

# BARRIERS TO SUSTAINABILITY GOVERNANCE OF INFRASTRUCTURE DELIVERY SYSTEMS

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## ORIGINALITY:

This study seeks to offer a new perspective towards research into governance for sustainability within infrastructure delivery systems in developing countries.

## KEYWORDS:

Developing Countries, Infrastructure Delivery, Phenomenology, Sustainability Governance

## ABSTRACT

### PURPOSE:

This exploratory study seeks to identify the factors which negate the ability of extant project governance approaches to deliver on sustainable development (SD) ethos within infrastructure delivery systems.

### DESIGN/METHODOLOGY/APPROACH:

A phenomenological research design was utilised to elicit the perceptions of purposively selected stakeholders. Data was obtained through a number of semi-structured interviews held with purposively selected interviewees. Thematic analysis was deployed in analysing the data.

**Findings:** Findings confirmed the inability of project governance approaches to deliver optimal sustainability performance. This was as a result of the persistent insistence on cost and time as the most dominant project success criteria. Another barrier identified was the absence of credible sustainability assessment and rating tools within the developing country context.

### RESEARCH IMPLICATIONS:

It is expected that these findings will provide the platform for sustained engagement between industry practitioners, policy makers and members of the academia on the need to develop sustainability governance approaches.

## 1. INTRODUCTION

The quest for sustainable development (SD) has assumed frontline position in contemporary policy and development discourse. To this end, national and regional development strategies are increasingly being predicated on SD tenets. Sustainability and SD have been described as veritable platforms for engendering socio-ecological harmony<sup>[1]</sup>. Issues such as poverty, lack of social inclusiveness, equity and justice as well as environmental degradation have been identified as threats to this socio-ecological harmony. The effective implementation of SD has been suggested as a panacea to the aforementioned threats<sup>[2]</sup>. Presently, SD provides no concise framework, detailing approaches, plans or activities through which it can be operationalised especially in projects<sup>[3]</sup>. This challenge has culminated in the development of context-specific guidelines hence making a widely acceptable operationalisation framework difficult, if not impossible to achieve. Although the dimensions appear to have gained traction<sup>[4]</sup> amongst a large scholarly base, they do not sufficiently make up for the vagueness associated with SD and its operationalisation.

For optimal implementation of SD to occur, changes associated with sustainability should be embedded into all aspects of societal life such as inherent activities, practices, communication and culture<sup>[5]</sup>. Likewise, in the construction industry,



SD implementation can only be achieved through the consideration of its aspects by extant project management or project governance frameworks available<sup>[6]</sup>. However, a careful look at relevant literature confirms a paucity of evidence pointing to the presence of such in-depth consideration<sup>[7]</sup>. Whereas, an increasing advocacy for such consideration into project management practices has been observed same cannot be said regarding project governance structures. The non-consideration of SD ethos in the governance of infrastructure project delivery processes (otherwise referred to herein as infrastructure delivery systems-IDS) portends dire consequences for such projects from a sustainability perspective, especially considering the magnitude and costly nature of such projects. Scholars have reiterated the need to ensure that project governance approaches are designed to match the current realities being faced by contemporary society<sup>[8, 9]</sup>. They maintain that unless this is done, projects will continue to disrupt the socio-ecological balance in an unsustainable manner.

Developing countries appear to suffer from intensive infrastructure deficit<sup>[10]</sup>. However, they are making strides to bridge this deficit through significant infrastructure investments. There is need to ensure that the infrastructure delivery efforts are carried out in a sustainable manner. One way of achieving this lies in the consideration of SD tenets in the project governance and management approaches applied by the delivery team, therein<sup>[11]</sup>. Nevertheless, a cursory look at the infrastructure assets being delivered indicate that this is not the case<sup>[12, 13]</sup>. Therefore, there is a need to identify the barriers that have deterred the infrastructure subsector from mainstreaming SD tenets in extant project governance approaches. Prior to this time, efforts at integrating SD ethos into projects have centred on asset sustainability, not the processes and inter-organisational relationships involved in the delivery of the asset. It is important that the aforementioned aspects which make up the IDS are governed in a manner that allows for actualisation of SD goals. Yet, it is worthy of note to mention that efforts to mainstream sustainability ethos into conventional project management methodology in developing countries has commenced<sup>[14]</sup>. This study seeks to contribute towards bridging this gap. To do this effectively, the study explores the perspectives of a varied mix

of construction industry stakeholders on the probable barriers to the evolution of a sustainability-oriented governance approach to infrastructure project delivery.

To achieve its objective, subsequent parts of this article will be arranged in the following manner, namely; a review of relevant literature on construction project governance, and the case for the adoption of sustainability governance approaches in the delivery of infrastructure projects. Other aspects consist of a justification of the research methodology adopted, the presentation and discussion of findings, and the conclusion.

## 2. THEORETICAL PERSPECTIVE

### Governance of Construction Projects

In the construction industry context, scholars have also made attempts to define governance from a project perspective-project governance<sup>[15, 16]</sup>. Project governance can be approached from two perspectives<sup>[15]</sup>, (i) a micro-analytical perspective, and; (ii) the macro-analytical perspective. Project governance is described as consisting of a set of institutionalised principles, structures and processes for undertaking and managing projects<sup>[17]</sup>. Succinctly put, project governance consists of the elements necessary to enable an effective organisation of interactions between various actors and processes on a multi-scale during the course of project delivery. Elements of project governance include consist of the following, namely: existence of contracts between involved actors, organisation and conduct of procurement, procedure for the management of suppliers networks by project actors, risk allocation and management, monitoring and coordination of work during various phases of the project lifecycle, processes for collaboration among project stakeholders as well as the nature of communication between project actors<sup>[18]</sup>.

It can be seen that project governance is a complex endeavour and even more so, is the governance of infrastructure projects. The bid to improve sustainability performance during the delivery of infrastructure projects makes it imperative that governance approaches which are capable of catering to increased levels of complexity are deployed. But, the inadequacy of



extant governance approaches which rely on market, hierarchy or hybrid forms of governance in providing for infrastructure projects has been observed<sup>[18]</sup>. This is prompted by the nature of infrastructure projects as project coalitions or networks consisting of several interdependent organisations and processes which elucidate the degree of interconnectedness existing between them in aspects pertaining to communication, control, and coordination. Therefore, the strategies adopted therein by participating organisations will play a salient role in the governance of large projects. Furthermore, the choice of a project governance approach should be predicated on the objectives which the project sponsors are intent on achieving<sup>[19]</sup>. Therefore, this implies that the bid to deliver infrastructure projects in a sustainable manner should take precedence during the selection of governance structures, based on the need to not only contribute to society's SD aspirations but also to improve on the construction industry's SD credentials. This is necessary especially as various participating organisations have different worldviews concerning SD, thus making them work at cross-purposes within the delivery system. To avoid such an occurrence, there is need to evolve appropriate governance approaches for delivering on this critical agenda within the realm of infrastructure projects.

Extant construction, project management and built environment literature is largely silent on the integration of SD ethos into conventional governance approaches<sup>[20-22]</sup>. This observation makes this study imperative.

### **The Case for Sustainability Governance of Infrastructure Delivery Systems**

Although the sustainability performance of a project is dependent upon the mode of governance adopted, there is a paucity of literature supporting this assertion<sup>[3]</sup>. Relevant studies have buttressed the need for this linkage and posit that the potential of a governance approach to deliver on SD should be dependent upon the fulfilment of two criteria<sup>[23]</sup>. These criteria include: consistency of the contents of the governance mode with the goals-functional and normative- resulting from the pursuit of SD, and; the presence of an induced form of transformative, collective action among the stakeholders. They maintain that only

governance modes which fulfil these criteria would be able to deliver on SD objectives. The absence of a widely accepted form of sustainability governance, especially as sustainability has remained context-dependent thereby possessing details which highlight different contexts<sup>[24]</sup>. Yet, the development of a foundational strategy detailing structures and practices capable of engendering positive working practices among the multiplicity of stakeholders across a complex range of issues in an interconnected manner on multiple levels and scales with regard for contexts and uncertainties was necessary for effective sustainability governance. Furthermore, the notion that any governance mode possessing the aforementioned attributes will be capable of delivering on effective sustainability governance in any context has been alluded to. Sustainability governance does not possess a generally accepted definition as it is considered to be an evolving concept in its embryonic stage. Sustainability governance is defined as a set of formal or informal networks existing between actors and the systems in which these networks are domiciled, that affect sustainability through the integration of various dimensions<sup>[25]</sup>. It has also been described as comprising of processes of socio-political governance oriented towards the attainment of sustainable development within a particular context. These processes occur along several levels, either local or international, affect different policy fields and refer to multiple temporal scales.

Despite the claims made in the sustainability governance literature concerning the adoption of certain governance modes as being appropriate for the delivery of SD, there is as yet, no particular appropriate governance mode for governing sustainability both in projects and society<sup>[23]</sup>. Such a governance approach will consist of (i) integration of policy considerations within the delivery system, (ii) development of common and shared SD objectives, (iii) selection of suitable sustainability-based criteria for planning as well as (iv) indicators for measuring actionable progress towards sustainability, agreement concerning trade-offs, provision of information concerning available incentives for practical implementation and development of programmes for continuous system innovation [24]. Also, governance modes emphasizing partnerships among multiple stakeholders across



several policy levels should be relied upon for optimal SD implementation [25, 27-29]. The delivery of infrastructure projects consists of a plethora of anthropogenic activities which leave debilitating effects on the actualisation of society's SD aspirations<sup>[30]</sup>. These activities need to be better governed to ensure an amelioration of such effects. In recognition of this need, a surge in relevant literature pertaining to the adoption of sustainable infrastructure project delivery processes has been observed. Terminologies like sustainable construction, green construction etc. have evolved accordingly. Yet, evidence from the developing world context still indicate the prevalence of unsustainable project delivery practices<sup>[31]</sup>. Seemingly, this has led to the underwhelming levels of sustainability performance. Perhaps, such performance can be attributed to the inability of the extant project governance approaches being applied in the IDS to cater to the dynamics of SD implementation. The significance of the IDS in engendering sustainable infrastructure delivery cannot be overlooked. Therefore, there is need to ensure that the SD ethos are considered in the design of the project governance approaches to be utilised within such systems.

### 3. RESEARCH METHODOLOGY

This qualitative study adopted a phenomenological research design due to the need to elicit the perceptions of relevant parties based on their first-hand experiences of the phenomenon understudied<sup>[32]</sup>. Accordingly, this study sought to ascertain the opinion of various stakeholders who have been involved with the delivery of infrastructure projects within the developing country context, on the concept of sustainability governance. The recruitment of interviewees was based on a mix of purposive and snowball sampling techniques respectively<sup>[33]</sup>. However, effort was made to ensure that adequate representation of various stakeholder groups identified through the aid of the Viable Infrastructure Delivery System (VIDSM)-a conceptual model for identifying parties to an IDS<sup>[19]</sup>. Additionally, some interviewees were recruited from the academia to provide a variety of views. Nevertheless, the interviewees from the academia comprised of individuals who had been involved with sustainable project delivery based research projects within the construction,

engineering and management (CEM) discipline. Emails were sent to 34 prospective interviewees, soliciting their participation in the study.

Furthermore, these individuals were asked to recommend other individuals whom they thought would be happy to participate. From an initial cohort of 34 potential interviewees, 18 individuals indicated interest to participate in the study. Yet, 4 additional interviewees were enlisted through recommendations from the original cohort. In total, 22 interviewees agreed to participate in the study. Consequently, another email was issued to the interviewees, indicating the scope of the study, particularly as it concerns the meaning of sustainability governance. An interviewee asked to be excused from the study for personal reasons. This led to a reduction in the number interviewees to 21. The demographics of the interviewees are presented in Table 1.

**Table 1: Interviewee Demographics**

Sector	Number of Interviewees	Code	Location
Academia	7	A1-A7	Nigeria, Ghana, South Africa
Contractors/Sub-contractors	5	CS1-CS5	South Africa, Nigeria
Consultants	6	CO1-CO6	Nigeria, South Africa,
Client representative	3	CR1-CR3	South Africa, Nigeria

Source: Author's compilation (2017)

Interview sessions were conducted through a combination of face-to-face interviews and computer-mediated communication (Skype) between January and June, 2017 lasting between 45 minutes to an hour. Questions asked during the interview sessions pertained to the individual understanding of what SD implied, their experience with extant project governance approaches applied within the IDS, their assessment of the efficacy of such approaches towards optimal operationalisation of SD and, the flaws noticed with the application of these approaches. Care was taken not to mention the terms 'project governance' and 'sustainability governance' during the interview sessions so as not to bring about increased levels of ambiguity to the interviewees as they were more or less, industry practitioners and terms such as the duo enjoyed higher patronage within the academia.





Rather, the dimensions associated with project governance were utilised. With the permission of interviewees, the author recorded the interview sessions and transcribed them accordingly. Guided by the principles of thematic analysis, the author perused through the emergent transcripts severally to make sense of the responses and align them with the study's objective. During this engagement with the transcripts, certain patterns were observed which were subsequently categorised into the pre-set themes initially adopted by the author. These themes are discussed in the subsequent section.

## 4. PRESENTATION AND DISCUSSION OF FINDINGS

During data analysis, the author relied on the interview questions in themes development. This approach culminated in the adoption of three main themes. These themes include; sustainability and SD awareness, understanding of project governance dimensions and assessment of extant project governance approaches to achieve sustainability and SD during infrastructure delivery. In this section, findings are presented and discussed in a concurrent manner according to the aforementioned themes.

### Theme 1: Sustainability/ SD/Sustainable Construction awareness

This question was deemed critical to the success of this study. The lack of awareness of SD and sustainable construction practices among construction industry stakeholders as a barrier to its effective adoption was identified in literature<sup>[34]</sup>. Going by the excerpts from the transcripts, all interviewees showed a remarkably high degree of sustainability, SD and sustainable construction awareness. This was expected as there has been increased advocacies by professional bodies, academic institutions and think-tanks as well as policy implications thus making it imperative that parties to the infrastructure delivery system should at least be aware of the tenets of SD as it applied to construction. Such groups were identified as institutional enablers of sustainable construction practices in developing countries<sup>[35]</sup>. Also, the interviewees belonged to a combination of one or more professional bodies which have been

clamouring for industry transformation. According to one of the interviewees from the industry (CS4);

“ It (sustainability/SD/sustainable construction) is the use of less resources to achieve more...Simply, we can say that sustainability and sustainable development are more or less concerned with value maximisation with a lesser amount of resources, from a construction project perspective that is.’

This was re-echoed by a multiplicity of the industry stakeholders whereas their academic counterparts adopted the SD mantra elucidated in Bruntland commission's our common futures report<sup>[36]</sup>. However, A6, in his contribution cautioned that whilst the use of less resources was central to the SD concept, there was need to ensure that this was not taken at face value, admitting that,

“I know that the sustainable development entails the minimal use of construction materials and other resources.....care must be taken to ensure that we don't end up misleading industry practitioners who are always keen on seeking out cost cutting measures in their projects, some of which may be detrimental to the actualisation of the project's initial objective... there is need to evaluate the deployment of alternative resources and their associated cost implications over the lifecycle of the project.”

### Theme 2: Understanding of project governance dimensions

The terms governance, project governance and sustainability governance have been described as defying widely acceptable definitions. Therefore, the author deemed it vital to ensure that some sort of consensus was arrived at between the interviewee cohorts to ensure that elicitations obtained were congruent with the study's expectations.

During the interview sessions as has been reiterated previously, the author refrained from asking the interviewees about their understanding of what project governance or sustainability governance entailed. Rather, questions asked revolved around the dimensions of the project governance like the presence of different decision-making, communication and



control, monitoring and evaluation structures<sup>[37]</sup>. That is to say, interviewees were asked about their engagement with these structures designed to enable the alignment of the strategic objectives to the project level implementation objectives. To this end, the interviewees were provided with a diagrammatic illustration of this relationship as depicted by the VIDSM. This approach proved effective, especially for a significant number of the industry practitioners.

To buttress their understanding of project governance, an interviewee (CS2) stated;

'Ok, I now see what you are driving at, are contractual agreements between the client and the contractor regarding the specifications, the need to follow the specifications when doing the work and penalties attached to not doing the work according to what has been specified not part of what you are talking about?'

Another interviewee (CR2) added;

"By control and coordination structures, I believe that you are referring to the type of contract that is being used to ensure compliance among contractors, consultants and artisans...the strategy for reporting activities on site and the audit of various stages before issuance of completion certificates."

These responses indicate that knowledge concerning project governance dimensions among the interviewees appears to have been established. This observation provided the author with the impetus to proceed with exploring their perception concerning the ability of the present contracting strategies and procurement arrangements or pathways to deliver on SD aspirations through the IDS.

### **Theme 3: Assessment of the ability of the extant governance approaches to ensure optimal mainstreaming of sustainability/SD ethos in Infrastructure Delivery Systems**

From available data, there was a consensus among the interviewees on the inability of extant governance approaches to cater to the actualisation of SD aspirations during procurement and subsequent delivery of infrastructure projects. Based on their position, an identification of factors responsible for the inability of these approaches to achieve SD ethos on the projects became pertinent. The factors

identified by the interviewees were further classified into 2 sub-themes which are presented and discussed below.

#### 1. Persistent reliance on the iron triangle as project success criteria

Scholars have continued to complain about the seeming fixation of construction industry stakeholders on the use of cost, time and quality as project success criteria<sup>[38,39]</sup>. There was a need to dichotomise between project management success and project success<sup>[40, 41]</sup>. Nevertheless, this fixation has continued unabated as most project sponsors continue to measure the success or otherwise of their projects by these success criteria. Yet, the advocacy for the inclusion of sustainable development outcomes as part of the criteria for measuring project success has continued on an incremental basis. This is especially the case in public sector projects where the public sector clients are being tasked with delivering added value to the host communities and end users of their projects whilst still delivering on time cost and quality.

Explaining the impact of such reliance on the ability of the project governance approaches to deliver on SD, an interviewee—CO3 stated that,

"During the briefing stages, the client describes what he desires from the project, often times making adjustments based on the cost cutting attributes of different options...there is a fear on the side of clients to part with considerable funds with an expectation of future benefits...be they sustainable or not"

Another interviewee, admitted to how an attempt at showing a client the benefits of a more expensive option was going to bring about improved cost savings and reduced adverse effects on the environment over the whole of life of the asset nearly cost him his commission. According to him, the client rebuffed the idea especially the aspects pertaining to cost implications.

Contributing to the discourse, another interviewee (CR3), this time, a representative of the public sector infrastructure client maintained that;

"In my position and I have been in this ministry for upwards of 16 years.....we are constrained with working with budget cycles as our bosses are politicians who



need to deliver to the electorate in short periods...remember that they (politicians) are also held accountable for acts bothering on perceived profligacy by the public who often act as if they are not concerned about the long term benefits such as cost savings offered over time and environmental friendliness of more expensive options.”

Some interviewees also admitted to the common usage of taxonomies like sustainable construction, preferential procurement, green supply chain, etc. as ways of engendering a transformation to more sustainable infrastructure delivery systems. They admitted that the inability of project sponsors to consider the entire lifecycle of the project was undermining the potency of extant governance approaches to deliver on SD oriented objectives. This view is shared by others <sup>[42]</sup>. Whilst advocating for a comprehensive make-over of the extant governance approaches to deliver on sustainability such as inclusiveness within the delivery system, the influence of contract strategies needs to be regarded <sup>[42]</sup>. Continuing they advocate for the adoption of integrated contracts, i.e. contracts that support the integration of the construction and maintenance aspects into a single project contract. They argue that this will enable an understanding of the whole-of-life sustainability contributions of decisions made at the project's front-end stages.

From these responses, it can be implied that stakeholders are often desirous of delivering projects at the most economically responsive terms and quality within acceptable timelines to avoid public opprobrium without recourse to what happens in the latter stages of the project's lifecycle.

A plethora of interviewees concurred with these assertions, acknowledging that despite the prevalence of policy documents on the need to engender sustainability and SD ethos in projects, especially those commissioned by the public sector, this in most cases amounted to mere lip service as the governance structures deployed to these projects are designed to achieve values espoused by the iron triangle. Accordingly, the infrastructure delivery systems are governed in like manner to achieve these iron triangle-oriented ideals. Mention was also made of the

gradual shift towards the integration of sustainability-based success criteria in certain projects. Yet, it was observed that such projects were usually executed in collaboration with global organisations or private sector entities who are desirous of marketing their sustainability credentials as a value proposition for gaining wider acceptance in their respective markets.

## 2. Absence of sustainability assessment and rating tools

The assessment and rating of infrastructure projects for sustainability is indeed imperative <sup>[43, 44]</sup>. Taking a cue from the saying, “if it cannot be measured, it cannot be managed” the importance of such parameters can be observed as their absence obviously negates the ability of stakeholders within an IDS to effectively gauge their efforts towards mainstreaming SD in their utilisation of allocated resources during the conduct of associated activities. A review of relevant literature reveals the absence of relevant tools for the assessing and rating the degree to which SD ethos has been mainstreamed into infrastructure projects in developing countries <sup>[45, 46]</sup>. However, it must be noted that the absence of such tools in this context only relates to the infrastructure aspects and not buildings. Developing countries like South Africa and Brazil are playing a leading role in the adoption and utilisation of such tools in the building subsector of the construction industry <sup>[44]</sup>. In South Africa for instance, the Green Star SA rating system has been adopted for rating buildings for sustainability whereas the Built Environment Sustainability Tool (BEST) has been developed to measure the capability of buildings to contribute to SD. The same cannot be said of the infrastructure sector. In the developed country context, separate or a combination of methodologies like Lifecycle Assessment (LCA), Lifecycle Costing (LCC), Social Lifecycle Assessment (S-LCA), Lifecycle Sustainability Assessment (LCSA), etc. have all been used to develop infrastructure assessment tools like Infrastructure Sustainability (IS), Civil Engineering Environmental Quality Assessment and Award Scheme (CEEQUAL). These tools may have affected the manner in which infrastructure delivery systems are being governed in recent times. But, an investigation into the success of these tools in evolving optimal sustainability governance within IDSs in such climes is surely beyond the scope of this study.



On this issue, it was interesting to observe that only interviewees from the academia mentioned the absence of appropriate sustainability assessment toolkits as posing a significant barrier to effective sustainability governance. There was no mention of such by other interviewees.

According to an interviewee (CR1),

“Gone are the days when we have to solely rely on environmental impact assessments and strategic environmental assessment for appraising projects of this magnitude as such tools do not cover the various stages of the project's lifecycle.....sustainability performance must be measured and managed on a continuous basis and only tools that can go the whole way should be encouraged.”

Besides the absence of these assessment and rating toolkits, another issue that was mentioned by one of the interviewees was the lack credible databases from where data can be extracted and standardised metrics for measuring social sustainability dimensions. No doubt, data is critical to any assessment and rating exercise and in its absence, no credible assessment can be done. Furthermore, the need to utilise context-specific data for such exercises makes reliance on data from developed countries untenable. Such data will encourage effective decision making concerning choice between alternative activities, materials and resource allocation and usage within the IDS.

The following sub-themes discussed above were identified by the interviewees as encumbering effective sustainability governance of infrastructure delivery systems, hence resulting in unsustainable project delivery practices, especially in the developing country context. Findings from this study lend credence to others conducted in the developed world context on the need for the modification of existing project governance approaches or the development of new mores to accommodate the changing trends in contemporary society<sup>[8, 42]</sup>. Accordingly, it was recommended that the adoption of new governance approaches which would change the manner through which various parties to a project delivery system interact, if the desire for sustainable project delivery is to be actualised<sup>[8]</sup>.

## 5. CONCLUSION

The delivery of infrastructure has often been described as complex. From a systems thinking perspective, the interaction between resources, parties and activities are described as integral components of the delivery system, required to deliver on the objectives of the system. Therefore, these relationships need to be governed appropriately. Infrastructure delivery in developing countries continues to be confronted by underwhelming sustainability performance. This has led to the advocacy for the modification of the extant project governance and management approaches or development of new ones to cater to the optimal integration of SD ethos during the delivery of infrastructure projects through the IDS in developing countries.

Adopting a phenomenological research design, this study sought to identify the factors hindering the ability of these extant governance approaches to deliver on SD objectives through the IDS. Based on the data collected from a series of interview sessions with critical stakeholders, it was discovered that absence of veritable sustainability assessment and rating tools as well as the retention of cost, time and quality as the major project success criteria constituted major barriers to sustainability governance in the IDS.

Therefore, this implies that unless these barriers are tackled, the bid to deliver projects in a sustainable manner would continue the industry, particularly in developing countries. There is then a need to devote more studies towards the development of a sustainability governance framework for infrastructure delivery taking a cue from other sectors and from nature (biomimicry). Also, it should be noted that this study is exploratory and only seeks to initiate the discourse on the need to develop and engender sustainability governance approaches in the industry. Subsequent studies are thus encouraged in this regard as it holds significant implications for industry practitioners, policy makers and relevant stakeholders.

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