

Towards a Theory of Sustainability Governance in Mega Projects: An Exploratory Study

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Abstract:

It is no longer news that megaprojects are capable of undermining the attainment of society's sustainable development aspirations. What is news, however, is the overt reliance on traditional governance approaches by stakeholders in the construction in their attempt to integrate sustainable procurement, construction, and asset management practices during various phases of the asset's lifecycle. This appears to have brought about the prevailing instances of underwhelming sustainability performance in various megaprojects. This is especially the case in developing countries where the demand for critical infrastructure is driving the initiation of several greenfield projects. The need to put forward a governance approach that is contingent on the successful implementation of sustainable development ethos across the entire life cycle of infrastructure assets in developing countries thus becomes imperative. This is the central objective of this study. Relying on a review of relevant literature pertaining to themes such as sustainability governance, megaprojects and sustainable development, this qualitative study explores the utility of the theory of sustainability governance within the megaproject context. It is expected that this study will contribute to an emerging discourse on the need for the theory of sustainability governance in the construction industry and mega projects, in particular. Furthermore, it will propose a theoretical platform for the development of a mechanism for engendering sustainability governance in megaprojects.

Keywords: Developing Countries, Mega Projects, Sustainability Governance, Sustainable Development

1. Introduction

Society is witnessing a paradigmatic shift towards sustainability (Broman & Robèrt, 2017). Accordingly, several governments and organizations are beginning to embrace the sustainable development (SD) mantra. Apparently, this is in recognition of the unsustainable consumption patterns prevalent in contemporary times. Sustainability has been referred to as a state of utopia resulting from effective SD implementation, wherein society's consumption patterns are structured in a manner that provides effectively and efficiently for the present generation whilst not undermining the ability of the future generation to enjoy utility of the earth's resources (Frantzeskaki, Loorbach, & Meadowcroft, 2012). This is seen as a drive towards securing intra and inter-generational equity through the adoption of SD ethos. Therefore, various policy implementation frameworks have been initiated by national, regional and global bodies, especially the United Nations towards the attainment of sustainability. Recently, the sustainable development goals (SDG) initiative was launched, replete with milestones which the society has to meet in order to successfully attain sustainability by 2030.

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Also, prior to the determination of three sustainability dimensions- environmental, economic and social (Elkington, 1999b), the concept of sustainability was seen as a buzz word for policy makers, industry practitioners, academics etc. Till this moment, sustainability is still regarded as a fad and incapable of being realized or operationalized (Boström, 2012). This reputation stems from its indefinability. Scholars have referred to this notion as depriving the society of the desired benefits associated with sustainability (Sneddon, Howarth, & Norgaard, 2006). However, whilst society is being challenged to deliver on sustainability through SD, certain economic sectors associated with anthropogenic activities capable of undermining this aspiration have been identified. It is pleasing to note that efforts are on-going in such sectors to contribute towards sustainability (Pitt, Tucker, Riley, & Longden, 2009).

The construction industry happens to be one of such sectors (Ding, 2008). The industry's activities as well as the operation of the end products resulting from these activities make significant contributions towards the attainment of the sustainability agenda, either positively or adversely (Du Plessis, 2007). To stem this tide, stakeholders in the industry have resorted to exploring new ways of delivering and operating these assets. The adoption of new approaches to project delivery has led to the emergence of new taxonomies such as, *green construction*, *sustainable construction*, *sustainable procurement*, *lean production*, *green business models*, etc. However, despite several years after the adoption of these new practices, the industry has continued to record varied implementation performances as it concerns sustainability. In some instances, business as usual (BAU) has continued to prevail thus leading to a plethora of unsustainable developments in the industry. Africa and the rest of the developing world seem to be lagging behind their developed country peers in terms of the degree of significant improvements which have been achieved so far.

The relationship between infrastructure and economic growth has been buttressed severally in the literature (Esfahani & Ramírez, 2003; Munnell, 1992). Societies can only achieve desired levels of productiveness required to compete favourably in the comity of nations given the presence of adequate infrastructure. Therefore, the imperative nature of these assets cannot be overlooked. However, the delivery of these assets (usually as megaprojects) and their subsequent operation have the potential to detract from society's sustainability objectives as a result of the inherent anthropogenic activities (Kibert, 2007). Megaprojects are known for their highly complex nature (Kardes, Ozturk, Cavusgil, & Cavusgil, 2013). This attendant complexity along with the communication difficulties associated with them makes it difficult to achieve project objectives (Giezen, 2012). Owing to the nature of megaprojects, their failure will leave debilitating effects on the SD endeavour, hence the need to ensure that such does not occur. Succinctly put, megaprojects are too big to fail.

Yet, it has been observed that whereas other economic sectors have started to evolve new ways of governing their activities so as to achieve sustainability tenets, literature reveals that the governance of megaproject has continued in a manner which depicts BAU (Klakegg, 2009). It is pertinent to note, however, that the industry cannot achieve expected sustainable outcomes though overt reliance on conventional governance approaches, hence the need for the development of new governance approaches for megaprojects. This is the gap which this study seeks to contribute to, in theoretical terms.

To fulfil its objective, subsequent aspects of this exploratory study is structured as follows: a brief review of the concept of sustainability and sustainable development; mega projects and

sustainable development; the case for sustainability governance of mega projects, and; concluding remarks with insights into further research.

2. Theoretical Perspective

2.1 Sustainability and Sustainable Development

The dual concepts of sustainability and sustainable development have assumed a frontline position in contemporary policy and development discourse across the globe. To this end, national and regional development strategies are being consistently woven around sustainability tenets. These concepts have since been described as a platform for engendering socio-ecological harmony. 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.

But, the concept of sustainability suffers from the problem of indefinability which has continued to affect its optimal realization and operationalization. In its normal form, the sustainability and SD provides no concise framework detailing suitable approaches, plans or activities through which it can be operationalized (Ayre & Callway, 2013). This imbroglio has culminated in the development of a plethora of guidelines and context-dependent definitions hence making a widely acceptable definition difficult if not impossible. As it stands, the sustainability has to rely on the development of a common ontology among a diverse group of stakeholders to give it meaning. The achievement of such consensus and enhanced participation among stakeholders across multiple layers of society enables a more binding implementation framework among such groups. Although the dimensions provided by Elkington (1999a) appear to have gained traction amongst a large scholarly base, they do not sufficiently make up for the vagueness associated with the sustainability concept.

For optimal implementation of SD, advocates opine that the changes associated with sustainability should be embedded into all aspects of societal life such inherent activities, practices, communication and culture (Linnenluecke & Griffiths, 2013). In the construction industry, SD implementation can only be achieved through the integration of its aspects into the extant project management or project governance frameworks available to the industry. However, a careful look at relevant literature confirms the paucity of such integration. Whereas, an increasing advocacy for such integration into project management practices has been observed, same cannot be said regarding the integration into project governance structures. The non-integration of sustainability ethos into the governance of mega projects portends grave consequences for megaprojects from a sustainability perspective, especially considering the magnitude and costly nature of such projects.

2.2 Governance of Mega Projects

Mega projects are multibillion-dollar mega infrastructure projects mostly commissioned by the public sector and delivered through the private sector (Marcelino-Sádaba, González-Jaen, & Pérez-Ezcurdia, 2015). Such projects are often described as transformational and trendsetting, with planning, design, procurement and eventual delivery spanning several years. They are deemed to possess the capability to reshape contemporary society through the kind of services that they expected to deliver and the manner through which they are delivered. This

implies the need for a different set of management approaches than will be utilized in conventional projects as they differ completely in scale and complexity from the latter. According to Flyvbjerg (2014) megaprojects are gradually becoming the preferred delivery models for goods and services across various economic sectors. Projects like civil infrastructure projects, water and energy infrastructure projects, transportation projects, industrial processing plants etc. have been categorized as megaprojects. Owing to the magnitude of these projects, their effects on the socio-ecological system can be better imagined.

With the widening global infrastructural deficit and the relationship between the provision of resilient and sustainable infrastructure on the one hand and the attainment of sustainable development goals (SDGs) on the other, several projects of this nature will be coming on stream in the future, bringing with them mixed effects on the state of the society. To curb the degree of debilitating effects which megaprojects may have on the socio-ecological system, there is need to take a cue from other sectors where new modes of governance have been adopted and implemented with the overall objective of attaining sustainability.

The theory of governance shares several attributes with sustainability and SD respectively. Whilst it has been described as occurring on the firmament at about the same period as sustainability, scholars proceed to state that it is being equally as vague as sustainability and lacking a widely accepted definition (Lange, Driessen, Sauer, Bornemann, & Burger, 2013). Buttressing this perspective, Stoker (1998) and (Türke, 2008) admit to the lack of uniformity within extant literature, among the various definitions of governance. Stoker (1998) agrees that the academic literature on governance was disjointed and eclectic, alluding to its theoretical roots which lie within the realms of institutional economics, international relations, organisational studies, development studies, political science, public administration and Foucauldian-inspired theorists.

The contribution made by the theory of governance is predicated on its value as an organizing framework, the capacity of governance to provide a framework for understanding and changing processes of governing an organisation. Some other scholars attempt to liken it to government and the role of government in the act of governing as constituting governance (Yencken, 2002). From these definitions, it is observed that governance involves the process of organizing and leading an entity towards the attainment of an established goal or objective such as sustainability in this case. However, this must be done through a collective resolve by the actors within the entity or system (Lange et al., 2013). Affirming this notion, Türke (2008), Kooiman (1993) and Stoker (1998) agree that governance requires a high level of interaction for it to be successful. Biesenthal and Wilden (2014) trace the evolution of the theory of governance as deriving from a coagulation of several theories such as the agency theory, the transaction costs theory, the stakeholder theory, stewardship theory and resource dependence theory. This provides a rationale for the encompassing nature of governance when analysing inter-party transactions, within projects or organizations.

Türke (2008) adopts a systemic view of the concept of governance. In this systems view, he identified a structure-oriented view and an actor-oriented view as two disparate governance modes applicable to social systems. Whereas the structure-oriented view involves the belief that social systems are self-governing and independent objects which govern themselves through circular, self-referential processes which highlight their identity, the actor-oriented view comprises of social systems composed not only of communications but also of actors as

empirical subunits. Contributing, Shiroyama et al. (2012) posit that governance consists of several systems and actors operating outside government apparatus in a self-organizing manner as inter-organizational networks.

In the construction industry context, scholars have also made attempts to define governance from a project perspective (Pryke, 2004; Winch, 2001). They term this concept '*project governance*'. (Winch, 2001) observes that the project governance process can be approached from two perspectives, micro-analytical perspective, referring to inherent processes for conducting transactions between project actors, and; the macro-analytical perspective which focuses on the transaction procedures between institutions at a societal level. Cooke-Davies, Crawford, and Lechler (2009) on the other hand describe project governance as consisting of a set of institutionalized principles, structures and processes for undertaking and managing projects. In a nutshell, project governance consists of the elements necessary to enable an effective organization of interactions between various actors and processes on a multi-scale during the course of project delivery. It transcends project management which is only concerned with the management of project level activities. Elements of project governance consist of the following, namely: existence of contracts between involved actors, organization 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 (Ahola, Ruuska, Arto, & Kujala, 2014).

Based on the foregoing it can be seen that the governance of projects is a complex endeavour and even more so is the governance of megaprojects. The desire to attain improved sustainability performance during the delivery and management of megaprojects makes it imperative that governance approaches which are capable of managing increased levels of complexity be deployed in this case. But, Ahola et al. (2014) observe the inadequacy of extant governance approaches which rely on market, hierarchy or hybrid forms of governance in providing for megaprojects. This is occasioned by the nature of megaprojects as project coalitions or networks consisting of several interdependent organizations 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 organizations will play a salient role in the governance of large projects. Too and Weaver (2014) maintain that governance is necessary to provide systems within which effective management decisions can be taken and carried out. Four key components required to support effective governance consist of portfolio management, project sponsor, project management offices and effective project management. Obviously, for effective sustainability governance to be achieved, SD ethos has to be mainstreamed into these four components.

Awuzie and McDermott (2015) posit that the choice of a governance approach for a project should be predicated on the nature of objectives are. Therefore, this implies that the bid to deliver megaprojects in a sustainable manner should take precedence during the selection of governance structures. This is necessary especially as various participating organizations have different worldviews concerning sustainability and SD, thus making them capable of working at cross-purposes with the project objectives. To avoid such an occurrence, there is need to evolve appropriate governance approaches for delivering on this critical agenda within the realm of megaprojects.

Extant construction, project management and built environment literature is largely silent on the integration of sustainability ethos into the conventional governance approaches (Eskerod & Huemann, 2013; Gareis, Huemann, Martinuzzi, Weninger, & Sedlako, 2013; Silvius & Schipper, 2014). This observation makes this study imperative. The study seeks to contribute to the development of a theory of sustainability governance for megaprojects whilst relying on the plethora of studies on the sustainability governance in a socio-ecological context.

2.3 The Case for Sustainability Governance in Mega Projects

The way a sustainability-oriented project is organized and the way that leaders frame the issues that participants discuss, may affect if and how substantive sustainability aspects are considered within projects (Boström, 2012). Although there seems to be a consensus that the sustainability outcome of a project is dependent upon the mode of governance adopted (Ayre & Callway, 2013), there is a paucity of literature among governance and sustainability seeking to explore or to perhaps empirically or theoretically support this nexus. Understanding this nexus is critical to the successful SD implementation as it enables stakeholders to determine suitable governance modes for delivering on their expected outcomes. Lange et al. (2013) highlight the need for this linkage and further posit that the potential of a governance mode to deliver on SD should be dependent upon the fulfilment of two criteria. 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. In their contribution, Kemp, Parto, and Gibson (2005) suggest the absence of a widely accepted form of sustainability governance, especially as sustainability has remained context-dependent thereby possessing details which highlight different contexts. Yet, they opine that 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, they allude to the notion that any governance mode possessing the aforementioned attributes will be capable of delivering on effective sustainability governance in any context.

Before proceeding to explore the suitability of the extant governance approaches in the construction industry to deliver on SD, especially within the realm of megaprojects, there is need to explore the concept of sustainability governance or governance for sustainability as many authors have termed it. Similar to the cases of sustainability, SD and governance, sustainability governance does not possess a concise and generally accepted definition as it is considered to be an evolving concept in its embryonic stage. Shiroyama et al. (2012) describe sustainability governance 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. They proceed to view the concept from the knowledge integration and multi-actor governance perspectives. Whereas the former concerns the integration of knowledge bases within a context to achieve a consensus on the multiple dimensions of sustainability and uncertainty, the latter involves the management of stakeholder interactions within these networks on a public-private, multi-level basis in manner that enables consensus on what sustainable actions to take among these actors, in designing and developing sustainable systems.

Meadowcroft (2007) describes governance for sustainable development as comprising of processes of socio-political governance oriented towards the attainment of sustainable development within a particular context. According to him, these processes occur along several levels, either local or international, affect different policy fields and refer to multiple temporal scales.

Lange et al. (2013) reiterate that 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. Designing such a governance mode for organizations, project-based organizations like megaprojects are not left out, entails the internalization of external costs, integration of policy considerations within the delivery system, development of common and shared SD objectives, selection of suitable sustainability-based criteria for planning as well as widely accepted 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 (Kemp et al., 2005). Other scholars within the mainstream sustainability governance realm posit that governance modes emphasizing partnerships among multiple stakeholders across several policy levels should be relied upon for optimal SD implementation ((Frantzeskaki et al., 2012; Jordan, 2008; McAllister & Taylor, 2015; Shiroyama et al., 2012). Continuing, McAllister and Taylor (2015) suggest the need to conduct an evaluation of costs and benefits associated with partnerships, during the design stages before embarking on them as such understanding would engender enhanced cooperation among various stakeholders. They suggest that modes of governance which incorporate significant levels of partnership are capable of handling complexities occurring on a multi-scale, cross-sectoral and long-term temporal aspects of SD than the conventional and hierarchical modes of governance. Although as a downside, they elucidate the potential of such arrangements to obscure accountability and transparency in the delivery process, if not properly checked.

From the foregoing, it can be seen that the cardinal features of effective sustainability governance consist of effective partnerships within networked systems, imbued with significant degrees of reflexivity, participation, adaptability, social learning processes as well as knowledge integration and multi-actor management. In the absence of these features, the ability of conventional governance modes to achieve SD is truly questionable. Therefore, society's quest for sustainability through SD requires a transmutation of the existing governance modes or hybrids of such modes to support this quest. In accordance to this viewpoint, Lange et al. (2013) traces the resurgence of the governance modes in the literature to the quest to attain societal sustainability in the short to long term. This implies that the SD concept propelled the present governance discourse, hence generating new insights into the development of the new approaches to governance.

In the governance of megaprojects, the need for sustainable development to be mainstreamed through the entire lifecycle is imperative. However, based on the studies reviewed to this point, it can be seen that the governance of megaprojects has remained fixated on issues relating to cost, timely delivery, quality as well as functionality whilst still laying claims to attempting to deliver on SD (Miller & Hobbs, 2005). Accordingly, the extant governance modes being applied in the delivery of megaprojects are incapable of achieving sustainability hence the case for a governance approach which appropriately captures the

requirements necessary for the optimal integration of SD ethos in megaprojects which have been highlighted previously.

Socio-ecological systems have provided suitable approaches to sustainability governance like transition management (Kemp, Loorbach, & Rotmans, 2007). Having been applied towards enabling sustainable socio-ecological transitions, transition management has been suggested as capable of providing effective governance for similar transitions towards sustainable socio-technical systems (Smith & Stirling, 2008). Megaprojects are indeed socio-technical systems given their composition of interactions between social actors and technical aspects such as processes and machinery. Often times the social subsystem within the socio-technical system has been blamed for their failure to achieve optimal project performance. In the case of SD, actors representing various organizations on different levels are expected to have contrasting opinions concerning issues like; the meaning of sustainability, aspects of sustainability dimensions to prioritize and the phase of the delivery lifecycle to do so, how to mainstream agreed upon aspects of relevant dimensions etc. This disparity of views pertaining to a particular phenomenon renders the case for effective sustainability governance imperative. Advocating for the adoption of transition management as an appropriate governance mode for in socio-technical systems transitions, Smith and Stirling (2008) suggest that the governance arrangement provides a platform for deciphering who is responsible for governance, who's system framings count, and who's version of sustainability is going to get prioritized. According to them, the transition management approach seeks to achieve consensus on these questions among the various actors and to develop a common ontology among them during the initial stages of the megaproject (socio-technical system). Summarily, transition management seeks to develop and sustain the channeling of processes within a socio-technical system towards the attainment of a stated objective, hence controlling the dynamics of socio-technical change (Kemp et al., 2007).

Although the exemplar utilized by Smith and Stirling (2008) dwelt more on technology-oriented socio-technical systems, the same governance approach can be transposed to the megaprojects scenario as the same rules concerning complexity are prevalent. So adopting the transition management governance approach in megaprojects, a common ground has to be determined through consensus by all actors working on multi-levels in a manner that is identical to the concept espoused by Shiroyama et al. (2012). Such consensus will reflect on the development of the commonly shared sustainability performance indicator, shared understanding of the aspects of sustainability dimensions to be prioritized within various phases of the project, joint decision making on the most sustainable approach to utilize in integrating the agreed upon aspects with the indicators for measuring the degree of integration. In this situation, opportunities for reflexivity and sustained learning processes should be encouraged within the megaprojects to enable effective knowledge integration among actors, before, during and after the delivery of the megaproject.

3. Concluding Remarks and Further Research

Scholars have continued to reiterate the need for sustainability ethos to be mainstreamed into extant project management and governance approaches within the realm of megaprojects. Such advocacies stem from the notion that sustainable procurement, delivery and management of megaprojects will make significant contributions to the societal quest for sustainability. Megaprojects, due to the magnitude and scale have immense potential to affect this quest for

sustainability if not properly organized. Whereas incessant calls have been made for the integration of sustainable practices into conventional project management to engender sustainable project management practice, a paucity of studies detailing such needs within the context of project governance for megaprojects has been observed. This observation makes this exploratory study, imperative.

Besides highlighting the elements of effective sustainability governance regimes, the study identified the features of the extant governance models and theoretically assessed them for their applicability and potential to enhance sustainability in megaprojects. Deficiencies such as the inability of these models to engender multi-level actor governance and knowledge integration was identified as capable of hindering the entrenchment of the ethos of sustainability governance in megaprojects.

Summarily, the study proceeded to propose the adoption of an established governance mode, transition management, which has been utilized in socio-ecological systems as a possible sustainability governance mode for megaprojects. This study draws attention to the shortcomings of the extant governance modes available for megaprojects and reiterates the need to start looking elsewhere for effective sustainability governance approaches to be integrated into the delivery of megaprojects and other infrastructure projects. Quite understandably, such approaches will be modified to suit megaproject context. It is expected that future studies would seek to empirically evaluate the applicability of the transition management governance mode in megaprojects through case studies, especially in developing countries where high rates of megaproject failure enjoy sufficient reportage.

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