

Environmental Conservation Approaches Among Small and Medium-Sized Enterprises (SMEs) with a Focus on Zero Emission Discharges in Kenya

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Abstract

The green economy is an important aspect of environmental conservation and this forms the foundation for Kenya's goal towards sustainable development. This well highlighted by the green economy which is anchored in the Constitution 2010 under Articles 42 that recognizes a clean and healthy environment as a right. The constitution is integrated into the country's ambitious development plan, Vision 2030, which aims to attain and sustain a GDP growth of 10 percent per annum in the short to medium term by creating a "just, cohesive and equitable social development in a clean and secure environment". The transformation towards green economy is underpinned to the five thematic areas viz sustainable infrastructure, building resilience, sustainable natural resource management, resource efficiency, and social inclusion and sustainable livelihoods. By adopting green business practices, and providing products and services through sustainable value chains, SMEs can help in driving green growth while at the same time sustaining job creation. A central emphasis of climate change in Cop 26 was that of Decarbonization as observed by World Health Organization. Decarbonization efforts have initiated innovation opportunities and which have similarly triggered business efficiency gains on which businesses are expected to capitalize on. The impacts of climate change present a significant challenge to SMEs, which are often seen as the drivers of economic growth in Kenya. This study intends to generate and provide an evidence and knowledge base to inform advice design, and implementation of public policies in upscaling private green investments that can generate green growth while creating decent employment. This study adopted desk top literature review relevant to the topic, descriptive and cross sectional survey designs. In this study data on environmental conservation and emission discharges among small and medium-sized enterprises was collected from interviews and observation from a sample of towns visited by the researcher. The study identified various strategies adopted by SMEs in environmental conservation with the aim of reducing emissions. These strategies included; digital marketing and digital operations, Policy and legislative frameworks, environmental footprint assessment and Eco innovation. In conclusion; the study observed that Climate change and waste emissions are serious global issues today. Therefore, meeting the challenges associated with it could provide an opportunity to create and trigger tremendous growth for SMEs.

Keywords: Environmental Conservation, Emissions, Green Economy, SMEs and Digitization

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1.0 Background

The green economy is an important component of environmental conservation which has become the foundation for Kenya's goal towards sustainable development as observed by Mwanzu *et al.* (2023). This is highlighted by the green economy which is anchored in the Constitution 2010 under Articles 42 that recognizes a clean and healthy environment as a right. Article 60 (c) places emphasis on sustainable and productive management of land resources, and Article 69 (a)-(h). The constitution further declares that the State shall ensure sustainable exploitation, utilization, and protection of genetic and biological diversity, establish a system for environmental impact assessment, and achieve and maintain a tree cover of at least 10 per cent of the land area (Ochieng' 2018). The concept of climate change is well covered in the Sustainable development goals (SDG) SDG 13 whose emphasis is on climate action with focus on taking urgent action to combat climate change and its impacts.

Thus, Kenya's Constitution has provided overall guidance for the conceptualization and development of Kenya's green economy program. Kenya's ambitious development plan, Vision 2030, which aims to attain and sustain a GDP growth of 10 percent per annum in the short to medium term focusses on a "just, cohesive and equitable social development in a clean and secure environment". Kenya developed a Green Economy Strategy and Implementation Plan (GESIP) 2016-2030 that outlines the guiding principles to transition to a low carbon, resource efficient, equitable and inclusive socio-economic transformation of the country's businesses as observed by Okeyo, & Ragui, M. (2017).

There is no updated record of Small and Medium Enterprises (SMEs) in Kenya. However, according to an economic survey report by KNBS in 2017, there exists 1.56 million licensed SMEs and about 5.85 million

unlicensed businesses (Muturi, & Njeru, 2019) in the country. A common consensus is that the sector plays a key role in economic development and job creation. SMEs are largely informal with estimates placing them at about 7.5 million enterprises that contribute about 34 percent of the GDP in the economy and employing 15 million Kenyans. SMEs in Kenya contribute 80 percent of jobs and three percent of the GDP in the Kenyan economy (Kimathi, 2020). SMEs operate under the Micro and Small Enterprise Act of 2012 that has provided new rules and institutions supporting micro and small businesses in Kenya through promotion, development and regulation. For example, some of these are institutions in the Micro and Small Enterprise Authority within the Ministry of Industrialization and Trade.

Based on the people employed by SMEs, SMEs need to play a key role in green economy growth. This is made possible by employing their innovative approaches in their operations and value chains, promoting economic diversification, transformation and growth and subsequently ensure minimal emissions to the environment. By adopting green business practices, and providing products and services through sustainable value chains, SMEs can help in driving green growth while at the same time sustaining job creation. Positively, SMEs can tap into the niche green market by going green and increase their market share and profits. The adoption of eco-friendly strategies, they can reduce their costs of operation through use of recycled materials and enhanced operation efficiency (Dharmadhikari, 2012). The adoption of green measures requires skills and technological understanding of green operations and value chains that SMEs often lack due to their traditional approach to businesses and limited technological understanding.

A central emphasis of climate change in Cop 26 was that of Decarbonization (World Health Organization, 2021). To try and stabilize the climate at 1.5 degrees and pursue a “net zero” strategy, by global leaders by 2050, there is a need to deal with the global carbon budget. If there is going to be any remote chance of meeting the 1.5 degrees, the ceiling for carbon dioxide emission needs to be fixed at 420 gigatonnes. It is argued that this budget is likely to be exhausted by 2030. This is because by 2030 global fossil fuel production is expected to be 10.5% higher than the volume necessary to keep to the global warming limit of 1.5 degrees. This data calls for a radically new economic and social scenario for the world’s net zero ambitions to be fulfilled which is being undermined by concerns over rising energy prices. Ironically, the energy crisis has, as expected has injurious effect on smaller firms in both the energy sector and in various others dependent on energy supply.

Many businesses today have realized the impact their daily activities have on the environment and therefore see the need to change to more environmentally sustainable business practices (Seidel *et al.*, 2010). Recently, more businesses have embarked on embracing the Green Business Activities concept. The increasing high number of SMEs implies that their cumulative effect on climate change are bound to be enormous. Therefore, there is need to investigate their Environmental Footprint evidenced by emissions and to find ways to reduce it. The impacts of climate change present a significant challenge to SMEs, are the drivers of economic growth in Kenya (Atela, 2018). Subsequently therefore check on emission discharges which trigger climate change thereby resulting to job losses and declining economic growth if they cannot adhere to environmental conservation. But the impacts can also be indirect, with the increasing scarcity and rising prices of resources such as water and energy, the disruption of supply chains and changes in demand for produced goods.

1.2 Statement of the problem

The important role of SMEs in promoting GDP growth and employment in Kenya is underlined in the country’s Vision 2030, the country’s long-term development blueprint and the “Big Four” agenda under the manufacturing agenda. SMEs play a pivotal role in Kenya’s economic growth and development and further they are sources of innovation, competitiveness, goods and services, and entrepreneurial skills. SMEs cover a wide range of establishments in almost all sectors of the economy with many operating in the informal sector. However, despite their immense contribution to the economy, SMEs on aggregate have a high environmental footprint. In particular, SMEs in the manufacturing sector have contributed to a large share of global resource consumption, pollution, and waste generation all of which form a critical role in the green transformation. Subsequently, given the economic and environmental significance of SMEs, they would be important drivers of inclusive and green growth if their operations minimize emission discharges.

1.3 Research objective

This study sought to establish the adoption of environmental conservation strategies by Small and Medium-sized Enterprises (SMEs) with a focus on zero emission discharges in selected towns in Kenya.

1.4 Purpose of the study

This study sought to interrogate environmental conservation with a focus to reduction of emission discharges among SMEs in Kenya. This study was intended to generate and provide an evidence and knowledge base to inform advice design, and implementation of public policies in upscaling private green investments that can generate green growth while creating decent employment. This study critiqued knowledge and appreciation of the

benefits and opportunities for private sector through SMEs to adopt green business and subsequently increase ability of the private sector to seize business opportunities offered by green growth pathways in selected sectors. Finally, this study emphasizes the strengthening of knowledge, skills and overall capacity of SMEs to identify design and expand investment in green business.

2.0 Literature review

2.1 SMEs and Green economy

Looking at the jobs they create, SMEs can play a key role in green growth. This can be achieved by employing their innovative approaches to operations and value chains, stimulating economic diversification, transformation and growth and therefore ensure minimal emissions to the environment. By adopting green business practices, and providing products and services through sustainable value chains, SMEs can help in driving green growth while at the same time sustaining job creation. Positively, SME's can tap into the niche green market by going green and increase their market share and profits. By being eco-friendly, they can reduce their costs of operation through use of recycled materials and enhanced operation efficiency (Dharmadhikari, 2012).

Conversely, on the negative side, greening SMEs creates an extra burden over their existing challenges in accessing to finance, accessing markets and product development and innovation. More so, the SMEs businesses attract additional costs associated with investment in technology, compliance with regulation, and innovation. Despite these costs, which vary by sector and could end up being insignificant as compared to potential benefits, there is still a challenge of accessing green investments and absorbing green costs of which most of them are associated with sunken businesses costs. More so, adapting green measures will require skills and technological understanding of green operations and value chains that SMEs often lack due to their traditional approach to businesses and limited technological understanding.

Global temperature changes projections

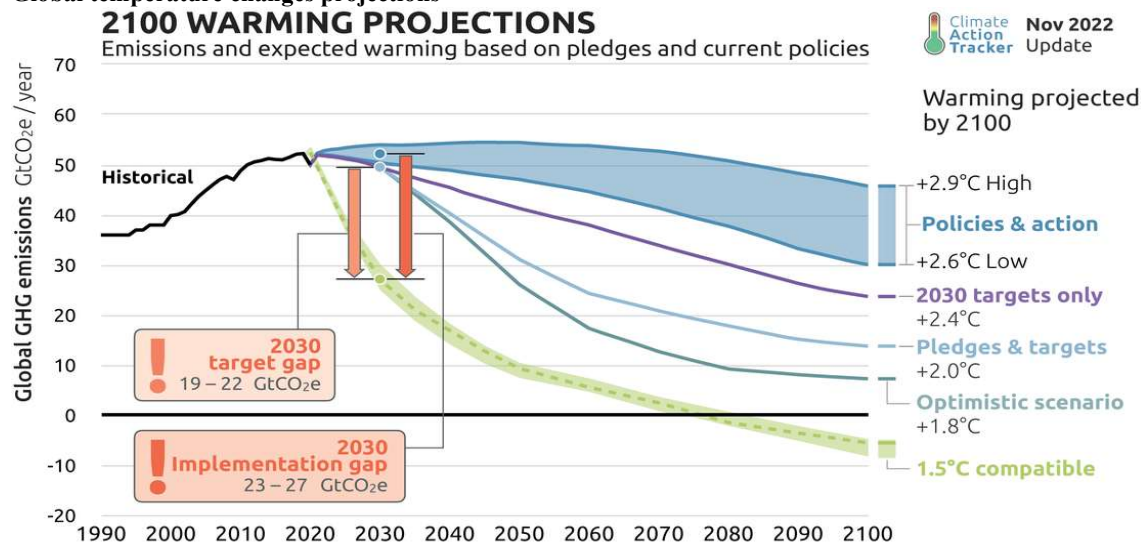


Figure 1; Warming projections **Source;** Climate action tracker

The effect of increased emissions is manifested through rise in global temperature. Majority of SMEs engage in activities like burning of fossils in manufacturing, value chain and transport sectors that release greenhouse gases thereby increasing global temperature. Figure 1 demonstrates the warming projections from 1990 to 2100 showing the temperature changes some of which are associated with increased activities of SMEs (Seidu,2014). From the Global temperature changes projections, it is evident that the effect of emissions unless checked is bound to continue increasing the global temperature.

Plastic packages which are often used by SMEs are threatening the ability of the global community to keep global temperature rise below 1.5°C, as greenhouse gases (GHG) are emitted throughout the plastic life cycle. Indeed, extraction, refining and manufacture of plastics are all carbon intensive activities. Plastic Bags and climate change are linked in a variety of ways. From air quality to ocean toxicity, plastic bags contribute to eco-system disruption. Habitat destruction, fossil fuel emissions, and plastic pollution are some of the ways that plastic bags and climate change cannot be separated.

When used for bags, it is a wasteful and unnecessary way to deplete our oil supply and contribute to carbon dioxide build-up in our atmosphere. The green economy is widely seen as a potential solution to current global economic and environmental crises, and a potential mechanism by which sustainable development might be

achieved in practice (Ospanova et al., 2022). Considerable investments are now being made into the development of green technology, renewable energy, biodiversity conservation, resource efficiency, recycling of materials and green infrastructure.

2.2 Significance of SMEs in Kenya's economy

The National Economic Survey report by the Central Bank of Kenya (CBK) indicated that SMEs constitute 98 percent of all business in Kenya thereby creating 30 percent of the jobs annually which translates to 3 percent of the GDP as observed by Central Bank of Kenya (Business Daily, 2020). During the 3rd Kenya Manufacturing Summit and Expo conference, it became apparent that SMEs have a huge but relatively untapped potential to turn around the Kenyan economy. The SME sector's resilience was evident during the Expo and how they were ably represented among the exhibitors. The adoption of energy saving technology which result to emission reductions has the capability of expanding markets by giving local products a chance to compete globally. Therefore, SMEs will tap into new and emerging markets made available by current technological trends.

2.3 Conceptual framework

In the recent years the world has witnessed a tremendous interest growth witnessed in the green economy thereby resulting to its incorporation into policy at national and international levels. The foundation of this is emphasized through the notion that the green economy seeks to solve both the financial and environmental crises facing the world today. Consequently, investments are now being made in the development of green technology, green goods and services, renewable energy, recycling of materials and green infrastructure as observed by Newton & Cantarello (2014). The green economy offers a 'win-win' solution to both environmental and economic problems by implementing; clean energy sources, minimizing discharges in the manufacturing sector and improving waste management strategies. These strategies will tend towards zero emission discharges through Support from stakeholders, Government involvement & Green market innovations & Technology as illustrated in figure 1.

3.0 METHODOLOGY

This study adopted desk top literature review relevant to the topic of study, descriptive and cross sectional survey design. In this study data on environmental conservation and emission discharges among small and medium-sized enterprises was collected from interviews and observation from a sample of towns visited by the researchers in the course of his research and academic work in Kenya. The data was collected from Four towns and their environs in Kenya namely Nairobi, Nakuru, Kisumu and Eldoret during academic trips. The data collected purposively focused on environmental strategies adopted by SMEs with emphasis to zero emissions. The data collected focused on the make and available digital taxis, types of packaging used by SMEs, outdoor advertisement activities and emerging solar farms. The data collected was analyzed qualitatively as per the research themes and presented in reports and photo events.

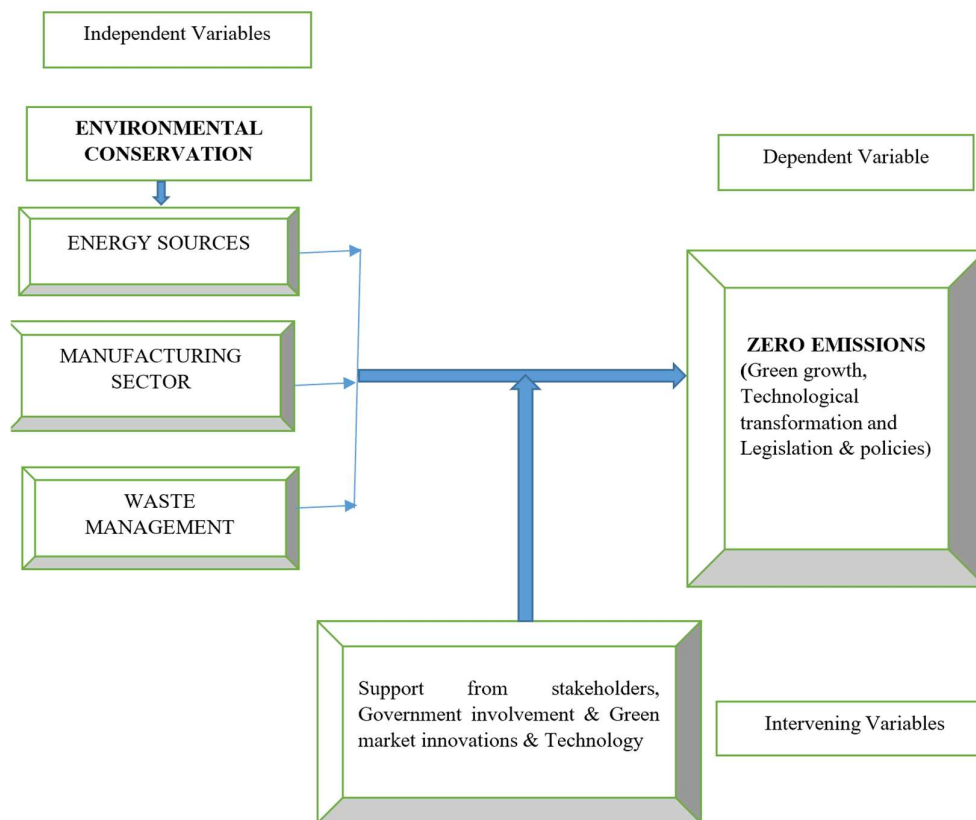


Figure 1; Conceptual framework outlining the components of Green Economy transformation as a strategy to zero emissions

Source; Author

3.1 FINDINGS

Adoption of online service provision

Kenya suffers from both high levels of outdoor and indoor air pollution attributed to outdoor marketing. According to available data, air pollution in Nairobi consistently exceeds the World Health Organization’s guideline limits for PM 2.5 (Egondi, 2016). Results from various studies demonstrate that emissions emerging from vehicles are an important pollution source in Kenya. Black carbon which is as a result of incomplete combustion of fuel, produced from older vehicles, forms a large fraction of particulate matter in Nairobi, with levels among the highest in the world. SMEs engaged in Taxi business in selected towns in this study were found to be promoting digital services.

Many residents of Nairobi, Kisumu, Eldoret and Nakuru are opting to use online Taxi services. This has witnessed the mushrooming of a number of online taxis in the recent past. Some of these online taxis identified in the selected towns included; Wasili, Bolt, Uber, safe boda, JIMCAB and many more. Majority of these vehicles used for the Taxi business have low engine capacities as demonstrated in Plate 1 translating to low emissions to the environment. The use of these low engine capacity vehicles is playing an effective role in enhancing the efficiency of energy use and improving the level of green technological innovation. Further also make Kenyans in the selected towns today have opted for online shopping and the goods bought from the online applications are being delivered to their homesteads. The delivery to their homesteads helps to reduce quantities of carbon emissions and this has witnessed an increase of Jumia branded motorcycles as evidenced in plate 2 in the selected towns of Nairobi, Kisumu, Nakuru and Eldoret.



Plate 1; Wasili branded online Taxi
Source; Author



Plate 2; Jumia branded motor cycle
Source; Author



Plate 3; Outdoor advertisement Source; Author



Plate 4; President Ruto of Kenya launching Online government services
 Source; Presidential Press service

Further also many SMEs in the selected towns have embraced the use of Online platforms like Facebook, Jiji Kenya, Cheki Kenya among others, posters and banners for advertising their goods and services. Plate 3 shows a sample of outdoor service advertisement. The provision of online services was boosted by Kenya's President William Ruto when he unveiled the digital government services on June 2023 as evidenced in plate 4.

3.2 Policy and legislative framework implementation

Presently, Kenya is facing an increasing challenge in solid waste management, witnessed in SMEs business premises. Plate 5 shows a typical example of non-biodegradable plastic packages before the ban of plastic bags had been imposed. The sampled towns were characterized by many dumpsites with wastes originating from SMEs especially in the municipal markets visited in the towns. that form major sources of environmental pollution

(National Environment Management Authority, 2014). According to NEMA's *National Solid Waste Management Strategy*, it is alluded that in Nairobi, an estimated 2,400 tons of solid waste is generated every day, 20% of which is in plastic form. The plastic disposals originate from the packaging materials with 45% being recycled, reused, or transformed into a form which can yield an economic or ecological benefit. Subsequently through legislation enacted by Environmental Management and Co-ordination Act, 1999 revised 2015 (EMCA) and Environmental (Impact Assessment and Audit) Regulations, 2003 revised in 2012 Kenya has achieved reduced solid waste disposals by banning the use of plastic bags. Subsequently today SMEs are using eco-friendly packages as shown in plates 6 and 7



Plate 5; Non-Biodegradable Packaging
Source; Author



Plate 6; Eco friendly carrier bags.
Source; Author



Plate 7; Eco friendly carrier bags
Source; Authors

3.3 Use of green energy

To check on emission discharges Kenya has embarked on the adoption of green economy. This strategy places emphasis on green transition by the adoption of green energy. Broadly, green energy contributes to the protection of the climate, environment, and biodiversity. In the sampled towns, there was focus on reducing the environmental footprint in the production process as in the case of resource-efficient processes while others focused on green outputs and offer green products and services exhibited through renewable energy products as shown in plate 8. Many SMEs are now green performers where they are incorporating use of solar energy as shown in plate 9. In the concluded African Summit Climate held in Nairobi, Kenya between 4th and 6th September 2023, the African leaders emphasized on the need to implement green energy strategies.



Plate 8; Some of the green energy products identified **Source;** Author



Plate 9; Solar Energy for use in a dairy farm
Source; Author

4.0 RECOMMENDATIONS

Climate change triggered by carbon emissions from different individual world countries is a serious global issue. Locally in Kenya, meeting the challenges associated with it could provide an opportunity to create and trigger tremendous growth for SMEs. Developing mitigation strategies and adopting policies to tackle the emissions' challenges can make SMEs more innovative. Therefore, based on various field observations and desk top scenario analysis in Kenya, this study observed that SMEs are on trajectory change towards the adoption of environmental conservation technologies and innovations. To achieve this there need to enhance environmental conservation strategies through environmental campaigns and bringing SMEs as major stakeholders in the campaigns. This study provides further evidence that SMEs are responding positively to green energy strategies and therefore need for the government to subsidize equipment and machines that embrace green technology. Finally, this study is significant in initiating and contributing to green innovation and revolution by the SMEs. This research therefore will significantly be of interest to policymakers who are engaged in formulation of environmental conservation issues, policies and legislation and therefore enhance adoption of emerging technology in addressing emission discharges.

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