



Sustainable Construction Transition (SCT) Policy Regime in Kenya

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Received 25 August 2022; received in revised form 04 September 2022, 27 October 2022 and 19 January 2023; accepted 16 March 2023
<https://doi.org/10.1564/jcbm.6.1.1257>

Abstract

The global construction industry is lagging in transitioning to sustainability, and the Kenyan construction industry is not excluded. As a result, and in response, there are Kenyan policies with specific provisions on SCT. Despite this progress, there is limited empirical research on their scope and implementation dynamics. Against this backdrop, this study examined Kenya's SCT policy regime regarding its priorities, instruments, and stakeholder orientation, including any inherent shortcomings. This aimed to make appropriate recommendations for an improved SCT policy regime to enhance and optimise industry SCT performance. Qualitative research design, specifically, qualitative content analysis technique, was used to analyse the 34 policy documents identified. The findings indicate that the regime: priorities – primarily focus on environmental sustainability targeting strategic and tactical implementation levels with minimal focus on SCT socio-economic objectives and operational level of implementation, which reduces its comprehensiveness; instruments – driven by regulations, the constitution, and Acts of Parliament, as well as codes, guidelines, and plans, from multiple sources, primarily aimed at regulation and control and not the other policy instruments functions hence not delivering on their full potential; and, stakeholder orientation – primarily targeting developers/owners/occupiers and government with less focus on the other stakeholders and thus not leveraging their specific roles in SCT supply chain. The resulting recommendations were: priorities – need for improved focus on SCT's socio-economic objectives and operational level of implementation; instruments – need for a central database and leveraging them to support economic incentives, supporting activities, liability compensation, education and information, voluntary programs, and management and planning; and, stakeholder orientation – improved targeting of contractors, suppliers/producers/manufacturers, professional consultants, non-governmental and civil society organisations, and media. Lastly, given that this study focused on SCT policy evaluation, future research can focus on other parts of the policy-making process.

Keywords: Business, Construction, Content analysis, Kenya, Performance, Planning, Policy regime, South Africa, Strategy, Sustainability, Sustainable Construction Transition (SCT).

1. Introduction

Construction industries worldwide are part and parcel of current sustainability concerns owing to their known negative sustainability impacts (economic, environmental, and social) (Dania, 2016:1). Economically, sustainable construction (SC) is aimed at enhancing profitability through efficiency in resource usage (Woodall et al., 2004). Resource usage inefficiency in the industry has been observed in relation to a large share of global energy use; greenhouse gas emissions related to energy use; waste generation; and natural resources usage, including undesirable resources fluctuation in the construction phase (United Nations Environment Programme (UNEP), 2021; Lamka et al., 2018). Kats (2003:85) argued that the benefits of ensuring economic sustainability as a priority include acceptable

project lifecycle costs. Additionally, an economically sustainable entity is more likely to practice environmental sustainability due to implied resource efficiency (Du Plessis, 2002:16-17). Environmentally, SC is aimed at water, materials, land, and energy conservation (Woodall et al., 2004). According to UNEP (2011), "... the construction sector is also responsible for more than a third of global material resource consumption, including 12% of all freshwater use ..." p.20. Additionally, "... the built environment accounts for a large share of energy (estimated to be about 40% of global energy use) ..." (UNEP, 2021). Kats (2003:85) highlights that if environmental sustainability concerns are prioritised and appropriately implemented, they could enhance environmental quality and acceptable use of energy and natural resources.

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Socially, SC aims to ensure the industry meets its moral and legal obligations to its stakeholders throughout the project lifecycle (Adetunji et al., 2003; Woodall et al., 2004). According to Pocock et al. (2016), construction projects often fail to meet social expectations due to adopted sustainability approaches prevailing over local conditions. The social facet of SC focuses on legal land acquisition; local culture sensitivity; water and energy efficiency; safety of built facilities; thermal comfort; extent of local communities' engagement; extent of use of locally available materials; locally understood construction methods; and, use of sustainable and affordable local construction materials. Du Plessis (2002:15-16) postulates that disregard of these aspects is evidenced by unethical practices, such as corruption and gender discrimination, low compliance with pre-set health and safety regulations, and unjust labour practices. According to Kats (2003:67), the benefits of observing social sustainability as a priority include improved well-being of involved stakeholders; and an overall reduction in terms of turnover of employees and employee work absenteeism. This study adopted the view postulated by Joseph (2019:22) and Esezobor (2016:28) that the environmental facet houses the social facet, which in turn houses the economic facet.

A radical transformation in the design, construction, operation, and decommissioning phases of built facilities is needed if the identified socio-environmental concerns are to be significantly addressed (Green Africa Foundation, 2018:7). It is from this realisation that the need for the construction industry to shift from its conventional mode of operation (production and consumption) to a comparatively sustainable alternative, SC, emanates (Du Plessis, 2002:8-9; Ofori, 2007:5). This shift has been identified to be both radical and socio-technical, and is commonly referred to as sustainability transition (ST)/sustainability transformation (Elzen et al., 2004; Grin et al., 2010; Blythe et al., 2018) and by extension for the construction industry sustainable construction transition (SCT). This involves adopting SC practices throughout the lifecycle of constructed facilities or part thereof. According to Du Plessis (2002:8-9), SC is a wholesome process whose goal is to revitalise and ensure balance at the interface between natural and built environments while at the same time enhancing the quality of life by upholding the dignity and economic equity of the human populace individually and collectively. It has also been observed that the construction industry is lagging in transitioning toward sustainability compared to other sectors (Glass, 2012).

The Kenyan construction industry is not excluded from the lagging transition to sustainability in the global construction industry. This is exemplified by: economically – inefficient resource usage (Lamka et al., 2018:283-284; UNEP, 2018:21); environmentally – minimal uptake of green buildings. As of 16 June 2021, there were 28 green buildings totalling 1,319,390 square metres (GBIG, 2021) against a [projected] building stock of 41 million square metres (IFC, 2017), representing a mere 3.2% green building stock and socially – inefficiently meet legal and moral obligations to industry stakeholders on fronts such as gender inequity, including low skills and knowledge enhancement (NCA, 2014:7,8),

low observance of construction site health and safety (Kemei et al., 2015:6) and sick building syndrome symptoms (SBSs) (Marete and Waweru, 2016:2). As a result, and in response, there are numerous Kenyan policies with specific provisions that support SCT. It is also worth noting that there is limited literature on SC and SCT in the Kenyan construction industry. This study sought to fill this gap by answering the research question – what is the nature of the Kenyan SCT policy regime in terms of its: (i) priorities; (ii) instruments; and (iii) stakeholder orientation, including (any) inherent shortcomings? This ultimately aimed to develop context-appropriate recommendations for an improved policy regime as an avenue for enhanced SCT performance by the Kenyan construction industry.

2. Sustainable Construction Transition (SCT)

The built environment is a complex system that supports societal needs such as housing and recreation, has a significantly longer lifespan and involves many stakeholders. Additionally, the interaction of the built environment system with the ecological system has resulted in well-documented negative impacts on the latter. Specifically, these negative impacts have been observed to be comparatively less noticeable and documented at constructed facility scale compared to the same but at the planetary scale over time (Vanegas and Pearce, 2000:406-407). This has led to an increased focus on the contribution of the built environment by the various stakeholders. Owing to its known direct and indirect contribution to this problem, the construction industry has seen increasing restrictions to minimise negative ecological impacts. These have assumed different forms, which include regulations, laws, standards and pressure from other stakeholders, such as civil society. However, some industry players, such as design and construction entities, see compliance with these restrictions as a challenge to be overcome as opposed to a means of reaping SC benefits for themselves and others (Kinlaw, 1992, as cited in Vanegas and Pearce, 2000:407). Drivers for SCT have been identified to include: negative ecological impacts; resource degradation and depletion; and, lastly, impacts on human health. It, however worth noting that SCT embeds the traditional project priorities of time, cost, quality and minimising adverse impacts in the context of sustainability (Vanegas and Pearce, 2000:407-408).

Negative sustainability impacts of the construction industry have been characterised as worse in developing nations, such as Kenya, compared to developed nations. This is exacerbated by comparatively fewer resources to deal with the sustainability challenges. On a positive note, underdevelopment in these nations offers room for a better and sustainable future. The urgency of ensuring SC in these developing nations has two main drivers: active ongoing construction activity implying continued unsustainability in case of inaction (failure to transition towards SC); and increased demand on already limited resources. It is also worth noting that the socio-economic sustainability dimensions have received more attention in practice compared to the biophysical dimension, which has been left mainly at the research and scholarly level

(Du Plessis, 2002:21). Joseph (2019:83) observed different findings where the ranking of the key SC priorities in the Kenyan construction industry ranked as social, environmental and economical in order of decreasing importance. It is clear in both that the environmental aspect of SC is not a major practice concern in developing nations which Du Plessis (ibid:21) associates with pressing socio-economic challenges.

For STs, such as SCT, and as advanced by Loorbach et al. (2017), change is from one state of dynamic equilibrium experiencing sustainability challenges to comparatively sustainable alternatives. They aim to change entrenched consumption and production patterns in society's ways of doing things (Geels, 2004; Kohler et al., 2019; Markard et al., 2012), including associated assumptions, rules and practices (Rotmans et al., 2001). Kemp and Lente (2011) postulate that STs also change how goods, services and systems are perceived and facilitate change in established socio-technical systems. STs are heavily biased towards the public good rather than individual gains (Geels, 2011; Kohler et al., 2019). These transitions involve many elements, such as infrastructure and supply chains, with complex interactions on matters such as economics and power (Unruh, 2000; Geels, 2011; Kohler et al., 2019). These transition processes take a long time to execute, ranging from one generation – 25 years (Rotmans et al., 2001), up to 50 years (Markard et al., 2012) or even decades, as discussed in Kohler et al. (2019). Their implementation requires the input of the stakeholders at individual, corporate and institutional levels drawn from learning/research institutions, civil society, political structure, sectors and households (Markard et al., 2012; Kohler et al., 2019).

Three implementation levels have been advanced for SCT: strategic – industry level and long-term; tactical – firm level and medium-term; and operational – project level and short-term (Cruz et al., 2019). Gilham (2010:126,140) emphasised the role of non-governmental organisations (NGOs) and civil society organisations (CSOs) in SCT as a driver through a watchdog role, collaborating with research institutions to craft and disseminate new practices and technologies; and independent monitoring and evaluation of industry performance. Graham et al. (2003:4) additionally emphasised the central role of media in governance, and by extension, SCT governance, as argued in this study, in the following ways: relaying information among sectors, resulting in opinion-shaping, and promoting accountability. Mechanisms and instruments employed to influence change, such as SCT, have been identified to have the potential to back: regulation and control; economic incentives; supporting activities; liability/damage compensation; education; information; voluntary programs; and, management and planning (Chang, 2016:106; Lafferty, 2004:6; OECD, 2001:132, 135-136). SC demand drivers in SCT have been identified as personal and selfless motivations; social responsibility; and economic and financial motivations (Onuaha et al., 2017:23-24). Additionally, drivers of SC supply in SCT have been identified as better returns; project financing incentives; positive price signals from existing SC investments; marketing strategies; lifecycle cost savings;

attractive tax incentives; SC skills availability; supportive policies; SC certifications, awards and recognition; and, ethical motivations (Onuaha et al., 2016:500-502; Diyana and Abidin, 2013:916-917).

The Kenyan government's SCT plan for the period 2016-2030 was identified as follows: greening 75% of new and renovated private and public buildings, increasing stakeholders' green training programmes, and increasing the number of adopted green building standards. This aims to deliver a built environment that is: comparatively greener, more efficient and with rationalised water; and energy use. This is all aimed at ensuring sustainability in the design, construction and operation of constructed facilities. The key stakeholders in this plan were identified as National Construction Authority (NCA); universities; County governments; private actors; Architectural Association of Kenya (AAK); Institution of Engineers of Kenya (IEK); and the Ministry of Transport, Infrastructure, Housing and Urban Development (MTIHU) under the leadership of Ministry of Lands and Physical Planning (MLPP). This 15-year plan was estimated to cost 5 billion Kenyan shillings (Ministry of Environment and Natural Resources, 2016a:38). According to Green Africa Foundation (2018:21), similar efforts at the national level are evident in the Kenya Building Research Centre's Strategic Plan 2017/2018 – 2021/2022. This plan, with specific reference to SC, is aimed at the mainstream green building; researching SC materials; and developing supporting policies, guidelines and regulations for the Kenyan construction industry. Irrespective of this progress, there is limited empirical research on its scope and implementation dynamics.

3. Research Methodology

This study adopted a qualitative research design approach. This was informed by inductive research reasoning used to answer the research question. This approach is comparatively less structured. There are no presuppositions, and it is aimed at gaining a deep understanding of a phenomenon (Sutrisna, 2009). Additionally, a 3-step policy system analysis approach from previous policy studies, and as employed in a similar study on the Chinese SC policy system (See Chang, 2016:102), was adopted: policy identification; description and analysis of identified policy; and lastly, discussion of inherent challenges. SCT-related policy documents with specific SCT specific provisions by the Kenyan government were identified through the manual screening. The identified SCT policy system components were described and analysed through qualitative content analysis. As postulated by Zhang and Wildemuth (2005:2-4) and adopted in Chang (2016:103), the qualitative content analysis took the following key steps: data preparation; definition of the unit of analysis/coding units; developing coding units' categories; coding; analysis; and, reporting findings.

The identified current policy documents were downloaded from relevant government authorities' databases and manually screened for data preparation. Only those with SCT-specific provisions were selected/found appropriate for further analysis.

Specifically, this study identified 34 SCT-related policy documents. For the unit of analysis, the basic coding unit was defined as the individual policy themes as recommended by Zhang and Wildemuth (ibid:3). As such, codes were assigned for texts of any length representing a singular theme. Lastly, the identified policy documents were coded, labelling text to facilitate analysis. Additionally, the resulting data was further analysed to categorise the coding units into a high-order category inherent in the research question: priorities, instruments, and stakeholder orientation. The categories were additionally analysed to reveal shortcomings, if any, and the resulting findings were reported.

4. Results

4.1 Overview

Green Africa Foundation (2018:16-21) identified some SCT-related policy documents that were not included in the 34 SCT policy documents analysed for the following reasons: replacement by newer versions (which have been

included), not being explicit about the relationship between their provisions and SCT; and lastly, being draft guidelines that have now been ratified. Based on their specific SCT-related provisions, and priorities, the policy documents were first classified as focused on: economic, environmental, and social facets of SCT as the first coding stream. Additionally, based on document type and instruments, they could be further grouped as subsidiary legislation/regulations; constitution and Acts of parliament; and codes, guidelines and plans – the second coding stream. Lastly, based on their provisions and stakeholder orientation, they targeted different industry stakeholders: government (national and county); developers/occupiers/owners; professional consultants; contractors; and suppliers/manufacturers/producers – third coding stream. Tables 1 – 3 outline the specific SCT policy documentation identified as differentiated into the 3 coding streams identified above. This includes briefly describing the provision used to inform the coding decision for the second and third coding streams.

The preceding discussion, including contents of Tables 1-3, is summarised in Figure 1.

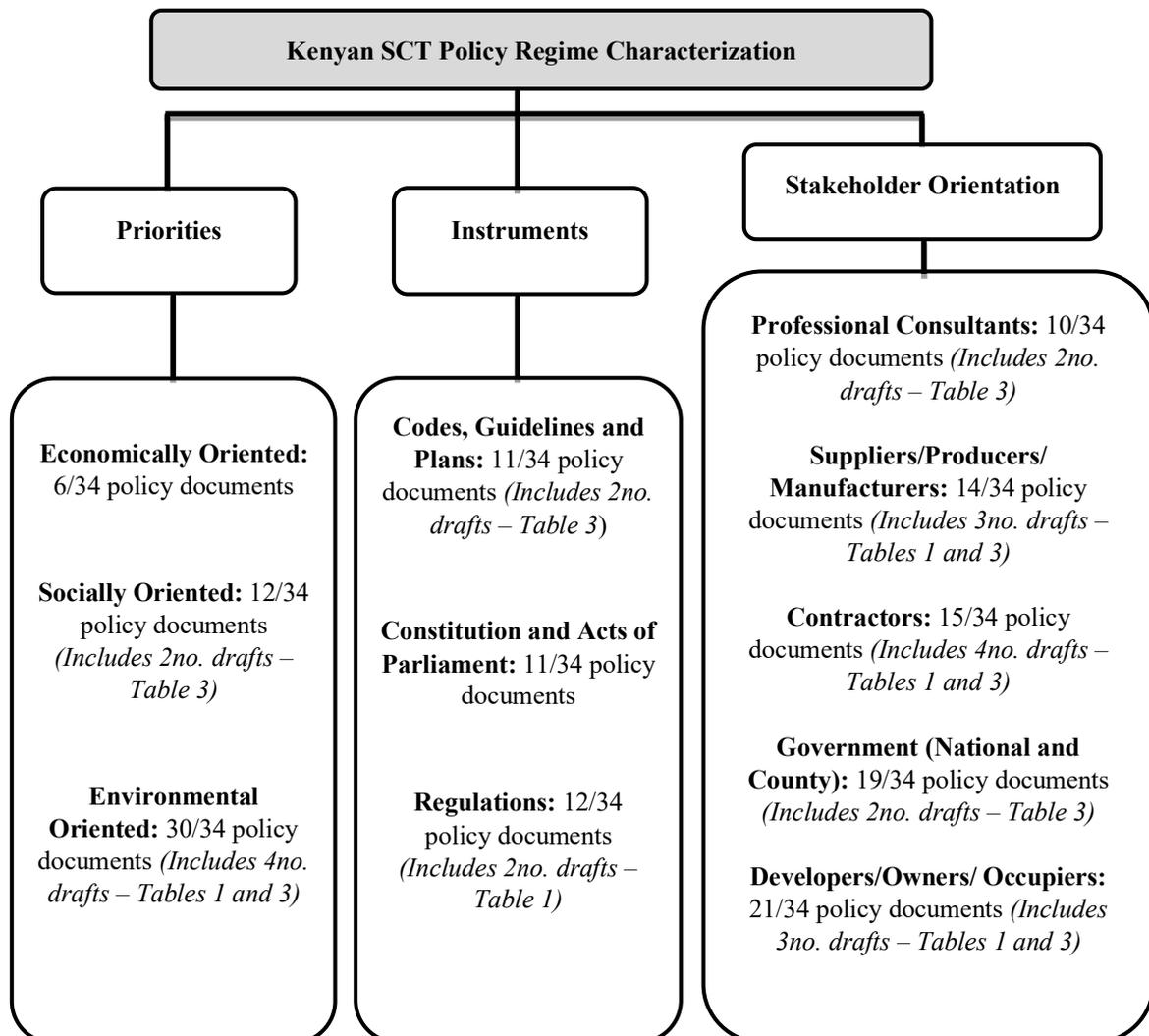


Figure 1: Kenyan SCT Policy Regime

Table 1: Kenyan SCT Policy Regime – Regulations/Subsidiary Legislation

Policy Instruments: Regulations/Subsidiary Legislation			
Policy Document	SCT Related Provision	SCT Priorities	Stakeholder Target
1. <i>The Environmental Management and Coordination (Conservation of biological diversity and resources, access to genetic resources and benefit sharing) Regulations 2006</i>	Prohibits all activities, such as construction, that have impact on any ecosystem. It also requires EIA for all activities, such as construction, that may lead to unsustainable use of natural resources	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets developers
2. <i>The Environmental Management and Coordination (Water quality) Regulations 2006</i>	Covers: prevention of water pollution/control of effluent discharge; acceptable domestic, industrial, wastewater for irrigation and recreation water standards; and, protection of water sources	Water conservation (Environmental)	Targets contractors, water suppliers, owners/operators of industrial facilities, irrigation schemes and water bodies used for recreation purposes
3. <i>The Environmental Management and Coordination (Waste management) Regulations 2006</i>	Guides the management of waste (solid, industrial, hazardous, pesticides and toxic substances, biomedical and radioactive), which are common/possible during the construction and operation phases of constructed facilities	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets developers/owners/occupiers and contractors
4. <i>The Environmental (Impact assessment and audit) (Amendment) Regulations 2009</i>	Outline the rules on EIA procedure (Including environmental auditing and monitoring), which applies to construction projects, including registration of EIA experts	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets developers and EIA experts/professionals
5. <i>The Environmental Management and Coordination (Noise and excessive vibration pollution) (Control) Regulations 2009</i>	Regulations provide standards on maximum allowable noise and vibrations from a constructed facility, construction site, demolition site, mines and quarries (Including associated licensing and exclusions)	Protecting human health and comfort (Social)	Targets developers/owners/occupiers of constructed facilities, contractors and suppliers of building materials (raw or finished) sourced from mines and quarries

6. <i>The Environmental Management and Coordination (Wetlands, riverbanks, lake shores and sea shore management) Regulations 2009</i>	Requires Environmental Impact Assessment (EIA) for endeavours, such as construction, with adverse effects on wetlands, riverbanks and shores	Land and water conservation (Environmental)	Targets developers
7. <i>The Energy (Energy management) Regulations 2012</i>	On energy consumption management in industrial, commercial and institutional constructed facilities	Energy conservation (Environmental) and operation cost rationalization (Economic)	Targets developers/owners/occupiers of constructed facilities
8. <i>The Energy (Solar water heating) Regulations 2012</i>	Requires installation and use of solar water heating systems for all constructed facilities using above 100litres of hot water daily	Energy conservation (Environmental) and operation cost rationalization (Economic)	Targets developers/owners/occupiers and design phase professionals
9. <i>The Environmental Management and Coordination (E-waste management) Draft Regulations 2013</i>	These draft regulations cover registration and responsibilities of e-waste producers and recyclers (Including generators such as constructed facilities or sites). They additionally outline the responsibilities of collection centres, refurbishers/repairers including guidelines on control and handling	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets developers/owners/occupiers and contractors
10. <i>The Environmental Management and Coordination (Air Quality) Regulations 2014</i>	Provides guidelines on prevention, control and mitigation of air pollution from stationary sources such as paint manufacturing plants and mobile sources such as vehicles used in construction (Including indoor air quality)	Environmental	Producers, contractors and developers/owners/occupiers of premises
11. <i>The Energy (Appliance's energy performance and labelling) Regulations 2016</i>	Standards on energy performance rating and labelling of appliances used during the construction and operation phases of constructed facilities such as lamps, refrigerators, motors, and, non-ducted air conditioners	Energy conservation (Environmental) and operation cost rationalization (Economic)	Targets suppliers/manufacturers/producers
12. <i>The Draft Environmental Management and Coordination (Toxic and</i>	These regulations cover the management of hazardous industrial chemicals and materials, such as asbestos in construction, management on: classification;	Preventing damage and potential irreversible impacts on the natural	Targets contractors and suppliers

<i>hazardous industrial chemicals and materials management) Regulations 2019</i>	registration; labelling; packaging; advertising; manufacturing, importing; exporting; distribution; storage; transportation; and, handling	environment (Environmental)	
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Table 2: Kenyan SCT Policy Regime – Constitution and Acts of Parliament

Policy Instruments: Constitution and Acts of Parliament			
Policy Document	SCT Related Provision	SCT Priorities	Stakeholder Target
1. <i>The Employment Act 2007</i>	Prohibits: forced labour; discrimination in employment; and, sexual harassment. It also provides guidelines on: protection of wages; basic minimum conditions in employment; protection of children; and, employment disputes	Ensuring the construction industry meets its moral and legal obligations to its stakeholders throughout the project lifecycle (Social)	Targets governments (national and county), developers/owners/occupiers, professional consultants, contractors and suppliers
2. <i>The Occupational Safety and Health Act 2007</i>	Outlines the duties of facilities occupiers, self-employed persons, employees, designers, manufacturers, importers and suppliers in ensuring health, safety and welfare in the context of workplaces	Ensuring human well-being (Social)	Targets contractors, consultants, developers/owners/occupiers, designers, manufacturers, importers and suppliers
3. <i>The Work Injury Benefits Act 2007</i>	Provides guidelines on employees (including government employees) compensation, by their employers, due to occupational related diseases, disablement (temporary or permanent) and death	Ensuring human well-being (Social)	Targets governments (national and county), developers/owners/occupiers, professional consultants, contractors and suppliers amongst other related employers
4. The Kenyan constitution 2010	Article 10 (2) – Identifies SD as a national governance value and principle Article 42 – Identify the right to clean and healthy environment for everyone	Covers the three dimensions of sustainability (economic, environmental and social)	All – Targets governments (national and county), developers/owners/occupiers, professional consultants, contractors and suppliers/manufacturers/producers
5. <i>The National Construction Act 2011</i>	NCA (a national organization) is empowered to conduct/commission research and advise the relevant cabinet secretary on any matter relating to the construction industry, not excluding SC	This covers all the three facets of SC (economic, environmental and social)	Targets national government

6. <i>The Public Health Act 2012</i>	Requires prevention and removal of nuisance in relation to, but not limited to: unsafe accumulation of materials; chimney discharging significant amounts of smoke; land in state that poses health risk; factory or business facilities unsafe emissions; and, effluents and buildings situated, erected, used or maintained in a manner that is injurious to human health	Preventing damage and potential irreversible impacts on the natural environment (Environmental) and ensuring human wellbeing (Social)	Targets County governments and developers/owners/occupiers
7. <i>The Environmental Management and Coordination (Amendment) Act 2015</i>	Cabinet secretary in charge of environment mandated to set the national environment protection direction; NEMA and County Environment Committees established to supervise and coordinate all matters environment nationally and in counties respectively; specifies the nature of construction projects and construction related endeavours for which EIA is mandatory; and, environmental offences (such as inspection, EIA, pollution related)	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets government (national and county), developers, contractors, producers, and, EIA experts/professionals
8. <i>The Climate Change Act 2016</i>	One of the aims of the Act is to mainstream climate change sensitivity, including SD, in the planning, execution and decision making of developments	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets national and county governments
9. <i>The Water Act 2016</i>	On regulation, management and development of sewerage and water services and establishes National Water Harvesting and Storage Authority partly charged with developing and enforcing water harvesting policy	Water conservation (Environmental)	Targets national and county governments
10. <i>The Energy Act 2019</i>	Cabinet secretary on energy to: promote the development and use of renewable energy such as biomass; and, energy efficiency and conservation nationally	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets national and county governments
11. <i>The Physical and Land Use Planning Act 2019</i>	Sets out to, amongst other objectives, provide a multi-level (National, county and local) framework for sustainable land use, planning and management	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets national and county governments

Table 3: Kenyan SCT Policy Regime – Codes, Guidelines and Plans

Policy Instruments: Codes, Guidelines and Plans			
Policy Document	SCT Related Provision	SCT Priorities	Stakeholder Target
1. <i>Building Code (Current) – The Local Government (Adoptive By-Laws) (Building) Order 1968; and, The Local Government (Adoptive By-Laws) (Grade II Building) Order 1968</i>	Has provisions on: statutory requirements for development approvals; requiring buildings to be sited in a manner ensuring hygienic and sanitary conditions and avoiding nuisance to neighbouring owners and/or occupiers; safety and protection of persons affected by construction works; and, building materials requirements in relation to aspects such as structural soundness, fire safety and weatherproofing	Preventing damage and potential irreversible impacts on the natural environment (Environmental) and ensuring the industry meets its moral and legal obligations to its stakeholders throughout the project lifecycle (Social)	Targets professional consultants, owners, developers and occupiers, contractors, suppliers and local governments
2. Ministry of Lands (2009)	<i>Sessional Paper No. 3 of 2009 on National Land Policy</i> – Sections 140 and 141 recommends: prohibition of untreated waste, a by-product of the operation phase of constructed facilities, into water bodies; promoting and mandating segregation and labelling of waste to ease its management; regulation of all quarrying and excavation activities; promoting re-use of urban waste; developing guideline on dumpsites rehabilitation; mandating EIA and environmental audit for development activities likely to degrade the environment; environmental degradation monitoring; polluter pays principle enforcement; and, ensuring public participation in environmental management	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets developers/owners/occupiers, contractors and suppliers/manufacturers/producers
3. <i>The (Proposed) Planning and Building Regulations 2009</i>	Partly aims at promoting optimal resource usage and enhancing convenience, health and safety in relation to construction sites and constructed facilities. It provides guidelines on: accessibility of constructed facilities; energy efficiency and thermal comfort; water harvesting; conducive indoor air quality; prohibition of objectionable sewerage discharge; prohibition of dangerous demolition methods; control of dust and noise from excavation, erection or demolition work; appropriate disposal of waste materials; and, standards for various installations such as water closets amongst other provisions	Preventing damage and potential irreversible impacts on the natural environment (Environmental) and ensuring the industry meets its moral and legal obligations to its stakeholders throughout the project lifecycle (Social)	Targets government (national and county), professional consultants, building owners and occupiers, contractors and suppliers
4. Energy Regulatory Commission (ERC) (2013)	<i>ERC Baselines and Benchmarks and the Designation of Industrial, Commercial and Institutional Energy Users in Kenya</i> – This study facilitated development of baselines and benchmarks for energy performance and designation of energy users (industrial, commercial and institutional). This was intended to raise awareness and facilitate	Energy conservation (Environmental)	Targets developers, owners, and occupiers of constructed facilities

	decision making on energy conservation and efficiency in line with <i>The Energy (Energy management) Regulations 2012</i> (See Table 1)		
5. Ministry of Environment, Water and Natural Resources (2013)	National Environmental Policy – Section 5.6 requires the government to: conduct periodic EIA for all infrastructural projects; develop and implement an environmentally conscious infrastructure development strategy and action plan; and, conduct social impact assessment, public participation, EIA and strategic environmental assessment (SEA) in the approval and planning of infrastructural project	Preventing damage and potential irreversible impacts on the natural environment (Environmental) and ensuring the industry meets its moral and legal obligations to its stakeholders throughout the project lifecycle (Social)	Targets national and county governments
6. NEMA (2014)	National Solid Waste Management Strategy – Recognizes construction and demolition as one of the main sources of waste in Kenya. In a bid to ensure a healthy, safe and secure environment, this strategy seeks to achieve 80%, 50% and 30% waste recovery (in terms of compositing to energy and recycling) and the remaining 20%, 50% and 70% for sanitary landfilling by the years 2030, 2025 and 2020 respectively	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets national and county governments
7. Ministry of Environment and Natural Resources (2016a)	Green Economy Strategy and Implementation 2016-2030 (GESIP) – Requires promotion of sustainable built environment from design, through construction to operation phases of constructed facilities. Some of the specific strategies include: increasing share of renewable energy in the energy mix; and, promoting sustainable design, construction and operation of constructed facilities	Covers the 3 facets of SC (economic, environmental and social)	Targets national and county governments
8. Ministry of Environment and Natural Resources (2016b)	Sessional Paper No.5 of 2016 on National Climate Change Framework Policy – Advocates for “... <i>integration of climate change risks and opportunities in the design, operation and management of infrastructure</i> ” p. 11	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets national and county governments
9. Green Africa Foundation (2018)	Kenya Building Research Centre’s Strategic Plan 2017/2018 – 2021/2022 : Has the following key result areas – developing policies, regulations and guidelines on green buildings; conducting research on and gazetted SC materials; and, oversee mainstreaming of green building principles in the construction industry	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets national government
10. Ministry of Environment and Forestry (2018)	Kenya National Climate Change Action Plan (NCCAP) 2018-2022 – This plan recommends, but is not limited to: promotion of green buildings; sustainable privately owned land timber production; and, enhanced energy conservation and efficiency	Preventing damage and potential irreversible impacts on the natural environment (Environmental)	Targets national and county governments

11. <i>The (Draft) National Building Code 2022 – Scheduled to be in operation from 2023</i>	Aims at enhancing order, health and safety in and around construction works (including resulting constructed facilities) and provides: guidelines related to all construction project phases (including requirement for conformance to sustainable design strategies); materials and other components standards; and, disaster management standards amongst other provisions	Preventing damage and potential irreversible impacts on the natural environment (Environmental) and ensuring the industry meets its moral and legal obligations to its stakeholders throughout the project lifecycle (Social)	Targets County governments, professional consultants, building owners and occupiers, contractors and suppliers
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Source: Authors (2022)

4.2 SCT Policy Regime Priorities (Including Inherent Shortcomings)

Based on Figure 1 above, it is clear that the regime largely focuses on the environmental facet of SCT with comparatively less focus on the social and economic pillars (in decreasing order of focus). This ranking is in line with the ideal nesting of the three SCT facets as postulated by Joseph (2019:22) and Esezobor (2016:28). That notwithstanding, with each facet having a specific SCT objective (Woodall et al., 2004; Adetunji et al., 2003), no facet appears to be less important comparatively. Consequently, the regime can be enhanced along the economic and social facets to ensure enhanced and comprehensive SCT. Additionally, the specific provisions of the policy regime are largely geared towards strategic and tactical implementation levels with a lesser focus on the operational level, that is, at the construction project level and in the short term (See Tables 1-3). Consequently, the system can also be optimised through enhanced focus on the operational level of implementation. This aligns with three SCT implementation levels as recommended by Cruz et al. (2019) and would complement the current SCT implementation efforts through the policy regime at the industry and firm levels in the long and medium term, respectively.

4.3 SCT Policy Regime Instruments (Including Inherent Shortcomings)

Figure 1 also shows that the Kenyan SCT policy regime drives the SCT agenda through subsidiary legislation/regulations; constitution and Acts of parliament; and codes, guidelines and plans. Based on their respective numbers, they emerge to be employed approximately equally. This is generally in line with a developed nation such as China (See Chang, 2016:104-106). It must however be noted that given the multiplicity of policy documents, a database with all SCT-related policy documentation has the potential to inform comprehensive SCT practice, policy and research. Additionally, a closer look at the specific SCT provisions of the various policy instruments indicates that the regime largely backs SCT through regulation and control (See Tables 1-3). This leaves out other ways to back SCT, such as through: economic incentives – subsidies, awards and financial innovations; supporting activities – demonstration projects, publicity, standards and evaluation; liability/damage compensation – supporting mandated pollution insurance, extended producer responsibility, clear liability rules, and, compensation funds; education and information – on awareness drives, information dissemination, eco-labelling, and, publicising non-compliance penalties; voluntary programmes; and, management and planning (OECD, 2001b:132,135-136; Lafferty, 2004:6; Chang, 2016:106-115). This highlights part of the gap that the policy regime should seek to fill to realise its full influence potential towards SCT.

4.4 SCT Policy Regime Stakeholder Orientation (Including Inherent Shortcomings)

Lastly, Figure 1 indicates that the regime largely focuses on the role of developers/owners/occupiers and government (national and county) (in decreasing order of focus). Additionally, it focuses comparatively less on contractors, suppliers/producers/manufacturers, and professional consultants (also in decreasing order of focus). Though targeting the same group of stakeholders as the Chinese SCT policy regime (See Chang, 2016:106-109), more needs to be done, policy-wise, to back the implementation of SCT targeting professional consultants, contractors and suppliers/producers/manufacturers. This can be ensured through new policies and revision of current ones and can ultimately synchronise the entire construction industry supply chain for enhanced SCT performance. Additionally, it should be noted that there was no explicit mention of the role of NGOs, CSOs and media in SCT (See Tables 1-3). Given their well-documented potential to drive the SCT agenda, as postulated by Gilham (2010:126,140) and Graham et al. (2003:4), there is the implied need to leverage them for SCT through policy. Specifically, NGOs and CSOs' potential is in the watchdog role, crafting and disseminating new practices and technologies and independent monitoring and evaluation. On the other hand, media can support SCT: inter-sectorial information relaying, opinion-shaping; and promoting accountability.

5. Conclusion

This study sought to analyse the Kenyan SCT policy regime regarding priorities, instruments and stakeholder orientation, including (any) inherent shortcomings. Identifying the inherent shortcomings was ultimately aimed at making appropriate recommendations for improved SCT policy regimes to enhance and optimise industry SCT performance. The findings indicate that the regime: priorities – primarily focus on environmental sustainability targeting strategic and tactical implementation levels with minimal focus on SCT socio-economic objectives and operational level of implementation, which reduces its comprehensiveness; instruments – driven by regulations, the constitution, and Acts of Parliament, as well as codes, guidelines, and plans, from multiple sources, primarily aimed at regulation and control and not the other policy instruments functions hence not delivering on their full potential; and, stakeholder orientation – primarily targeting developers/owners/occupiers and government with less focus on the other stakeholders and thus not leveraging their specific roles in SCT supply chain. The resulting recommendations were: priorities – need for improved focus on SCT's socio-economic objectives and operational level of implementation; instruments – need for a central database and leveraging them to support economic incentives, supporting activities, liability

compensation, education and information, voluntary programs, and management and planning; and, stakeholder orientation – improved targeting of contractors, suppliers/producers/manufacturers, professional consultants, non-governmental and civil society organisations, and media.

Irrespective of the notable and commendable progress, the previous discussion highlights room for an improved SCT policy regime as an avenue for optimised and enhanced SCT performance in Kenya. Lastly, given that this study was limited to current SCT policy regime evaluation, future research on the subject focus on other parts of the policy-making process system, such as problem identification; agenda setting; policy development; and implementation.

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