and ecology; pollution; and innovation. BREEAM through the innovation category supports and recognises benefits that are sustainability related but not currently included in the assessment issues and credits. This it does through the availability of additional credits. The weighting of each category varies according to the structure of the development as presented in Table 1.

## 2 | METHODOLOGY

Adopting the case study research strategy, this research explores the extent sustainability assessment frameworks can help UK construction companies demonstrate their commitment to ESG targets. This strategy as espoused by Denscombe (2007), Yin (2009), and Johannesson and Perjons (2014) focuses on one instance (a case) of a phenomenon to study, and analyse events, relationships, experiences, or processes, in great depth, thereby offering a rich description and insight of that phenomenon. Secondary data was sourced by document analysis of technical manual of BREEAM UK New Construction 2018 version 3.0. Following a proper understanding of the BREEAM assessment frameworks in terms of transactive and procedural aspects, the ESG components as it relates to construction industry illustrated in Figure 1 were mapped with the content of the assessment framework. This will be useful to determine how well the uptake of the BREEAM New construction assessment framework can be helpful in delivering the ESG targets.

Document analysis is a systematic procedure which is useful for evaluating documents to provide context, generating questions, and supplementing, other type of research data (Bowen, 2009). This paper

adopted the READ approach to document analysis developed by Dalglish et al. (2020) as illustrated in Figure 2.

It is noteworthy that document analysis has been widely adopted in several studies in built environment research especially as it relates to the sustainability assessment framework as demonstrated in Adewumi et al. (2019) and Sharifi and Murayama (2013).

Also, as the BREEAM New construction can be applied at different stages of the completion of a project (e.g., shell only, shell and core, simple building, and fully fitted out), this paper would focus on the fully fitted out project. According to BRE (2021), in addition to the core, central and localised systems, fully fitted dwellings have additional fixtures and fittings provided to mitigate environmental impacts while the dwelling is in use throughout its life span.

## 3 | RESULTS AND FINDINGS

Through document analysis, the assessment credits of the BREEAM New Construction sustainability assessment framework were extracted and the weighting of each which demonstrates the importance of each credit in planning for a sustainable outcome. This was followed by mapping the 24 ESG targets presented in Figure 1 against the assessment credit to establish the extent in which the uptake of the BREEAM methodology for a new construction could help deliver the ESG target. The result is presented in Table 2.

### 3.1 | Environmental

The BREEAM New construction could help a construction company deliver key environmental aspects in a way to demonstrate commitment to address environmental concerns in development projects. The result showed that 54.13% of the BREEAM weighting addressed environmental concerns.

Out of its 11 environmental themes, reducing greenhouse gas emissions had the highest weighting of 20.53 followed by the use of renewable energy in new buildings with 8.25% and pollution with 8%. The least environmental aspect is climate change adaptation with a percentage of 0.55%. Proactive approaches to reduce greenhouse gas emissions were addressed with 5 credits with sustainable transport measures (Tra 02) having the highest weighting of 8.33% and energy

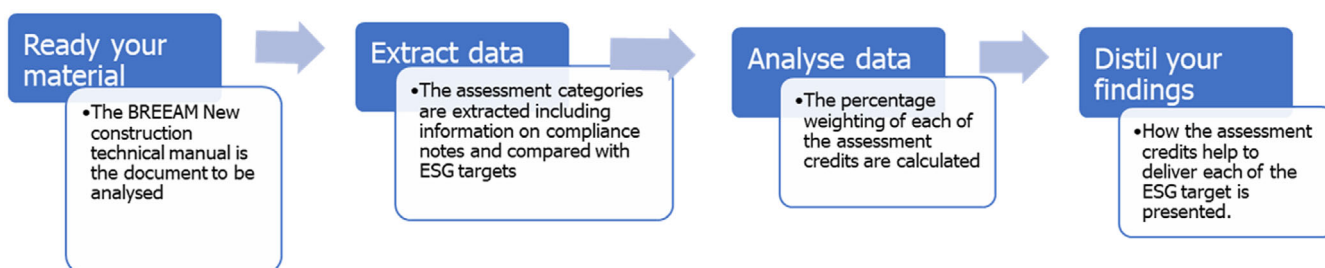


FIGURE 2 The READ approach. Source: Adapted after Dalglish et al. (2020).

**TABLE 2** Mapping of environmental, social and governance (ESG) targets against building research establishment environmental assessment methods (BREEAM) new construction assessment credit.

ESG targets	BREEAM credits (pol—pollution; Wst—waste; mat—materials; Ene—energy; wat—water; Tra—transport; Ene—energy; Le—land use and ecology; man—management; Hea—health and wellbeing) <sup>a</sup>	Percentage weight of credit
<b>Environmental</b>		
Pollution control	Pol 01 Impact of refrigerants	2
	Pol 02 Local air quality (2×)	1.33
	Pol 03 Flood and surface water management	3.33
	Pol 04 Reduction of night time light pollution	0.67
	Pol 05 Reduction of noise pollution	0.67
Climate change adaptation	Wst 05—Adaptation to climate change (2×)	0.55
On-site waste minimisation & Use of natural resources	Wst 01—Construction waste management	2.73
	Wst 03—Operational waste	0.55
Mineral extraction	Mat 06—Material efficiency	1.07
Use of renewable energy in new buildings	Ene 01—Reduction of energy use and carbon emissions	6.71
	Ene 04—Low carbon design	1.54
Water efficient buildings	Wat 01—Water consumption	3.89
	Wat 02—Water monitoring	0.78
	Wat 03—Water leak detection	1.56
	Wat 04—Water efficient equipment	0.78
Recycling	Wst 02—Use of recycled and sustainably sourced aggregates	0.55
Reducing greenhouse gas emissions	Ene 05—Energy efficient cold storage	1.03
	Tra 01—Transport assessment and travel plan (2×)	1.67
	Tra 02—Sustainable transport measures	8.33
	Mat 01—Environmental impacts from construction products (2×)	7.5
	Pol 01—Impacts of refrigerants	2
Use of new and innovation technologies	Ene 07—Energy efficient laboratory systems (2×)	3.81
Future proofing design	Wst 06—Design for disassembly and adaptability	1.09
Total percentage =		54.13%
<b>Social</b>		
Health and safety	Wst 05—Adaptation to climate change	0.55
	LE01—Site selection	2.00
	Man 01—Project brief and design (3×)	2.09
	Man 03—Responsible construction practices	3.14
	Man 05—Aftercare	1.57
Wellbeing	Hea 01—Visual comfort	4.20
	Hea 02—Indoor air quality	2.80
	Hea 04—Thermal comfort	2.10
	Hea 05—Acoustic performance	2.80
	Hea 06—Security	0.70
	Hea 07—Safe and healthy surroundings	1.40
	Tra 01—Transport assessment and travel plan	1.67
	Le 04—Ecological change and enhancement	4.00
Affordability	Man 02—Life cycle cost and service life planning	2.09
User satisfaction	x	
Protecting workers and humans right	x	x
Minimising impacts on local communities	Mat 01—Environmental impacts from construction products	7.5

(Continues)

TABLE 2 (Continued)

ESG targets	BREEAM credits (pol—pollution; Wst—waste; mat—materials; Ene—energy; wat—water; Tra—transport; Ene—energy; Le—land use and ecology; man—management; Hea—health and wellbeing) <sup>a</sup>	Percentage weight of credit
Diversity and social inclusion	Man 01—Project brief and design	2.09
Legacy planning	x	x
Education and skills	x	x
Emergency response planning	x	x
Total percentage =		43.16%
Governance		
Strategies and policies	x	x
Eliminating corruption and bribery	x	x
Enforcing Ethical behaviour	x	x
Risk management	Le 02—Ecological risks and opportunities	2.00
Supply chain management and procurement	Mat 03—Responsible sourcing of construction products	8.07
	Wst 04—Speculative finishes	0.55
	Man 02—Life cycle and service life planning	2.09
Stakeholder engagement	Man 01—Project brief and design (3×)	2.09
Total percentage =		14.8%

<sup>a</sup>The percentage weight of credit was calculated using this formula: total weight of category multiply by (no of credits available for the assessment issue divided by total number of credits for category).

efficient cold storage (Ene 05) with the least weighting of 1.03%. Use of renewable energy system in new buildings is to be delivered with two main credits. These are reduction of energy use and carbon emissions (Ene 01) with a weighting of 6.71% and low carbon design (Ene 04) with a weighting of 1.54%. Although with a small weighting of 1.09%, it is interesting to note that there is consideration for future proofing design as an element of ESG which is demonstrated by design for disassembly and adaptability (Wst 06). In terms of materials and resources, the BREEAM New construction attempts to prioritise use waste management and reduction with no particular emphasis on renewable materials.

### 3.2 | Social

The BREEAM new construction focuses on key social aspect whose uptake could be useful to help a developer demonstrate commitment to this component of the ESG. This addresses concerns relating to health and safety; wellbeing; and minimising impacts on local communities amongst others. The result showed that 43.16% of the total weighting of the assessment framework is centred on this.

Out of the seven social ESG themes, wellbeing had the largest weighting in BREEAM New Construction covering 22.13% with credits such as visual comfort (Hea 01), indoor air quality (Hea 02), thermal comfort (Hea 04), acoustic performance (Hea 05) and safe and healthy surroundings (Hea 07) amongst others. This was followed by health and safety with 13.16% with credits such as adaptation to climate change (Wst 05), site selection (LE 01), and after care (Man

05) amongst others. The social ESG theme with the lowest consideration in BREEAM New construction is diversity and social inclusion allocated 2.09% which is under the project brief and design (Man 01) assessment credit.

However, four social aspects that could deliver ESG targets appear not to be covered in the BREEAM New Construction framework. These include protecting workers and humans right; legacy planning; education and skills; and emergency response planning.

### 3.3 | Governance

This remains a very crucial aspects of the ESG targets as it has mostly been ignored or overlooked in the construction section or in discourse relating to sustainability. In the BREEAM new construction, governance has a total weighting of 14.8% which addresses three out of the eight social ESG themes. These three include: risk management; supply chain management and procurement; and stakeholder engagement. However, supply chain and management appear to be the most considered with a total of 10.71% with 3 credits which are: responsible sourcing of construction products (Mat 03); speculative finishes (Wst 04); and life cycle and service life planning (Man 02). In the social ESG themes considered, risk management has the least weighting with one credit—Ecological risks and opportunities (Le 02).

However, it was obvious that other governance aspects of the ESG framework are not included in the BREEAM New Construction. These include strategies; policies; eliminating corruption and bribery; and enforcing ethical behaviour.



## 4 | DISCUSSION

Several issues emerged in the result and findings as discussed in this section:

### 4.1 | The dominant environmental category

Being the most dominant category with the highest weighting, the adoption of the BREEAM new construction can help a developer achieve key environmental targets in its ESG framework and reporting. This result agreed with Sharifi et al. (2021) that environmental concerns are usually the most prominent in assessment framework because most originated as environmental tools in response to the growing environmental footprints of cities before other aspects are included following intermittent revisions of the framework. Whilst this dominance may be perceived as a concern as it tends not to deliver a balanced assessment, it is noteworthy that most ESG report of construction company captures more of environmental aspects. BREEAM New construction could help in reducing greenhouse gas emissions through various credits providing ways to demonstrate the commitment of a developer to this global challenge. This is because, construction is amongst the leading industries contributing the largest carbon footprint (Sizirici et al., 2021) which results to thawing of the glacial masses, desertification, and flooding amongst others.

One of the ways through which the BREEAM new construction attempts to address this is by encouraging sustainable transport measures. This agrees with the UK Department for Transport (2022) and UNECE (2023) that greenhouse gas emissions have direct relationship with transportation means. Ideally, developers through their development can begin to promote cycling and walking within the neighbourhood through safe and friendly pedestrian routes. Most importantly, development is best suited when there is an existing transportation network. Proximity of amenities could be a good strategy to prevent reliance on cars. Taylor Wimpey (2021) in the annual report had 67% and 86% of projects located within 500 and 1000 m respectively to a

public transportation node. However, the means of transporting people and materials during the construction process should also be sustainable.

It is understandable the least weighting is climate change adaptation. This is perhaps because most assessment frameworks are more mitigative in approach than adaptative which is evident in the high consideration given to practices that promotes the reduction of greenhouse gas emissions. However, besides mitigation measures, assessment frameworks need to begin to explore some adaptation measures such as protection of coastal wetlands, new building technologies, building insulation, and encouraging building insurance.

### 4.2 | Multidimensional nature of some assessment credits

The analysis revealed that some of the assessment credits displayed multidimensional nature because they could be helpful to achieve more than one ESG targets as presented in Table 3. This agrees with the sustainability path conceptualised by Valentin and Spangenberg (2000) which was further elaborated by Dawodu (2017) and Adewumi (2020) about the inter-relationship between the various dimensions of sustainability. In this instance, it helps to create a narrative and connection between ESG targets. Majority of the indicators demonstrated Point Aspect, that is addressing one of the ESG targets. Few of the assessment credits tend to the Linear Aspect as they can be used to achieve two different targets. For example, adaptation to climate change (Wst 05) could deliver the ESG targets of climate change adaptation and health and safety.

This Planar Nature of Man 01 suggests the importance of effective project brief and design process because its consideration could deliver three ESG targets of health and safety, diversity and inclusion, and stakeholder engagement. This meets the aim of the assessment credit which according to BRE (2019) is to optimise the final building design by appreciating and giving adequate consideration for an integrated design process and robust stakeholder engagement. It is

**TABLE 3** Multidimensional nature of the assessment credits.

Assessment credits (pol—pollution; Wst—waste; Tra—transport; mat—material; Ene—energy; man—management)	Characteristics	ESG targets
Pol 02 Local air quality	Linear	Pollution Wellbeing
Wst 05—Adaptation to climate change (2×)	Linear	Climate change adaptation Health and safety
Tra 01—Transport assessment and travel plan (2×)		Reducing greenhouse gas emissions Wellbeing
Mat 01—Environmental impacts from construction products (2×)	Linear	Reducing greenhouse gas emissions Minimising impacts on local communities
Ene 07—Energy efficient laboratory systems (2×)	Linear	Reducing greenhouse gas emissions Use of new and innovation technologies
Man 01—Project brief and design (3×)	Planar	Health and safety Diversity and social inclusion Stakeholder engagement

anticipated that the credit could deliver values relating to understanding of stakeholder needs which would increase the potential for its acceptability after completion and when it is in operation. This agrees with Ebekozen et al. (2023) that stakeholder engagement in construction project is a key ingredient that contributes to the optimal performance of a project.

### 4.3 | Promoting equality diversity and inclusion in construction

Another issue that emerged from the result is that whilst wellbeing had the highest weighting in social category, diversity and inclusion had the least weighting. This suggests the need to include more variables that could help promote the uptake of equality, diversity and inclusion in the decision-making process of new development projects if the assessment framework will be able to serve as vehicle for delivering ESG targets. Although the aspect of inclusion appears to be covered with the Project brief and design (Man 01) assessment credit, the issue of diversity is not covered. This perhaps could have been addressed with a revised BREEAM new construction encouraging diversity in the stakeholders (skilled or unskilled) involved in the project. This could be from the perspective of cultural, racial, religious, age, or gender diversity. For instance, it would be worthwhile to capture or present information such as the male to female ratio in the workforce, junior management, and business unit management teams amongst others. This is in the wake of the campaign for more gender balance and diversity at organisational level (Galletta et al., 2022; Khatri, 2023; Norberg & Johansson, 2021; Rhee et al., 2023; Shrestha et al., 2020; Wasiuzzaman & Subramaniam, 2023). Besides gender, construction project should also be assessed on the spread of the ethnic affiliation of workers and cultural diversity as argued by Aboagye-Nimo et al. (2020), Dobija et al. (2023), Martinez-Ferrero et al. (2021) and Khan et al. (2019). In its ESG addendum, Taylor Wimpey (2021) noted that for construction projects executed in 2021, 5% of employees are from the Black, Asian, and other minority ethnic group (BAME). This was an improvement where it recorded 0% for 2017–2019 and 4% in 2020.

This could extend further to equality of opportunity which has to do with creating a fairer workplace of workers where everyone (irrespective of any disability) can participate and flourish to fulfil their aspirations. This aspect appears to be missing in the current ESG reporting and assessment frameworks.

### 4.4 | Limitations of BREEAM new construction to deliver holistic ESG targets

The BREEAM new construction assessment framework appears to cover much of the environmental aspects whilst the social and governance aspects of the ESG desire much consideration. This agrees with Boyle et al. (2018) and Vilela et al. (2020) that assessment frameworks need to include more social and institutional criteria which are

perhaps the bedrock and the platform where the environmental aspects can thrive. According to Kaymak and Bektas (2017), strong institutions also help to improve the quality of sustainability disclosure and communication with different stakeholders. The findings showed that the BREEAM new construction does not have an assessment credit to address education and skills; legacy planning; emergency response planning; strategies; policies; eliminating corruption and bribery; and enforcing ethical behaviour. These are issues that have continued to generate discussion in the built environment (Johari & Jha, 2020; Killip, 2020). It would be helpful for new development to target how much of skills and knowledge would be transferred during the project such as encouraging and documenting site visits by students and apprentices. Besides, it could address the question of the extent in which the project could lead to the development of new skills where training would be required. Legacy planning addresses not only the overall sustainability of the project but could cover delivering projects that could last the test of time. This is useful to guarantee return on investment (ROI).

Another important aspect which is crucial is planning for emergency response. This assessment credit could require a project to demonstrate the minimum time for emergency response. The proximity to existing emergency services could also be assessed in the proposed development. More importantly, the provision of necessary safety measures (including emergency response) during the construction phase of the project is quite critical (Abas et al., 2020; Rivera et al., 2021). Additionally, to deliver ESG targets, it would be useful if assessment frameworks can begin to raise questions or request the proposed supply chain structure for efficiency and to ensure that there is no room for corruption and bribery. The project could be requested to provide information on how financial transparency would be an important aspect of the project. Enforcing ethical behaviour has been quite important recently in the wake of professional ethics as stipulated by various institutions in the built environment. Assessment frameworks can now begin to require projects to demonstrate compliance with ethics and standards of these institutes at various stages of the projects as applicable so that they can serve as a useful tool to deliver ESG targets in this regard. In addition to that, the assessment framework may need to begin to include assessment criteria for governance factors as documented by Temel et al. (2021) that could facilitate the implementation of sustainability into organisational practices. Some of which include institutional frameworks (Patterson et al., 2017); policies (Glass & Newig, 2019); reporting (Ortas et al., 2017); communication (Klettner et al., 2014); and sustainability department (Gennari, 2019) amongst others.

## 5 | CONCLUSION

The aim of this paper is to explore the extent to which the uptake of BREEAM new construction assessment framework could serve as a vehicle for organisations in the construction industry to demonstrate commitment to ESG targets. A major output from this study is that the framework could be helpful to deliver the environmental targets

such as reducing greenhouse gas emissions, use of renewable energy in new buildings, climate change adaptation, and water efficient buildings. This paper adds to the existing call for more consideration for equality, diversity, and inclusion (EDI) in the built environment as a window to achieving this global agenda as documented in sustainable development goal (SDG) 5.

However, the current BREEAM new construction appears not to address all the ESG targets as revealed in this paper with social and governance aspects not properly covered with the latter being the least considered. As a result, the paper has recommended suggestions which can be considered during the revision of the BREEAM new construction which could position the assessment framework as a vehicle to assist real estate developers to demonstrate commitments to ESG targets.

Going forward, future research can begin to explore other assessment frameworks developed in other contexts and how the ESG framework of local construction company responds to that. This can be explored in both developed and developing country context. For instance, it would be interesting to explore how well the Green Star certification helps to achieve ESG targets for the construction sector in South Africa. Also, the revision of the assessment framework which should be carried out with industry stakeholders could be useful for companies to see a ready-made platform to adopt to demonstrate their ESG targets.

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