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**Insights and Experiences of Sustainability Decision-making by Construction Clients**

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**Number of words in the main text (excluding abstract and references) and the number of figures and tables - 6813**

## 1 Abstract

2 *Sustainable practices can only be successful when key stakeholders (e.g. client, designer, main*  
3 *contractor, subcontractors, etc) are in support of achieving them as shared values. The common goal*  
4 *of improving sustainable practices can be embedded in all aspects of projects ranging from*  
5 *conception to completion and in operation phase through to refurbishment and deconstruction or*  
6 *re/upcycling. This paper explores the various approaches that consultants adopt when ‘encouraging’*  
7 *clients to buy into sustainable designs for large projects. Semi-structured interviews were collected*  
8 *from industry professionals (from Project Managers to Quantity Surveyors). Themes explored within*  
9 *the data included cost vs ‘environmentally-conscientious’ options, fundamental decisions for moving*  
10 *towards sustainable principles, and knowledge of long-term benefits of such choices. Furthermore,*  
11 *the study investigates the techniques that consultants and project teams adopt when clients are*  
12 *directly or indirectly against the concept of implementing such practices particularly when they*  
13 *believe them to be non-beneficial due to financial implications. The study sheds much-needed light*  
14 *on best practice methods adopted by firms operating in financially difficult environments, working*  
15 *to ensure green targets. It is evident from this research that everyday subcontractors need further*  
16 *assistance through additional measures if higher standards of sustainability are to be realised.*

17 **Keywords:** carbon reduction, green consultancy, shared values, sustainable procurement.

18

## 19 1. INTRODUCTION

20 Sustainability continues to gain much-needed acceptance in all aspects of life. The wide acceptance  
21 of the United Nations Climate Change Conference COP26 in the United Kingdom (UK) in 2021  
22 demonstrates the global support for improving human activities’ impact on the environment.  
23 Sustainable development is not a new concept and has been touted by scholarly works for several  
24 decades (see Brundtland, 1987; Lélé, 1991). The construction sector is known to be a significant  
25 contributor to every national economy and also known to have practices that adversely affect the  
26 sustainable development through manufacturing and transportation of materials and components  
27 (Lima *et al.*, 2021).

28 Stakeholders in the UK construction sector have shown a healthy support for improving practices  
29 relating to sustainability in general (Opoku *et al.*, 2013). However, it is widely agreed that more work  
30 is needed if the industry is to help achieve the national target of a net-zero carbon UK. Following  
31 the above premise, this study aims to explore underlying principles and current approaches adopted  
32 by consultants and construction teams as they try to achieve projects of significant sustainable  
33 impact – this is conducted through a phenomenological lens.

34 The article presents relevant literature on sustainable development and the various challenges that  
35 prevent sustainability in the construction sector. The research methodology is presented  
36 afterwards, and this is followed by key findings from the empirical work.

## 1    **2. BACKGROUND**

2    The importance of sustainability is no longer up for debate in modern research. It is however a  
3    complex topic to unpack as there are numerous aspects and stakeholders to consider when  
4    discussing how to approach the topic both in theory and in practice (Tainter, 2006; Wells, 2012).

### 5    **2.1 Sustainable development and the construction industry**

6    Previously perceived to be a developing country's exigent obstacle; the provision of sufficient  
7    quantity of habitable secure houses and supporting infrastructure was always a challenge. This has  
8    now spread to the wider global community to include the developed world (Gan *et al.*, 2017).

9    The demand on the UK construction industry, including during the recent pandemic, has increased  
10    and with it, bringing sustainability to the fore (Orzeł and Wolniak, 2022). Broken down into three  
11    high level categories being economic, social and environmental the construction industry is under  
12    significant pressure to implement change whilst keeping up with this demand (Lima *et al.*, 2021).

13    Natural resources, greenhouse emission, land use and land fill are some of the prime areas directly  
14    impacted by the construction industry. Driving change is supported by the government by increasing  
15    standards in the building regulations, in particular part L, and government incentives and targets to  
16    reduce carbon emissions by 80% by 2050 (Davies and Osmani, 2011). These government incentives,  
17    increased standards, client and public pressure are passed onto the consultant team as referred to  
18    in the RIBA Plan of works (Qian *et al.*, 2015). Encouraging sustainable considerations in early design  
19    stages including social and environmental impacts, material choice, building performance standards  
20    (Bhamra and Lofthouse, 2016), for example Building Research Establishment Environmental  
21    Assessment Method (BREEAM) excellent and building management systems designed to monitor  
22    the buildings performance.

23    The industry, supported by the academic community, has developed strategies that reduce  
24    greenhouse gases, improving design lives. These initiatives play an essential role to enhance change,  
25    but the culture of the construction industry struggles to make sustainability a key aspect of all  
26    designs. Further investment is also required to train, invest time, and encourage collaboration when  
27    multiple subcontractors are on site to ensure that projects are delivered as designed (ibid).

### 28    **2.2 Sustainable construction challenges**

29    Brundtland (1987) defines sustainability in the construction industry as development that meets the  
30    needs of the present without compromising the ability of the future generation to meet their own  
31    needs. But how does a fragmented, commercially-driven and generally adverse to change industry  
32    translate this? A common clear definition is required allowing clients, stakeholders and  
33    organisations to comprehend implement change within their own organisation but also to external  
34    parties when required (Kiani Mavi *et al.*, 2021).

35    Client, stakeholder, public and government pressure have played a critical role in forcing change  
36    (Lam, 2020). The other significant challenge is cost as it has been, and still is in some cases, perceived  
37    to be a costly approach and in refurbishment projects timely and intrusive significantly impacting  
38    the building users etc. (Tokbolat *et al.*, 2020).

1 The construction sustainability industry has grown exponentially over the past decade  
2 demonstrating the uptake of the industry as a whole but has inadvertently caused a level of  
3 confusion as there is now a vast amount of options available (Kiani Mavi *et al.*, 2021). Clients,  
4 stakeholders and construction companies are now heavily reliant on sustainable consultants adding  
5 an extra cost to the project (Lam, 2020). This encourages clients with complicated refurbishment  
6 projects due to heritage interests, land locked sites, permanent occupation and planning  
7 considerations to opt for any solution that fits, generally solar power (Edwards *et al.*, 2019). Limiting  
8 other solutions for example rainwater harvesting for urinal and water closet use only reduces the  
9 demand on fresh water at source, water bills and additional pressure on the existing sewer system.  
10 The industry, policies, local government, and clients need to take stock of all available systems and  
11 as the contractors require further education and training so do the building users and stakeholders  
12 alike (Bal *et al.*, 2013).

### 13 **2.3 Role of stakeholders in sustainable construction**

14 Stakeholders have been found in study carried out by Umoh et al (2024) to be less inclined to  
15 consider sustainable construction practices. This is thought to be driven by poor information  
16 provided portraying inaccurate costs and therefore resulting in poor engagement (Zhang et al.,  
17 2018). It is therefore essential that stakeholders fully comprehend the concept of not only  
18 sustainability but sustainability in construction and how the consideration and implementation can  
19 provide positive change (Bal *et al.*, 2013). Further to this all stakeholders must have clear effective  
20 communication in place throughout the entire design and construction team (ibid).

21 Stakeholders are also responsible for ensuring that the best approach is adopted as in some cases  
22 this is overlooked as the risk of the client placing the project on hold due to time and cost are  
23 deemed to high resulting in the loss of a project (Pitt *et al.*, 2009). Knowledge sharing by  
24 stakeholders for the development of the industry, high level lessons learnt to evaluate planning and  
25 heritage obstacles in inner city areas is key for the industry as a whole (Umoh et al., 2024).

### 26 **2.4 Leadership for sustainability**

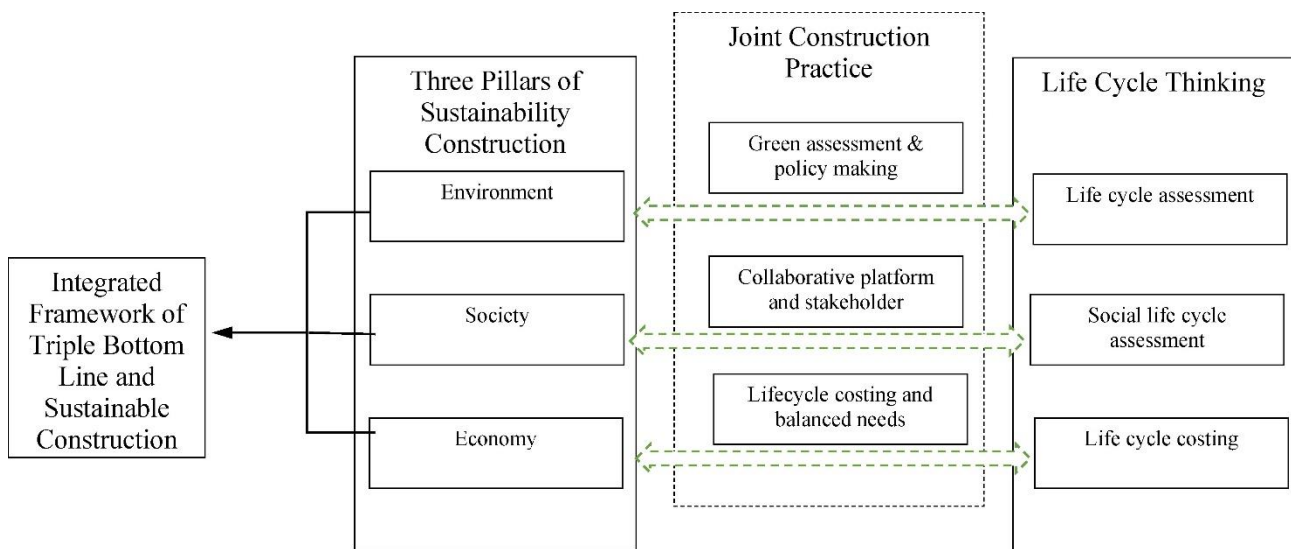
27 Both Egan (1998) and Latham (1994) called on leaders to lead the quest for change in the  
28 construction industry. The role of leadership in construction decisions has been well documented.  
29 Clients in general support the concept of sustainable construction but find themselves in a difficult  
30 position when construction time and costs increase (Opoku *et al.*, 2019). Clients when in this  
31 position find themselves value engineering the design with sustainability more than often being  
32 sacrificed as an upgraded version of a must have item (Jarrah and Siddiqui, 2013).

33 Clients who do have the budget, time and support from other stakeholders find themselves in a  
34 position whereby they can carefully consider the full benefit of their site. This can include the areas  
35 of work within the initial project scope to additional areas that would only benefit from a sustainable  
36 upgrade. The secondary clients mentioned above are unfortunately far and few between as most  
37 are restrained by annual budgets, commercial impact on footfall into the building due to scaffolding  
38 or noisy works or a lack of institutional commitment (de Blois *et al.*, 2011). Having said these, large  
39 institutions, especially local governments, and higher education organisations have sustainability  
40 targets supported by central government funding.

### 41 **2.5 The triple bottom line: A theoretical framework**

1 From a theoretical standpoint, the current research approaches the concept of sustainability using  
 2 a pragmatic perspective namely the 'Triple Bottom Line'. The triple bottom line of sustainability  
 3 fundamentally encompasses environmental, social, and economic dimensions, and as such plays a  
 4 critical role in the construction sector in the UK (Goh et al., 2020). Environmentally, the UK  
 5 construction industry is increasingly focused on reducing its carbon footprint and enhancing  
 6 resource efficiency. This involves the adoption of sustainable or green building materials, energy-  
 7 efficient technologies, and sustainable design principles aimed at minimizing waste and emissions  
 8 (Umoh et al., 2024). For instance, the implementation of the BREEAM standards encourages the  
 9 construction of buildings that use less water, produce less waste, and conserve energy, thereby  
 10 contributing to a lower environmental impact and fostering a more sustainable built environment.

11 On the social side, the UK construction sector continuously strives to enhance community well-being  
 12 as well as worker welfare (either professional roles or skilled trades). This includes ensuring health  
 13 and safety standards on construction sites, promoting good treatment of workers, and supporting  
 14 local communities through job creation and community engagement initiatives. Economically,  
 15 sustainable construction practices can lead to significant cost savings over the lifecycle of a building,  
 16 from reduced energy bills to lower maintenance costs (Kilbert, 2016). Additionally, sustainable  
 17 buildings often have higher property values and can attract higher rents, providing long-term  
 18 financial benefits (Zhang et al., 2018). By integrating the TBL framework, the UK construction sector  
 19 aims to balance ecological responsibility, social equity, and economic viability, ultimately leading to  
 20 more resilient and sustainable urban developments.



21  
 22 **Figure 1: Integrated framework of TBL and sustainable construction**

23 As shown in Figure 1, an integrated framework on TBL and sustainable construction ensures that the  
 24 three pillars inform the construction phase as well as the life cycle of the development. As part of  
 25 the empirical phase of this research, the data analysis will incorporate stakeholders' views  
 26 underlying reasons for incorporating sustainable principles in projects from inception to handover  
 27 and beyond.

1 **3. RESEARCH DESIGN AND METHODOLOGY**

2 A phenomenological-based methodology (i.e. gathering personal experiences) using an inductive  
3 research approach (i.e. an inquiry to synthesise experiences and observations) was utilised to align  
4 with the study's aim. Phenomenology (Husserl, 1989) aims to produce an idiographic account of  
5 lived experience rather than one prescribed by pre-existing theoretical preconceptions (Smith and  
6 Osborn, 2015). Using a lifeworld perspective to obtain insights through a phenomenological lens  
7 often allows for deeper accounts of individual experience to emerge (Willig, 2013).  
8 Phenomenological investigations are widely reported across a host of built environment themes  
9 (e.g. housing (Marquez *et al.*, 2019; Serjeant *et al.*, 2021), domestic energy (Ambrose *et al.*, 2017;  
10 Fong *et al.*, 2021), flooding (Anacio *et al.*, 2016; Maznieda *et al.*, 2022), transport (Gish and Vrkljan,  
11 2016; Sam *et al.*, 2018), amongst others) but, to date, a literature search indicates it has not been  
12 used to explore lived-experiences of implementing sustainability in the construction industry. A  
13 phenomenological research design enabled the use of questioning techniques to highlight issues  
14 significant to the interviewee, utilising descriptive, structural, and imaginative approaches to delve  
15 into individual experiences (Chell, 2004). Phenomenology is often defined as the examination of  
16 how phenomena are perceived and understood, focusing on the meanings derived from subjective  
17 experiences (Ball *et al.*, 2023).

18 A qualitative research strategy meant semi-structured interviews were adopted as the method of  
19 inquiry. This ensured the central questions were posed in the same way to each participant, whilst  
20 allowing some flexibility to adjust questions, where necessary, and to follow-up on any interesting  
21 replies. The choice of questions was influenced by recent literature that identified a suite of aspects  
22 to explore with the participants. Since the main purpose of the interviews was to solicit the personal  
23 experiences of professional persons who have been involved in influencing construction clients, the  
24 interview schedule was divided into four themes: (i) participant demographics and backgrounds; (ii)  
25 their role in the organisations; (iii) general views on sustainable development; and (iv) perception  
26 of the future of sustainable construction. The main questions asked to the participants are listed in  
27 Table 1.

28 **Table 1: A list of the questions posed to the interviewees within the interview guide.**

#	Interview Questions
1	What is your current role in your organisation?
2	What are your views on sustainability and construction in the past and now?
3	When deciding on sustainable principles in a given project, what aspect comes to mind first?
4	What is the biggest barrier when it comes to making sustainable inclusions in projects?
5	How does a client's awareness of sustainable principles affect your project success?
6	How and who do you discuss sustainability with when you're getting the clients on board?
7	What type of sustainable principles do you embed in projects without discussing with clients?
8	How do you assess the client's satisfaction when it comes to success in sustainability?

29 Both purposive and convenience sampling techniques were adopted to gather qualitative data from  
30 industry professionals (see table 3 for details), about their strategies for encouraging clients to  
31 embrace sustainable design practices (Etikan *et al.*, 2016). The purposive sampling ensured that  
32 participants with relevant experience and expertise in sustainability and large construction projects  
33 were selected, providing rich, targeted insights into the topic. In addition the participants also had  
34 to hold key decision-making roles in their organisations regarding sustainable choices. The  
35 convenience sampling, on the other hand, allowed for the inclusion of readily available participants,

1 facilitating efficient data collection. This combined sampling approach enabled the study to capture  
2 diverse perspectives while focusing on those with experience about the challenges and techniques  
3 associated with promoting sustainability in the construction sector.

4 All narrative interviews were digitally audio recorded (each lasting 30 – 45 minutes) and then  
5 transcribed verbatim by the researchers. To preserve the anonymity of participants and guarantee  
6 their confidentiality, pseudonyms were applied to the text. As with other phenomenological  
7 studies, no computer data analysis software was used to interrogate the datasets (Capodanno *et*  
8 *al.*, 2020). Moreover, the transcripts were scrutinised by a stepwise process (Table 2), which involves  
9 repeated reading of the transcripts to extract interrelated themes and meanings, so as to describe  
10 the assembly of the phenomenon being investigated (Smith, 1995; Osborn and Smith, 1998). This is  
11 conceivable because the small sample size of most phenomenological studies permits micro-level  
12 reading of participants' narratives.

13 The researchers involved in the study set aside their own pre-understandings so as to accord with  
14 the phenomenological principle of epoche (or bracketing), which attempts to circumvent any  
15 preconceptions or expectations to facilitate the phenomenon of the study objectively. As none of  
16 the researchers involved in the study have been involved in client-facing construction decision-  
17 making so the researchers' own values should not threaten the interpretations reported.

18 **Table 2: Description of the stepwise process used to analyse the participant interview narratives**  
19 **(based on Smith (1995), Osborn and Smith (1998)).**

Step	Description
1	Interview transcripts were read, and re-read several times, to ensure a general sense was obtained of the whole nature of participant's narratives.
2	Returning to the beginning, the transcripts were re-read and any emerging themes identified and organised tentatively.
3	Attention was then focused on the themes themselves to group and define them in more detail and establish their interrelationships.
4	The shared themes were then organised to formulate consistent and meaningful statements, which contribute to an account of the meaning and essence of the participants' experience grounded in their own words.
5	The superordinate themes and statements were then referred back to the original transcripts to verify their occurrence.

20 Thematic analysis was used to examine the interview data from the industry professionals on  
21 sustainable principles in the industry. The process involved familiarising with the data, generating  
22 initial codes, organizing these into themes, and refining them to accurately represent the data. Key  
23 themes included cost versus environmental concerns, decision-making for sustainability, and  
24 techniques to overcome client resistance. This analysis provided detailed insights into promoting  
25 sustainability in the construction sector.

26 It is important to acknowledge the limitations of the adopted approach i.e. phenomenology. Relying  
27 on rich qualitative data in this research project, particularly when using a phenomenological  
28 approach, offered insights into the experiences, perceptions, and values of the interviewees (please  
29 see table 3). This depth of understanding allowed the research to uncover nuanced factors,  
30 motivations, and barriers that quantitative data might have overlooked. Phenomenological research  
31 emphasises the subjective experiences of stakeholders—such as construction workers, project

1 managers, and community members—providing a comprehensive view of how sustainability  
 2 practices are implemented and perceived on the ground. Although the adopted approach in this  
 3 study has limitations regarding generalizability regarding the construction sector, it yields valuable,  
 4 in-depth knowledge that informs more meaningful and context-specific recommendations. This  
 5 deep understanding is crucial for developing tailored strategies and interventions that can be  
 6 implemented alongside the actual experiences and needs of those involved, thus yielding more  
 7 effective and sustainable outcomes for the sector.

8 Ethical approval was sought before the interviews were conducted. Approval meant all participants  
 9 were informed in a participant information cover page that their consent and involvement was  
 10 anonymous and entirely voluntary. The interviewer and interviewees were accompanied by a  
 11 companion on site visits to ensure the safety and welfare of those involved in the meetings. After  
 12 which, all interviewees (both in-person and online) were given a two-week window to allow them  
 13 (if they desired) to withdraw their responses. This procedure is compliant with the expectations of  
 14 university research ethics regulations in the UK.

#### 15 **4. FINDINGS AND ANALYSIS**

16 The findings of the study are presented beneath under four main section headings: (i) participant  
 17 demographics and backgrounds; (ii) their role in the organisations; (iii) general views on sustainable  
 18 development; and (iv) perception of the future of sustainable construction. All quotes and  
 19 information provided have been attributed to pseudonyms to ensure anonymity and confidentiality  
 20 (Parry and Mauthner, 2004).

##### 21 **4.1 Participant demographics and backgrounds**

22 Six participants (5 male and 1 female) responded to the invitation to be interviewed about their  
 23 lived-experiences of implementing sustainability with construction clients. This sample size accords  
 24 with the expectations of a phenomenological study (i.e. the sample size should be between 6–8  
 25 persons (Gauntlett *et al.*, 2017)) and, as such, is the same as those reported by Symeonides and  
 26 Childs (2015), Bowen (2019) Laczko *et al.* (2022), who all used six participants in their  
 27 phenomenological studies. The profiles of all the participants are detailed in Table 3.

28 **Table 3: Participant profiles (n=6)**

<b>Code name</b>	<b>Experience (years)</b>	<b>Role</b>	<b>Sector</b>	<b>Notes</b>
SJ	18	Design Engineer	Conservation Specialist	Architecture, engineering, and sustainability consultant
WC	7.5	Project Manager	Property Development	International commercial client consultant
MJ	20	Quantity Surveyor and Design Consultant	Property Development	Client and contractor consultant
EG	6	Quantity Surveyor	Property Development	Client and contractor consultant
JM	17	Project Manager	Property Development	Large scale housing development



BN	20+	Director	Property Development	Client consultant
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1 The need for sustainability in the construction industry did not appear as a concept that required  
2 industry stakeholders to contemplate any further (i.e. all interviewees were strongly in support of  
3 the concept). Sustainability was described by all interviewees as not a nice-to-have concept but a  
4 must-have concept due to the trajectory of the climate crisis. Furthermore, they all acknowledged  
5 the significant role of the construction sector in helping avert or mitigating the looming crisis. When  
6 asked about the general views on the principles of construction, some interviewees stated as  
7 follows:

8 *"I see it as something that's really important, something that we should definitely embrace and get*  
9 *involved in because the construction industry has a massive impact on sustainability, global*  
10 *warming. We can definitely make so many more measures and impacts on reducing waste and*  
11 *improving our energy efficient systems, our mechanical equipment and I think it's something that a*  
12 *lot of younger people understand and are more passionate about as well."* WC She further added  
13 that sustainability must be as much a priority as all other matters in the sector including safety and  
14 financial considerations. MJ was disappointed in the current trends by a larger portion of the sector  
15 as he stated: *"It's talked about a lot, but generally lip service is given to it and not what happens*  
16 *when it comes to budget"*. Similar to WC, he believed that budgets were still the highest on the  
17 priority and many stakeholders considered it as a trade-off when sustainable practices were to be  
18 introduced.

#### 19 **4.1 Evolution of sustainability in the construction industry**

20 As with any topic that gains appreciation by industry practitioners, it is clear that everyone comes  
21 to the realisation from a different perspective. SJ stated that his organisation was founded due to  
22 the increasing demand for consultancy services on sustainable principles. Furthermore, he had  
23 identified that there was a gap in knowledge amongst the specialist subcontractors he worked with,  
24 so he had gone for further training on the topic. He also added that he went for continuous  
25 professional development events whenever the opportunity arose. Other interviewees highlighted  
26 that several professional bodies including the Chartered Institute of Architectural Technologists  
27 (CIAT), Chartered Institute of Building (CIOB), Royal Institution of Chartered Surveyors (RICS) and  
28 Constructing Excellence were key organisations that had been promoting CPD engagements in this  
29 field.

30 Looking back at how practices had evolved, SJ added that *"Historically, it's always been the*  
31 *secondary sort of item, so the client often wants the pretty thing rather than the sustainable thing"*.  
32 This view was echoed by all participants. However, they all indicated that there had been a huge  
33 sway by clients into appreciating sustainable construction. Furthermore, not only clients had come  
34 around with regard to appreciating sustainable practices, EG admitted that although he believed in  
35 improving general practices, he became a staunch advocate when his personal circumstances  
36 changed; *"my daughter was born, [at the] start of the year. And so, I think I've become a lot more*  
37 *conscious of it [subsequently]. Sort of in my career as I worked along, I kind of went through the*  
38 *motions and sustainability hadn't really been much of an issue. I think in the last year it started to*  
39 *get a bit more [important] and I focused on it and particularly in the last six months as well"*. As  
40 indicated in the above statement, EG had a realization to embrace sustainable principles even  
41 further after his child was born. He explained that he believed it was his duty to help save the planet

1 for future generations including his daughter. SJ added that although the industry is improving,  
2 there is still room for improvement including legislation.

3 *“There’s still not enough legislation around it to enforce it, but that’s changing, which is a good thing.*  
4 *And that’s one of the reasons I started the company originally was to embed [sustainability]. I*  
5 *suppose, not just sustainability, but the way energy is used in a building and how buildings use*  
6 *energy”*. Thus, SJ is implementing a holistic approach to sustainability and not simply focusing on  
7 specific aspects or principles. Similar to emerging working processes which later become everyday  
8 practice (e.g., safety principles); there are always obstacles to overcome. Preliminary literature  
9 review and initial data analysis pointed at clients’ involvement. This concept is discussed next.

#### 10 **4.2 Barriers to gaining clients’ buy-in**

11 The budget holder in any project has a significant influence in key project decisions. In construction  
12 projects, this falls on the client. There was a consensus among the interviewees that the clients were  
13 the most important people when trying to implement sustainable principles. Some of them were  
14 quoted as follows: *“I think it’s the client’s decisions and how they want to go with sustainability as*  
15 *well. They might not be so much in the know. So, there’s a bit of education that’s required there, but*  
16 *I ultimately think it comes down to the budget that they’ve got a side and they’re willing to spend on*  
17 *sustainability”*. WC *“[Sustainability] is often a secondary one for clients, and they don’t often... They*  
18 *want something that looks similar to their next-door neighbour’s property, it being brick or glass”*. –  
19 SJ. As indicated by SJ, clients may not particularly be interested in sustainable features for the  
20 fundamental reasons. They may often be interested due to other factors e.g. their neighbours’  
21 properties. However, this does not deter the professionals from encouraging the sustainable aspects  
22 of the developments.

23 There are several reasons attributed to clients not fully embracing sustainable principles in  
24 construction projects. To name a few, WC points to lack of knowledge on the part of both industry  
25 professionals and clients. SJ also highlights clients’ need for aesthetic value as the main priority of  
26 the adopted design. EG adds that clients (particularly large developers) prioritize profit as they sell  
27 off the developments and thereby choosing the short-term gains over long financial rewards that  
28 are derived from sustainable principles (e.g. less energy consumption, etc.).

29 SJ revealed that in order to achieve good sustainable standards on the part of the clients, *“We*  
30 *always talk about it in terms of money saved due to energy not used and that’s kind of how we spin*  
31 *it instead. And the clients often understand pounds and pence rather than embodied carbon or*  
32 *kilograms of carbon”*. In other words, they highlight more financial incentives for the clients, using  
33 money saved during the operation of the building instead of the reduced upfront cost. However,  
34 this approach would not work on the large property developers that EG described because they  
35 aimed at selling off the properties instead of managing them on a long-term basis to reap the  
36 benefits of money saved. In addition to gaining client buy-in, interviewees had different  
37 stakeholders they regarded as gatekeepers when trying to gain the greenlight for projects of  
38 significant sustainable impact. Understandably, they all operated in different contexts and worked  
39 on different clients and different project scopes. Using the above findings in the context of the Triple  
40 Bottom Line theory, it is evident that different stakeholders are keen on different outcomes. For  
41 example, large developers would be more likely to focus on profit while environmentally conscious  
42 clients would be keen on sustainable materials that will keep the environment safe. As far as the  
43 theory goes, there will always be a trade-off.

1 Regarding the financial implications, the quantity surveyors were known as key players in helping  
2 get sustainable projects to go ahead. The project quantity surveyor's cost control principles always  
3 made an important impact of the overall project costs. As such, this discussion alludes to the focus  
4 on the client's budget that was highlighted previously. When asked how they get their clients and  
5 overall projects to attain significant sustainable standards, there were different views. SJ pointed  
6 out how he always focused on the client's quantity surveyors as they were there budget creators.  
7 He stated that *"it's probably the QS, just to say, right? What's our budget? How are we gonna  
8 implement this? What is the current market sort of trends and costs around using a different system?  
9 And then from that point on, we can start to work out what is affordable within the budget"*. As a  
10 designer, his adopted approach was thus working towards the provisional budget instead of putting  
11 together a design before creating the cost. As such, this would lead to a more acceptable price range  
12 for the client and SJ can also embed as much sustainable principles as the budget can contain. WC  
13 pointed out another technique she uses in gaining clients' buy-in. She spoke of the importance of  
14 additional value gained from the project and not solely relying on the financial incentives of projects.  
15 *"If [clients] can get money out of it obviously and also get an award associated to any sort of  
16 construction project, whether it be refurbishment or a new build..."*. It was discussed by interviewees  
17 that clients are keen to add sustainable features if they believe it will enhance the financial value of  
18 their properties. Thus, they focus on the lifecycle of the building including when they have to sell it  
19 off or even remodel. The added value in some contexts comes in the form of international  
20 benchmarking ratings such as BREEAM (Building Research Establishment Environmental Assessment  
21 Method) and LEED (Leadership in Energy and Environmental Design). Overall, budget still dominates  
22 the discussion on deciding on sustainable principles. This seems to be determined by the focus on  
23 cost as a trade-off when sustainable principles are being considered.

#### 24 **4.3 Revisiting project delivery approaches**

25 The concept of always discussing sustainable construction measures as the main determinant for  
26 overall project cost may require 're-think'. More importantly, a long-term view i.e., designing for  
27 the life cycle of the property must be a priority. MJ had identified how important it was to discuss  
28 project ideas holistically. When discussing how he presents project delivery methods he stated: *"I  
29 suppose you always try and sell it as the bigger picture, so it may cost slightly more in the short-term,  
30 but long-term running costs trying to gain the whole team really to say, well, actually it's gonna cost  
31 you X amount to build. But over 20 years it will save you four times as much"*. His idea had also been  
32 described by SJ but he was clear that it only worked best when his clients were also the end-users.

33 With regard to the large developers who always sold off the properties i.e., not having to deal with  
34 the running costs of the property, they needed additional incentives or motivation. Legislation and  
35 organisational reputation were strongly highlighted as key techniques that would gain their buy-in.

36 SJ and BN discussed the new laws coming in and standardizing international benchmarking criteria  
37 respectively. SJ stated that the *"There are still not enough legislation around it to enforce it, but  
38 that's changing, which is a good thing... New legislation comes in on June 15<sup>th</sup>, which is good for us  
39 to push sustainability further"*. He advocates for the need for regulatory bodies to get involved in  
40 the matter. There have been similar practices that have worked in other issues e.g., Construction  
41 Design and Management (CDM) Regulations 2015 and the need for Building Information Modelling  
42 (BIM) for any government project. WC discussing the role the government can play added that  
43 *"Make the government's requirements and achieve net zero more so and reduce our CO<sub>2</sub> emissions  
44 overall"*. This approach would essentially encompass all clients including large developers who

1 would thus be required to contribute to the life cycle assessment of the properties even though they  
2 would have sold them off right after practical completion.

3 At the moment, the interviewees agreed that effective sustainable principles through legislation was  
4 lacking and as such stakeholders could appeal to the 'reputational' needs of the clients and their  
5 organisations. Waiting on the incoming legislation seemed impractical according to GE and JM. *"I  
6 feel like it's something that definitely has a need to be addressed right now. With COP26 having  
7 taken place recently, we know the requirements that we need to meet"*. WC

8 Appealing to the goodwill of organisations, many of which claim to play a key role in shaping the  
9 environment through responsible projects, Corporate Social Responsibility and similar  
10 organisational values would be the way forward. After the 2021 United Nations Climate Change  
11 Conference (popularly known as COP26), organisations and individuals around the world pledged to  
12 improve their practices that affect the planet. Some of these pledges were explicit and others  
13 implicit. However, for large developers who count on their capital and expertise to complete  
14 projects, they require the support of other entities including local governments to obtain project  
15 approvals. Coincidentally, local governments' decisions are influenced by public opinion and hence  
16 the approval of the developers fundamentally depends on their reputation. Consequently,  
17 promoting measurable targets in the form of international benchmarking standards such as LEED,  
18 BREEAM etc. would motivate developers to practice better sustainable measures.

19 In terms of practices that can be improved without the influence of local governments and clients'  
20 reputation, EG stated that professionals could also contribute significantly by improving their own  
21 practices. *"So, this has happened in the last five years or so. I've been looking into carbon  
22 embodiment and how we as quantity surveyors can play a role in it, because at the moment you  
23 have the architects doing an estimate or structural engineer doing an estimate. Occasionally it is  
24 understandable that the M&E concerned that would do an estimate"* – EG. His approach would  
25 therefore mean that Quantity Surveyors can factor in the carbon embodiment of the project as part  
26 of the overall cost. He was also aware that other professionals (e.g., Architects and Structural  
27 Engineers) had been offering estimates that would offer some inaccuracies thereby further affecting  
28 clients' support for 'supposedly' expensive sustainable measures. He elaborates the frustration: *"To  
29 me, it doesn't make sense because, I know they have their specialty [as Architects and Structural  
30 Engineers], but they're just using software to create and run figures, which as a Quantity Surveyor  
31 we do the [fundamental] quantities and we can also do a side by side comparison from the carbon  
32 emission from a building, along with the cost and how those two go hand-in-hand and can be  
33 changed"*.

34 SJ shared his philosophy when it came to sustainable principles: *"So the best energy used in the  
35 building is the energy you don't use. So, if you don't have to heat it or light it because you've got  
36 natural daylight or the insulation levels that are really good"*. This would be a simple approach to  
37 explaining to the clients how sustainability works. Most clients presume extra costs are attached to  
38 sustainability. SJ's perspective would explain the fundamentals of sustainability to clients i.e., less  
39 drain on resources etc. In going to the basics of sustainability, WC added: *"Obviously, solar panels  
40 and wind turbines are super visual things that you see on buildings, and I think that's something that  
41 I do think of more so. But then I know that there are smaller things that you can do with mechanical  
42 systems and more efficient ways of building and the use of light etc"*. The above highlights a key  
43 reason why clients attribute extra costs to sustainability. Cost implications of the "super visual"  
44 features are understandably not cheap. However, designing a building to use less energy including

1 lighting, heating, etc. is crucial as there are no direct cost implications but offers lifelong benefits,  
2 for example, positioning the building for maximum solar gains.

#### 3 **4.4 Where are the subcontractors in this debate?**

4 In all discussions, there is minimal mention of subcontractors and their role in the supply chain.  
5 Specialist subcontractors namely M&E experts (Mechanical and Electrical Contractors) were  
6 mentioned in different occasions but there was no focus on 'everyday' subcontractors e.g.,  
7 electricians and bricklayers although it is clear that they play an imperative role in delivering  
8 construction projects. Subcontractors discussed in this section excluded M&E contractors as they  
9 are considered niche service providers.

10 As mentioned by WC, using international benchmarking standards would help the clients' interest  
11 in sustainable measures. She explained that "*Accreditation schemes are at the top of the list*". In  
12 order for contractors to achieve any targets (traditionally time, cost and quality), they strongly need  
13 the input of all teams in the supply chain especially skilled trades. Unfortunately, it is not common  
14 to see subcontractors being involved in discussions relating to sustainability. As SJ and EG discussed  
15 learning to improve their knowledge on sustainable principles, this is not often the case with  
16 subcontractors. Upskilling and training for other roles may be a '*luxury*' that many subcontractors  
17 may not have in terms of time and cost for the training programmes.

18 SJ added that it would be very helpful if subcontractors had a good understanding of the  
19 'sustainable' products and systems that are used in their projects. "*Sort of understanding products  
20 and systems... we're always looking out to the market for what the latest thing is and how... how it's  
21 used or how much energy it consumes or how much energy it can save. And then where it comes  
22 from*". As such, all the new knowledge they acquire must be shared with their stakeholders as they  
23 would all be involved in the implementation. Unfortunately, some contractors do not share this  
24 knowledge as they consider it as a competitive edge over their competitors. It is important that  
25 teams on the approved subcontractor list possess the competence in all aspects including a good  
26 safety culture and a positive attitude towards sustainability.

27 JM stated that they had stopped providing materials for their subcontractors and instead, reimburse  
28 them after certain work packages are complete. Although they fully reimburse the subcontractors,  
29 he said it had reduced the amount of waste drastically as the subcontractors are more careful with  
30 upfront costs and being out of pocket for the given period while they wait. When probed further,  
31 he revealed that the quality of work and productivity had not been affected.

32 Subcontractors are usually small and micro construction firms (i.e. employing less than 50  
33 employees or less than 10 employees, respectively). Considering the principal contractors form long  
34 term relationships with their subcontractors and other stakeholders in their supply chain, it would  
35 be beneficial for all interested parties if they could support them in improving their knowledge and  
36 skill relating to sustainability. This would help improve the principal contractors' overall social  
37 enterprise and also improve the quality of their delivery of sustainable projects.

38 This demonstrates the importance of subcontractors, particularly the skilled trades in the realisation  
39 of the sustainable dream. Sustainable procurement methods need to be revised to support  
40 subcontractors and share knowledge efficiently. The respondents all stress the importance of

1 project teams striving for best value and not simply the cheapest and understanding responsible  
2 sourcing throughout the supply chain.

### 3 **5. DISCUSSION**

4 As discussed in extant literature presentation earlier, there are several barriers to achieving  
5 sustainable principles in construction. In some instances, the challenges have been a lack of  
6 understanding of the potential benefits; insufficient cooperation among practitioners, research  
7 institutions and environmental organisations; and a lack of a systematic approach to pursuing  
8 sustainability goals, etc. (Tokbolat *et al.*, 2020). In this research, findings have highlighted clients'  
9 budgets as a key barrier. Although it is acknowledged that other factors such as lack of clear  
10 legislation and benchmarks to encourage the cultural shift, the financial aspect still supersedes all  
11 other challenges. This is in line with previous findings from researchers such as Kiani Mavi *et al.*  
12 (2021) and Edwards *et al.* (2019). From the practitioners interviewed, separating cost from  
13 sustainable design is synonymous to separating safety principles from design. Safety practices are  
14 embedded in general project practices (e.g. Construction Design and Management (CDM)  
15 Regulations 2015) and as such they are advocating that a cultural shift towards this line of thinking  
16 can help resolve the current impasse.

17 Additionally, awareness of sustainable construction practices on the part of the clients is a crucial  
18 issue that needs to improve to help the overall industry approach (Lam, 2020). However, findings  
19 from this research have revealed an important aspect that is being overlooked is missing knowledge  
20 on the part of construction professionals as well. Some keen industry professionals have been  
21 engaging in knowledge exchange activities to inform their own practices i.e. continuous professional  
22 development. This shows that the clients are not the only group of stakeholders who need to learn  
23 more about the concept of sustainability. More importantly, the complexity of the construction  
24 sector also leads to many stakeholders being unnoticed when it comes to their knowledge regarding  
25 sustainable principles. For example, builders' merchants may not prioritise sustainable procurement  
26 when acquiring the materials they stock, however, they are vital to the success of any project.  
27 Contentiously, a contractor would thus acquire materials from this local supplier with the intention  
28 of carrying out their environmental obligations by saving carbon emissions on the long-haul  
29 transportation of goods. This good will gesture may be nullified if the local supplier is acquiring  
30 unethically sourced materials. Traditionally, there has been great emphasis on clients not  
31 understanding the benefits of sustainability (Ball *et al.*, 2023; Lam, 2020) but the lack of knowledge  
32 amongst project stakeholders shows a need to revisit the priority level attributed to sustainability  
33 (Goh *et al.*, 2020).

34 The need to further encourage standardisation of sustainable targets in projects would also further  
35 enhance overall achievement of 'green projects'. Additionally, this practice would lead to the  
36 encouragement of best practice approaches for sustainability. Consultants need to support both  
37 clients and contractors as the data shows both parties could benefit from encouragement to move  
38 towards social and environmental improvements in their practices (see Horry *et al.*, 2023; Tokbolat,  
39 2020).

40 Subcontractors must be included in the discussion of improving sustainable practices is even more  
41 crucial at this moment. de Blois *et al.* (2011) encourage the need to support practices at an  
42 organisational level and such a culture would also support upskilling and offering training to  
43 subcontractors. As revealed by practitioners in the empirical work, knowledge regarding sustainable

1 principles is not widely prevalent even amongst project design teams including consultants.  
2 Improving sustainable practices through effective procurement targets may lead to higher project  
3 costs (Iles and Ryall, 2016) but the life cycle costs can end up being reduced significantly.  
4 Understanding of sustainable principles is required amongst all stakeholders within the complex  
5 relationships found in the construction industry.

## 6 **6. CONCLUSIONS**

7 This study explored the practices of the general construction industry in relation to sustainability.  
8 Using a qualitative approach, six semi-structured interviews were conducted with industry  
9 professionals including consultants, project managers and quantity surveyors. Although this paper  
10 was part of a larger research project where practices of proactive construction organisations and  
11 individuals are being followed, the focus remains firmly on improving sustainable principles in the  
12 industry. The paper was exploratory and sought to gain further understanding of how best  
13 sustainable construction practices can be promoted.

14 Financial constraints remain at the core of factors preventing sustainable projects from being carried  
15 out. However, there is an argument to be made that design teams are often focusing on the  
16 sustainable 'items' such as solar panels and wind turbines etc. instead of embedding slightly more  
17 passive sustainable principles such as improving lighting through wider windows and skylights or  
18 even improving the ventilation so as to have buildings require less energy usage. The use of practices  
19 including solar panels and wind turbines attract a higher upfront cost for developers, but the life  
20 cycle savings are immense. Large property developers (who are not end-users) as such do not focus  
21 on the long-term benefits of the projects. Adopting certification schemes such as BREEAM as a  
22 project requirement can force such considerations to be made. In addition, it is clear that many  
23 professionals, both office-based and site-based (e.g. architects and bricklayers respectively) need  
24 further training and knowledge regarding the wider context of sustainable development. Principal  
25 contractors can support subcontractors through CPD events and other knowledge sharing practices.

## 26 **PRACTICAL IMPLICATIONS AND NOVELTY OF THE PROJECT**

27 The novelty of the paper lies within its critical exploration of how consultants in the construction  
28 sector effectively persuade clients to adopt sustainable design practices, especially in the face of  
29 financial resistance. The paper identified stakeholder engagement strategies, techniques to  
30 overcome financial barriers, lifecycle implications of overall design choices and best practice  
31 approaches adopted in the UK construction sector especially in light of ongoing climate change  
32 challenges.

## 33 **ACKNOWLEDGEMENTS**

34 All authors would like to thank Cityzen Design and Fulkers Bailey Russell for allowing the ongoing  
35 project to explore their working practices in the quest to further understand and improve  
36 sustainable principles in the UK construction sector.

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