

**Analysis of the effectiveness of sustainable materials in UK construction industry**

**Topic Consultation**

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## **Background**

The construction sector is considered one of the biggest carbon-emitter sectors globally, with a total contribution of about 40% of the overall carbon emissions (Lu, Cui, and Li, 2016). One key reason behind this high carbon emission from the construction sector is the usage of energy-intensive processes, which generate excessive waste during construction activities (Dadhich *et al.* 2015). The United Kingdom is also facing similar challenges in that its construction sector is currently causing more than 40% of carbon emissions, creating a challenge for the country to meet its sustainability goals (Gieseckam *et al.*, 2016).

## **Rationale**

Sustainable materials refer to those that are manufactured, supplied, or used by individuals or organisations without having a negative impact on the environment. In other words, the carbon emission of such materials is either negative or neutral (Sandanayake *et al.*, 2018). Because they have no carbon emissions, these sustainable materials allow businesses to complete these activities sustainably without affecting the environment. Chastas *et al.* (2018) share an example of some of these sustainable materials, among which the key ones are rammed earth, cross-laminated timber, bamboo, recycled steel, and others. De-Wolf *et al.* (2017) argue that these sustainable materials could reduce carbon emissions during construction activities in the UK. For instance, Sandanayake *et al.* (2018) inform that the carbon emissions from laminated timber are about 75% lower than concrete, which is used as an alternative. Similarly, Chastas *et al.* (2018) inform that the carbon emissions of recycled steel are about 80% less than virgin steel. Based on these aspects, evaluating whether sustainable materials could support the UK construction sector in combating carbon emission challenges is imperative.

## **Key Aims and Objectives**

*To analyse the effectiveness of sustainable materials in the UK construction industry*

The study objectives are

- To evaluate the existing state of the construction industry in the UK and the existing sustainability challenges

- To review the impact of sustainable materials on optimising the construction industry's carbon emissions in the UK by taking the key aspects of profit, people, and planet into consideration
- To identify key policies or strategies using which the construction companies in the UK could switch to sustainable materials for generating decent profits and sales

## Literature Review

The Triple Bottom Line Theory provides information about three key elements related to the sustainability application or attitude of business companies or sectors, as per Figure 1. It is necessary for businesses to ensure decent performance in the key areas of profit, people, and the planet to work as sustainable businesses. This study will use Figure 1 as a theoretical framework (Wilson, 2015).



*Figure 1: Triple Bottom Line Methodology (Wilson, 2015)*

## Research Methodology

The researcher intends to complete the current research by using qualitative research methodology. This type of methodology has been selected because the researcher is interested in exploring the usage of sustainable materials in the UK construction sector. Here, qualitative

research methodology offers better support for collecting information related to the subject matter in a holistic fashion to meet the aim and objectives (Mohajan, 2018). The researcher intends to collect the data required in the current study through interviews. In contrast, the researcher shall analyse the collected data by using thematic analysis techniques to clearly determine all the key elements provided by the researcher (Mohajan, 2018).

## References

- Chastas, P., Theodosiou, T., Kontoleon, K. J., and Bikas, D. (2018). Normalising and assessing carbon emissions in the building sector: A review on the embodied CO2 emissions of residential buildings. *Building and Environment*, 130, 212-226.
- Dadhich, P., Genovese, A., Kumar, N., and Acquaye, A. (2015). Developing sustainable supply chains in the UK construction industry: A case study. *International Journal of Production Economics*, 164, 271-284.
- De-Wolf, C., Pomponi, F., and Moncaster, A. (2017). Measuring embodied carbon dioxide equivalent of buildings: A review and critique of current industry practice. *Energy and Buildings*, 140, 68-80.
- Giesekam, J., Barrett, J. R., and Taylor, P. (2016). Construction sector views on low carbon building materials. *Building research and information*, 44(4), 423-444.
- Lu, Y., Cui, P., and Li, D. (2016). Carbon emissions and policies in China's building and construction industry: evidence from 1994 to 2012. *Building and Environment*, 95, 94-103.
- Mohajan, H. K. (2018). Qualitative research methodology in social sciences and related subjects. *Journal of economic development, environment and people*, 7(1), 23-48.
- Sandanayake, M., Gunasekara, C., Law, D., Zhang, G., and Setunge, S. (2018). Greenhouse gas emissions of different fly ash based geopolymers in building construction. *Journal of cleaner production*, 204, 399-408.
- Wilson, J. P. (2015). The triple bottom line: Undertaking an economic, social, and environmental retail sustainability strategy. *International Journal of Retail and Distribution Management*, 43(4/5), 432-447.