



## **Sustainable Improvement in Infrastructure Development in Africa: Which way forward? Editorial June 2023**

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### **Introduction**

Infrastructure development remains a key driver for improved productivity and economic growth globally, especially in developing countries. However, this encounters significant setbacks; hence, the United Nations has set relevant, sustainable development goals. This may explain why the authors of the articles in this regular issue focus on construction tender price inflation, Lean construction techniques, Crystalline Silica Dust, and Sustainable Construction Transition (SCT) Policy, demonstrating the challenges that infrastructure development globally faces but with a focus on developing countries. They argue that these challenges must be addressed for a sustainable improvement in infrastructure development in various African countries. For example, Musa et al. (2023) argue that a better understanding of the level of awareness and barriers to lean construction techniques in developing countries, such as Nigeria will contribute to sustainable infrastructure development. However the problems that developing countries face, including establishing a functional regulatory system that will facilitate such ambition has been established as complex by authors, for example, Umeokafor (2017). The question remains 'Which way forward? How does Africa ensure and sustain the development of its infrastructure? While the authors in this issue attempt to answer this question, they also highlight areas that require more attention for pragmatic and robust solutions.

Welcome to the eleventh issue of the Journal of Construction Business and Management and collection of four articles by 15 authors from Kenya, Nigeria, South Africa, and Zambia. Following this introduction is the discussion of the papers, followed by the conclusion.

### **Discussion of the papers**

Despite the positive contributions of the construction industry to infrastructure development, its negative impact on the environment (for example, air and noise pollution, high water consumption, dust and gas emission, and

waste generation) is significant (Drager and Letmathe, 2022). Evidence suggests that the construction industry's contributions in developing countries are more than their developed counterparts. This call for more attention. However, many aspects of sustainability, for example, the scope and implementation dynamics of SCT in Kenya, are poorly understood because of the associated knowledge gaps.

Using qualitative content analysis, Joseph, Ralwala, Wachira-Towey, and Mutisya (2023) examine 34 policy documents on SCT in Kenya to identify the nature of their priorities, the instruments, and stakeholder orientations, including any shortcomings. They found that the stakeholders' orientation mainly targets developers/owners/occupiers and the government. By implication, other stakeholders in the supply chain are overlooked. In terms of the regulatory instruments, they are mainly regulations, constitutions, acts of parliament, codes, and guidelines. The priorities are on the strategic and tactical implementation of environmental sustainability with little consideration for the socioeconomic objective and operational level of implementation. The authors conclude that one of the ways forward is improving the sustainability performance indicators by realigning the priorities of the SCT by focusing on addressing socioeconomic objectives and the operational level of implementation. They also recommend a centralised database that supports economic incentives, education, and information, among many competitions.

Despite the contributions of Joseph et al. (2023) to the burning issue, the need for further studies is evident. For example, while the authors acknowledge the need to go beyond policy regime evaluation, the scope of the study, the problems identification aspect of policymaking, agenda setting, policy development, and implementation require further examination; further research can focus on interviewing the stakeholders on the topic to gain a deeper understanding of their experiences. Studies in the tenth issue of this journal focus on improving the construction industry's performance through education and training (See Windapo and Umeokafor 2022).

The second paper in this issue, Tembo, Mwanaumo, and Kahanji (2023), slightly align with this, focussing on a major contributor to the industry's poor performance, construction tender prices. Using content analysis, Tembo et al. (2023) examine data sources (such as annual reports, road sector reports, audit reports, and annual work plans (from 2008 to 2018) in two organisations. The aim is to define the behaviour of construction tender prices toward proposing the dimension of corrective priorities. Some of the findings in the study include a lack of collaborative working (for example, late engagement with consultants), late payment, poor quality of work, contract issues (such as poor contract practices and unethical contract awards), and poor design.

Further, an increase in tender prices was also found; for example, a 31.4 per cent increase was found in the case study firms from 2008 to 2018. They conclude that tender overpricing in construction is commonplace, which has negative implications for tender price inflation and variability in public sector projects during the procurement stage. While this study is limited like others, for example, due to insufficient data, some of the suggested ways forward include that the government should develop practical policies to reduce construction prices and provide incentives to the public construction sector (for example, by establishing good tender pricing systems that are inclusive of all stakeholders and meet their needs).

The third paper is by Musa, Saleh, Ibrahim, and Dandajeh (2023), which appraises the level of awareness and barriers to applying lean construction in Nigeria, using Kano as a case study. The principle of lean construction is the elimination of waste in any production process and activities resulting in a process cycle reduction by implication, improving the product quality and project efficiency (Balalola et al. 2019; Womack and Jones 2003). It concerns the better use of resources in more efficient ways, above effectiveness. Meeting sustainable development goals directly or indirectly related to infrastructure development will be extremely challenging (if not impossible) without significantly reducing construction waste. The construction process needs to be more efficient in many ways, including using materials, meeting completion dates, staying within budget, and delivering energy-efficient and healthy buildings. Musa and colleagues argue that the limited understanding of lean construction techniques among construction practitioners remains a significant barrier to realising this. Hence, they assess the extent to which construction practitioners know the principles and other barriers to its implementation. Their study found that construction practitioners' awareness and knowledge level in Kano, Nigeria, is low; the overall mean score for all the lean construction techniques is 2.52, less than the average score of 3. The barriers comprise the absence of a lean construction awareness programme ranking the highest with a mean score of 4.18 followed by lack of education and training on its implementation with a mean score of 4.09.

The last article focuses on Crystalline Silica Dust's sources and control measures in constructing buildings and roads in Zambia. Collecting qualitative data from trade workers such as tilers, bricklayers, labourers, and carpenters, through observations, the study by Tente, Mwanaumo, and Thwala (2023) contributes to the limited qualitative and occupational health research in developing countries. Addressing occupational health problems (which significantly limit sustaining infrastructure development) will be challenging without understanding social reality. Tente et al. (2023) found that adequate personal protective equipment (PPE) is rarely provided to workers. They also found that the exposure of the workers to dust is high because the use of control measures such as water and facemasks, are inadequate or ineffective. For example, they found that some workers use COVID-19 facemasks which are inadequate for silica dust control.

Regarding the risk control hierarchy, only engineering controls and PPE were adopted. By implication, the more effective ones, such as elimination or substitution, and the complementary ones, such as administrative controls, are not adopted. The risk control hierarchy comprises five measures/strategies/levels, and the principle is that in controlling risks, the most effective is considered and adopted first where possible. The first and most effective is the elimination, followed by substitution, engineering control, administrative control, and lastly PPE which is the least effective. The combination of control measures is commonplace. For example, when using substitutions, training and supervision (administrative controls) and PPE can be adopted. The findings of Tente et al. (2023) explain some of the health problems workers in Zambia encounter. The authors conclude by recommending the provision of the relevant PPE to the workers. However, the risk control hierarchy must be applied. Authors such as Umeokafor (2020) also found that a critical challenge for authors in construction health and safety, is the poor regulatory environment in developing countries.

## Conclusion

Despite the differences in the topics of the four papers in this issue contributed by 15 authors from Kenya, Nigeria, South Africa, and Zambia, this editorial has been able to show how they advance the discourse of sustainable improvement in infrastructure development by identifying issues that impact on it and suggesting ways forward. Focussing on construction tender price inflation, Lean construction techniques, Crystalline Silica Dust, and Sustainable Construction Transition (SCT) Policy, the papers demonstrate the need for improved regulation in occupational health and sustainability, the urgency for governments to develop practical policies to reduce construction prices and provide incentives to the public construction sector; and the extent of poor awareness and knowledge of lean techniques in a state in Nigeria which is critical for the efficient use of resources. Some of the burning questions that need to be answered are not limited to:

- How can the limited awareness and knowledge of lean construction in Nigeria be explained from a qualitative perspective?
- What are the characteristics of the relevant SCT policy documents in terms of the problem identification aspect of policymaking, agenda setting, development, and implementation?
- What are the experiences and perceptions of stakeholders in using the SCT policy?
- What are the workable strategies for improving workers' occupational health when exposed to silica dust and chemicals in Zambia?

We thank the authors for their contributions and the reviewers for their efforts to improve the quality of the papers published by the journal. We are also grateful to the journal editorial board and the panel of reviewers who play a critical role in ensuring the quality of the manuscripts and in keeping the journal on the path to attaining the expected standard and quality. Criticisms, feedback, and suggestions from readers for improving the journal's quality are also welcome.

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