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SYSTEMATIC REVIEW

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The role of sustainable business networks in promoting a Circular Economy in Africa—A systematic literature review

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Abstract

In order to achieve transition toward a Circular Economy (CE), multiple stakeholder partnerships are required. Although the CE shows proven potential and impact, the implementation is still very low in developing and transition countries. The role of networks in promoting the CE is assessed, including the impact which network participation has on the implementation of a CE at company level. Although firm level capabilities can be enhanced by network participation, a lot of knowledge gaps exist regarding the orientation and structure of networks; governance models for networks and the high impact activities that can be implemented. A systematic literature review was undertaken to characterize the role of sustainable business networks in green industrial transformation. The approach to literature review included keyword search, title analysis, search title analysis, abstract analysis and systematic review of contents for full review of 50 research articles from Web of Science, Scopus and literature. Barriers, cognitions and challenges in the operation of sustainable business networks were clearly analyzed, including knowledge gaps existing in literature. Database search and document review was undertaken to determine the role and impact of sustainable business networks in promoting a CE in comparison to idiosyncratic organizations without any affiliation. The review enabled determination of the policies which promote sustainable business networks, network structure, governance, and success factors. We conclude that sustainable business networks have an impact on the CE transformation in selected African countries. Implementation success could be explained by contextual factors within sustainable business network boundaries.

This article is categorized under:

Climate and Environment > Pollution Prevention
Climate and Environment > Circular Economy
Policy and Economics > Green Economics and Financing

KEYWORDS

Circular Economy, collaboration, green industry, networks, partnerships, sustainability

1 | INTRODUCTION

Transforming the current patterns of production and consumption will need novel approaches of a Circular Economy (CE) through collaboration (Brown et al., 2018; Ferasso et al., 2021). This is in response to existing problems to the environment and society, caused by industrial development across the planet (Baas, 1995). Industrial development has come at an unprecedented cost to environmental quality, due to the increased resource consumption of extractive industries, biodiversity loss, climate change and pollution of environmental compartments. We have reached a tipping point as humanity and we are exceeding planetary boundaries (Rockström et al., 2009). A CE can help us to decelerate resource intensive practices that threaten planetary boundaries.[1] It is therefore imperative to adopt a paradigm shift from unsustainable production and consumption patterns toward preventive concepts such as a CE (Prieto-Sandoval et al., 2018). The CE is an imperative for development, which presents a last gasp opportunity to solve the ecological challenges facing the planet (Ellen MacArthur Foundation, 2012; Ghisellini et al., 2016). In Africa, transition to a CE is an imperative for growth and development of the continent and to strengthen its resilience to a sustainable future.

Networks for a CE are emerging as more effective tools to disseminate sustainable innovation than isolated corporate initiatives where companies work individually. Despite several years being spent on implementing CE concepts such as Resource Efficiency and Cleaner Production (RECP) and Sustainable Consumption and Production (SCP), questions still remain as to what are the effective strategies required for its successful mainstreaming across global economies and how to ensure a high level of uptake in Small to Medium Sized Enterprises (SMEs). Multiple authors and scholars have also noted that firm organizational capabilities remain low despite several programs being launched at national, regional and international level (De Bruijn & Hofman, 2001; UNIDO, 2011; UNIDO-UNEP, 2010; Van Berkel, 2008). Sustainable business networks focusing on CE could be the panacea to industrial transformation in developing and transition countries. Network configuration can take the form of association, sectoral groupings, supply chain, regional industrial parks, national sustainability networks and international networks. Networks could be aligned by geographical proximity, common goals, supplying similar products and services as well as other convening factors. Networks can also be in the form of supply chain networks promoting sustainability within a supply chain networks configuration (Van Bommel, 2016). The effectiveness and impact of these network configurations in multiple country contexts requires research. Networks for promoting a CE have been formulated as a platform to increase the knowledge, capacity building, sharing experiences, disseminating toolkits and identifying common resource efficiency and pollution problems. It is yet to be seen what the impact of these networks have in African countries and whether they actually result in CE benefits at firm level. Implementing CE at firm level entails reduction in resource intensities, using waste as a resource for other processes, creating circular products and creating industrial symbiotic relationships among organizations. It also means moving away from linear business models and unsustainable means of production and consumption (Ghisellini et al., 2016). Meanwhile comparative studies are still to clearly ascertain and prove whether the firms that participate in network activities perform better than firms that do not participate in network activities. In most parts of the world, networks are not well understood (UNIDO, 2011). In some instances, collaborating firms attain a higher level of innovative capability and competitiveness (OECD, 2004). It is against this background that in recent years, several networks have emerged in both developed and developing countries fostering a CE agenda. Despite formation of these networks, there is emerging evidence that some of them do not last beyond program and project support (De Bruijn & Hofman, 2001). Despite participation of many firms and institutions in sustainable business networks, there is little evidence to suggest the causal effects of improved sustainability performance within network members are exclusive to network activities. It is still evident that there are difficulties in increasing the uptake of CE concepts in SMEs in developing countries even when corporates are involved in sustainable business networks. It is not clear as to whether participation in networks has significant impacts on the uptake of green industry practices. Although there is a strong belief that participation in industry associations oriented toward sustainability will accelerate corporate sustainability, it is not clearly possible to link all of the firm level efficiency improvements to network activities. It is not clear whether this network participation will result in CE transformation in the future. Most network actors are failing to go beyond networking activities, workshops, roundtables and face challenges in trying to mainstream CE. Some network initiatives fail to address country-specific issues and hence are deemed ineffective in steering industrial transformation and incompatible with local CE requirements. The aim of the article is to establish a systematic literature review, in order to understand the networking dynamics of firms in the transition toward a CE and enable a deeper understanding of their cognitions,

impact, roles, activities, effectiveness, barriers and enabling factors related to collaboration in a CE. The aim of this article is to decipher methodological, theoretical and empirical literature on CE networks and determine knowledge gaps of existing studies. The article has a specific focus on developing African countries due to their increasing vulnerability to ecological and climate shocks and the limited development of CE networks in the region.

The systematic literature review is structured as follows: Section 2 (Methodological Approach to Literature Review) which presents the methodology for undertaking the review, Section 3 (Systematic Literature Review—The role of sustainable business networks in promoting a CE) and then Section 4 (Conclusion) presents the conclusions from the systematic literature review based on the theoretical perspectives and empirical experiences derived from the literature.

2 | METHODOLOGICAL APPROACH TO SYSTEMATIC LITERATURE REVIEW

2.1 | Methodological approach

The systematic literature review used a range of methods by including document search on scientific databases. In order to understand the theoretical evidence of sustainable business networks in relation to CE, a systematic literature was undertaken in order to understand the "state of art." International databases Scopus and Web of Science™ were used to extract theoretical information about the phenomenon of network collaboration. Initial keyword search was focused on articles ranging from the years 1963–2023 in order to get a broad view of the area of study. Keywords related to networks for "sustainable business networks," "green networks," "green economy networks," "networks," "collaboration," "isomorphism," and "Circular Economy networks" were used to extract theoretical information and key documentation underlying the line of discourse. With research keywords Boolean searches were also undertaken considering "and" as well as "or" criteria. Initial range of articles on networks ($n = 4000$), sustainable business networks ($n = 1502$), CE collaboration ($n = 61$) were searched on Scopus database. A further assessment of titles and abstracts revealed that fewer of the articles were most relevant. Therefore, a total of 50 articles were reviewed to assess the effect of sustainable business networks on the implementation of CE. The articles which had networks without a focus on CE were screened out and excluded from the analysis.

Document review of project reports, project proposals, network briefings, network charters and networking conference proceedings was undertaken in order to give adequate information on network performance. The content analysis considered both quantitative and qualitative results of the network activities. Websites of networks were assessed to determine empirical case study reports from the various networks. Literature review on the success factors of network proliferation and the barriers that affect network development was undertaken. Literature from networks was assessed in order to ascertain the quality of sustainability interventions and determine whether the networking activities have accelerated CE adoption. Some networks evaluation reports were analyzed independently to ascertain the effects of their activities, hence the researcher systematically examined them to establish whether there was a significant effect in uptake of sustainable innovation instilled by the network collaboration. Case Study research methods were also used to understand depth and breadth of cases presented in literature on within networks (Yin, 2003). The next section presents the literature and state of art for the role of networks in promoting a CE. Figure 1 shows the approach which was used for the systematic literature review.

3 | THE ROLE OF NETWORKS IN PROMOTING A CE

3.1 | Toward sustainable development

The concept of sustainable development has been adopted as a key developmental paradigm in most countries ever since it gained prominence and definition in the Brundtland report of 1987 (WCED, 1987). Sustainable development has come to the fore at the backdrop of several environmental challenges affecting the world in different sectors of the economy and the emergence of global environmental problems. It is no longer a secret that environmental resources are dwindling at a rate that is higher than the ability of the earth's natural systems to recoup (WCED, 1987). The current patterns of consumption and production are not sustainable and this will affect the ability to meet future livelihood requirements and will certainly result in loss of key environmental functions.

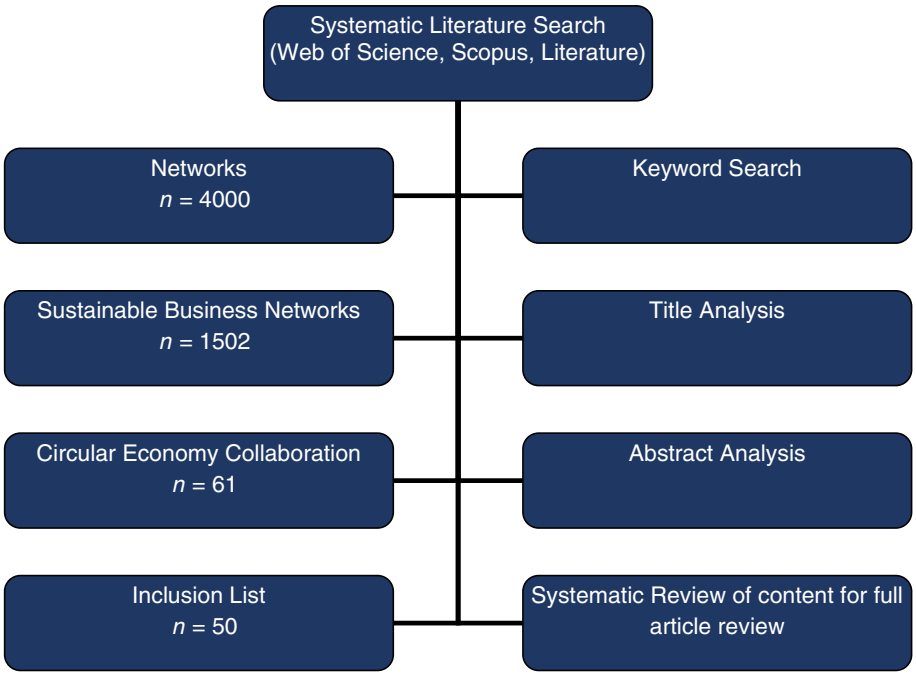

FIGURE 1 Systematic literature review approach.

"Sustainable Development is the development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). The urgency of the ecological crisis is widely confirmed by a wide body of researchers (Ellen MacArthur Foundation, 2012; Ghisellini et al., 2016; Leising et al., 2018).

Sustainable industrial development is now very common and several efforts have been put in place to promote Green Industry concepts. International efforts have consolidated the concept of sustainable development through the United Nations Conference on Environment and Development in 1992, World Summit on Sustainable Development in 2002, Rio+20 Summit in 2012 and the finalization of the Sustainable Development Goals (SDGs) in 2015. Key outcome documents that emphasized international commitments to sustainable development included; "*Our Common Future*," "*Agenda 21*," "*Johannesburg Plan of Implementation (JPOI)*," and "*The Future We Want*." A common emphasis from all these international consensus documents is the need for industries worldwide to adopt SCP patterns. The role of industry is widely recognized as a key player in the sustainable development trajectory. This entails changes in production and consumption practices and mainstreaming sustainability concepts into their business strategy through fostering innovation, resource efficiency and pollution prevention. In order to attain sustainable development, society must embrace CE paradigms including practices, business models, methods and processes.

3.2 | Toward a CE

Global resource intensities continue to rise exponentially, partly due to anthropogenic releases and intense resource utilization. Traditional models of development favored the, take-make-dispose philosophy. Such practices have been responsible for fueling environmental degradation and loss of natural resources (EU, 2021). The COP-26 Summit held in Glasgow, Scotland, confirmed that fossil fuels such as coal, are responsible for ecological catastrophes such as climate change and there is need to phase down their usage through cleaner energy sources that promote circularity. As sustainable development challenges continue to ravage the world in unprecedented proportions, both developing and developed countries are thriving to find solutions to the global challenges affecting the world today. The CE has emerged as an approach which could help societies correct the wrongs caused by humanity to the environment (EU, 2021). An emerging pattern from literature is the common citation of CE as a new paradigm for ecological and human development (Berlin et al., 2022; Ellen MacArthur Foundation, 2012; Ghisellini et al., 2016; Leising et al., 2018).

A CE provides a paradigm shift in the way we produce and consume, through ensuring that resources are recycled, re-used and taken back into the production process (Ellen MacArthur Foundation, 2012). Pursuing a CE allows

FIGURE 2 Model of a Circular Economy (CE). *Source*: EU (2021).

reduction in the extraction of resources such as minerals, water unclean energy sources and reduces the amount of waste that goes to the landfill. Typical examples of CE include recycling of waste, industrial symbiosis at industrial level as well as promoting energy recovery at process level (Ghisellini et al., 2016). However, CE should not only be focused on waste management; but consider other facets of CE (Ghisellini et al., 2016). Heat recovery, condensate recovery and reuse of process materials can facilitate reduction in exploitation of natural resources. In order for a CE to happen at national, regional, eco-industrial park and at firm level a number of factors are critical. Some of the factors include legal, policy, technological, capacity building and awareness initiatives. In addition, there is a higher acceleration of CE adoption when economic instruments, financing are also included in the discourse as a way of overcoming the barriers of CE implementation (Bacudio et al., 2016; Hina et al., 2022). Figure 2 illustrates the model of a CE.

A CE facilitates significant benefits to society, environment and the bottom line of businesses (Ghisellini et al., 2016). Some of the key benefits which can accrue due to CE, include cost savings, creation of green jobs, conservation of resources and ensuring that businesses are more competitive (EU, 2021). It is projected that by the year 2030 transition toward a CE will facilitate creation of 700,000 jobs in the European Union. The International Labour Organisation (ILO, 2018) projects that a CE will deliver over 24 million jobs by 2030. One of the dimensions of enabling a CE transition is through promoting the adoption of Resource Efficient and Cleaner Production (RECP) in enterprises.

3.3 | The need for RECP

Industrial production systems worldwide cause major environmental problems through pollution of the environment, extraction of energy resources, high water consumption and excessive usage of hazardous chemicals. Traditional approaches to these problems focused on providing end-of pipe treatment solutions which to a large extent never address the root cause of the problem. In recent years a paradigm shift has been adopted through RECP.

This innovative approach is defined as:

> The continuous application of a preventive environmental strategy to processes, products and services to increase overall efficiency and reduce risks to human health and environment.
>
> (UNIDO-UNEP, 2010)

This concept was first coined by the United Nations Environment Programme (UNEP) and has been adopted in different countries across the world. Currently more than 50 countries have National Cleaner Production Centres (NCPCs) and have successfully implemented RECP projects (UNIDO-UNEP, 2010). Could this industrial revolution be

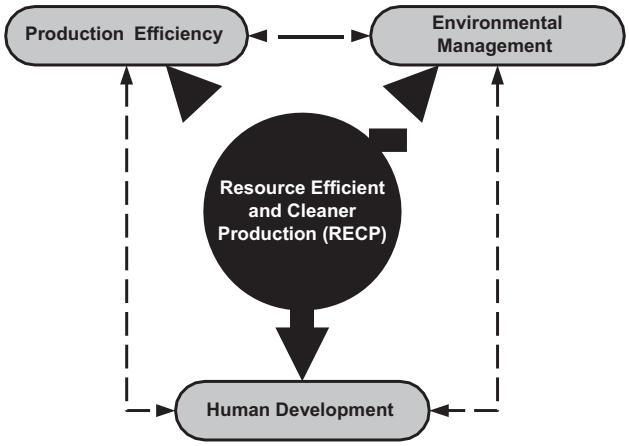

FIGURE 3 Resource Efficient and Cleaner Production (RECP). *Source*: UNIDO-UNEP (2010).

as a result of networking activities? One could generally allude to the fact that the implementation of these preventive approaches has yielded environmental, economic and social benefits in several firms in the world. This transformation has to some extent been facilitated as a result of gaining knowledge from knowledge sharing platforms on RECP (UNIDO-UNEP, 2010). Achievement of sustainable development therefore hinges upon industrial transformation especially through introducing innovative methods of production in industry, thereby ensuring efficient resource utilization and pollution prevention. Several reasons justify the need for RECP including the need for environmental protection, the increased resource prices that are affecting several industries and the impinging legislation that is regulating companies worldwide. Employing RECP methods ensures that a firm reaps environmental benefits, protects the safety and health of its employees and ensures better relations with regulatory authorities. The model of RECP is presented in Figure 3. Therefore, improving resource efficiency in industry is one of the key strategies for ensuring a sustainable future, which is also one of the CE pillars (Al Hilali, 2012). SCP patterns facilitate efficient resource usage and ecological balance in ecosystems.

3.4 | A transition to SCP patterns

The concept of SCP has also gained momentum in recent years, upon the realization that the current patterns of consumption and production are not sustainable (United Nations, 2011). International commitment on SCP was heightened by the Johannesburg Plan of implementation formulated at the World Summit on Sustainable Development (WSSD) which called for the establishment of 10 Year Framework of Programmes on Sustainable Consumption and Production and Strengthening of Regional Roundtables. This was also followed by the formulation of the Marrakech Process and different Marrakech taskforces on aspects of SCP including sustainable transport, sustainable mobility, sustainable tourism, sustainable lifestyles, sustainable building, education for sustainable development and special taskforces on Africa. The Marrakech process is a process that was developed to promote SCP worldwide (United Nations, 2011). Ever since 2002, SCP has been mainstreamed into the policy frameworks and national discourse across the world and the Rio+20 Summit of 2012 reinforced international commitment on SCP through adopting a Global 10 Year Framework on Sustainable Consumption and Production.

> Sustainable Consumption and Production is the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardise the needs of future generations.
>
> (Oslo Symposium, 1994)

As the concept of SCP evolved, it became evident that networks were essential in compiling SCP case studies, innovative ideas and acting as knowledge sharing platforms. Most projects of SCP have been promoted and channeled

through sustainable business networks. Therefore, in the following section an analysis of networks as vehicles of sustainable innovation transfer is explained.

3.5 | Networks as sustainable innovation transfer agents

Successful implementation of sustainable innovation requires SMEs to possess capacity and tacit knowledge (Hart, 1995). Developing countries face double jeopardy due to their limited resources to undertake innovation. This often results in them lagging behind on the technological revolution. South East Asia, some parts of South America and Sub-Saharan Africa, have experienced innovation challenges due to geo-political, financial and policy barriers. Within these regions, SMEs play a significant role in economic development. However, due to the limited innovative capacities of SMEs, adoption of innovations in these enterprises is greatly limited (De Bruijn & Hofman, 2001; Halme et al., 2007; Limaye & Limaye, 2011). Consequently, potential benefits of innovation in SMEs have not yielded competitiveness and sustainable production as expected because of the inability to design, implement and sustain suggested resource efficiency measures. Therefore, sustainability requires looking for other stakeholders beyond the SMEs such as networks and intermediaries which facilitate process and product innovation (Berlin et al., 2022; Collins et al., 2007; De Bruijn & Hofman, 2001; Jager & Piscisceli, 2021; Leising et al., 2018; Roome, 2004). Literature provides evidence that innovation requires not only firm level responses, but multi-stakeholder partnerships (MSPs), collaborations, networks, industrial support organizations and service providers (Antonnen, 2010; De Bruijn & Hofman, 2001; Morsink et al., 2011). This is the same when it comes to the concept of RECP whereby most SMEs struggle to innovate on their own without agents of change steering their transformation.

Networks offer an opportunity for these SME firms to get access to current knowledge which enables better process efficiency and cost savings (Veleva & Bodkin, 2018). In light of this realization, higher uptake of CE approaches can be steered by acquiring knowledge from networks, participating in network projects and benefitting from knowledge products created by the networks.

Some networks actually act as clearing houses and have established a panel of experts that can respond to any questions affecting SMEs in the field of corporate sustainability. There is generally a huge depository of information when networks convene their meetings and roundtables since several new toolkits are on offer. These toolkits are cascaded to member countries in the developed world and help to address resource efficient challenges. Some of the leading providers of toolkits include the United Nations Environment Programme (UNEP-DTIE) and the United Nations Industrial Development Organization (UNIDO) who have strong contacts with regional roundtables and also have formed their Global Network on Resource Efficient and Cleaner Production (RECP-Net). New research findings and advances in resource efficiency are also presented at network meetings for the collective benefit of network participants. Participants within these networks vary from time to time including Industry, NCPCs, Intermediaries, Consultants, Government Officials, private sector, academia, policy makers. These network participants adopt ideas from the networks and mainstream them into their service delivery regimes in the case of NCPCs, while policy makers strive to mainstream the new policy instruments that are identified as key to steering industrial transformation.

However, on the other hand are the laggard network actors who are just interested in attending networking events but do nothing about cascading knowledge to SMEs in their countries. Such networks have a lesser impact in promoting a CE. It is interesting to note that network actors have different motivations as they join and participate in networks (Hina et al., 2022). This could be an aspect worth investigating in the different networks in order to make sure the networking is effective. Without identifying success factors, addressing network barriers and without maximizing the opportunities that exist for enhanced collaboration—networks do not reach their full potential as agents of sustainable industrial transformation.

3.6 | Networks as a framework for governance

Networks serve a key function of providing governance frameworks in developing and transition countries. Many policy actors in developed and developing countries formulate policy goals including those focusing on sustainability. According to UNIDO (2011) in the "*Report Networks for Prosperity: Achieving Development Goals through knowledge sharing*"; emphasis is given on the fact that networks are essential to facilitate achievement of policy goals.

International and national policy goals to achieve a resource efficient future and shifting toward SCP patterns can therefore be addressed through networks.

> Networks are a distinct form of governance, with important potential for knowledge creation and development performance.
>
> (UNIDO, 2011, p. 24)

It is essential to note that in some countries, knowledge for resource efficiency and SCP is still scant and indicators of outcome and impact are not always available and this is evident in numerous country reports from the Independent Evaluation of the RECP program (Van Berkel, 2008). The realization of these knowledge gaps indicates the need to create a base for knowledge management, collaboration and information dissemination.

In a way, the feasibility of achieving policy goals is greatly enhanced through ensuring that the population has adequate information in sustainable innovation. The Contextual Interaction Theory (CIT) states that the achievement of policy goals is greatly influenced by the information, power and motivation (Bressers, 2009). This applies to any policy making process involving policy makers and the population where the policy interventions are being promulgated. In light of this theory one of the key things that are essential for the success of any policy is the information that is possessed by the population.

It is therefore essential to regard networks as contributing to the information dimension of the Contextual Interaction Theory. Establishing networks in different parts of the world is a useful tool that can enhance the feasibility of achieving policy goals. While traditional approaches of controlling the behavior of individuals and firms were hinged upon command and control and the use of coercion the use of softer policy instruments, such as market based instruments and information sermon type instruments is gaining momentum (Kooijman, 2010). In order to enhance information levels of firms and individuals, networks are very essential in bridging the knowledge gaps. Policy actors that strive for excellence and efficiency in governance and formulation of policy goals are now also seeking more collaboration among stakeholders and making sure that there is fostering of public–private partnerships (PPPs). Although RECP has been adopted in many countries including the establishment of the 50 NCPCs some countries have not yet mainstreamed this concept into national policies and strategies (UNIDO-UNEP, 2010; Van Berkel, 2008). Participating in networks can help to inform policy makers.

Through network activities there is also the prospect of influencing the policy makers in the policy making cycle and ultimately mainstream the requirements into national policy. Consequently, networks become policy change agents whether directly or indirectly. UNIDO (2011) citing the Global Resource Efficient and Cleaner Production Programme, consider networks as key agents in facilitating sustainable industrial development policy in pursuit of the Sustainable Development Goals (SDGs). The networking activities that these institutions undertake facilitate the policy goals of governments and the global thrust for the attainment of SDGs.

3.7 | The roles and functions of network collaboration in greening industry

The Role of networks in facilitating green industrial transformation is widely documented. In a green industry regime, there is efficient management of resources, energy, water and reduction in waste generation. Several studies elucidate the roles and functions of network collaboration in multiple country contexts (Berlin et al., 2022; Jager & Piscisceli, 2021; Leising et al., 2018; Madanhire & Mupaso, 2018; Mahuni & Bonga, 2016; Mbohwa & Rwakatiwana, 2010; UNIDO, 2011).

Although traditional policy mixes in most countries originally focused on evoking changes in firm level behavior through command and control approaches, it is becoming increasingly evident that such approaches may not always work. According to De Bruijn and Hofman (2001), it is difficult for SMEs to adopt cleaner production and pollution prevention technologies in isolation. High level uptake of cleaner production requires network collaboration among various stakeholders including SMEs (De Bruijn & Hofman, 2001). Based on PRISMA projects—Project for Success in Pollution Prevention in Industry consisting of Dutch examples of pollution prevention in selected SME industries; De Bruijn and Hofman (2001) suggest that trade associations implement pollution prevention as external agents to SMEs enabling capacity building, technology transfer, information dissemination and eco-innovation. Other researchers who confirm similar functions of networks, collaboration and industrial cluster arrangements include (Madanhire & Mupaso, 2018; Mahuni & Bonga, 2016; Mbohwa & Rwakatiwana, 2010; Morsink et al., 2011). The authors demonstrate the influence of collaboration on sustainability performance in different country contexts.

Networks complement the supportive, persuasive and repressive functions of the government thereby facilitating sustainable production in SMEs by influencing motives, resources and power of target groups and rational actions toward sustainable innovation (de Bruijn et al., 1996). Partnerships and collaborations are therefore identified as a key step of instilling sustainable development in industrial firms (Mbohwa & Rwakatiwana, 2010).

Roles and functions of networks vary depending on thematic focus of the particular network. Networks have key roles in information provision, knowledge generation, networking events and connections, advisory services and support as well as promotion of sustainability policies (Switch Asia Network Facility, 2013). Other scholars argue that networks do not always result in tangible changes in sustainability performance of industries particularly Small to Medium Sized Enterprises (SMEs) (Dieleman, 2007; Van Khoa, 2006).

The Environmental Protection Agency (EPA) of the United States of America carried out an evaluation of pollution prevention networks and concluded that networks were essential for improving performance of individual firms that offer pollution prevention services to industry (Environmental Protection Agency, 2013). The networking activities are also essential in preventing duplication of sustainability efforts and initiatives in similar territories and ensuring that projects complement each other at national regional and international level.

RECP-NET, SWITCH Asia Network Facility, Regional Roundtables on Sustainable Consumption and Production such as the African Roundtable on Sustainable Consumption and Production (ARSCP), European Roundtable for Sustainable Consumption and Production (ERSCP), Asia Pacific Roundtable on Sustainable Consumption and Production (APRSCP) are key networks that collaborate on sustainability issues. The Sustainable Consumption and Production Research and Exchange (SCORE) network is a key example of a network that was formed for the benefit of countries in Europe in terms of increasing cooperation in the field of sustainable business. In the African context, there are other emerging networks such as African Circular Economy Network (ACEN), Business Council for Sustainable Development Zimbabwe (BCSDZ) as well as the Environmental and Social Governance Network of Zimbabwe (ESG). The national Business Initiative and Plastics South Africa play an essential role in the path toward a CE in South Africa.

According to Tukker (2006) networks are essential in order to avoid a situation whereby sustainable business initiatives come to an end when projects are completed and there is no longer available funding for the initiative, project or program. Networks therefore provide cooperation beyond projects (Baas, 1995). The Greening of Industry Network (GIN) also became a leading collaborative platform for raising awareness and steering green industry and sustainable innovation technologies in different countries (GIN, 2022; Tukker, 2006). One common aspect of these networks is that they hold workshops and conferences on a regular basis (e.g., annual or bi-annual) to bring network actors together to share experiences, disseminate new technologies to each other, discuss best practice and identify emerging issues in the field of the CE.

This article is meant to assess and evaluate these network activities to establish if there are any tangible benefits emanating from network participation and whether this innovation will ultimately cascade to SMEs beyond the networking workshops and conferences. Without proper governance structures networks can easily collapse or be diluted by other parallel networks thus it is essential for networks to devise strategies of ensuring that they have a long-term strategy of collaboration and sustaining vibrant network activities (Tukker, 2006). In the absence of networks, it is generally difficult to increase the uptake of RECP technologies and increase the uptake of SCP patterns. Although networks have key roles to play in facilitating Sustainable Consumption and production, they do not always agree, as they may have differing perspectives on how to approach sustainable development issues. These differences if not managed may cause conflicts and disagreements (Xu et al., 2023).

3.8 | Cognitive factors influencing network participation

Organizations have different motives for participating in networks for a CE (Brown et al., 2018). These motives can be genuine or can be ulterior motives informed by the need to gain mileage, and popularity among customers without any sustainability actions. These cognitive influences from empirical evidence included the need to meet emerging regulatory regimes in the areas of sustainability, overcoming competition, gaining knowledge and information from other network members (Brown et al., 2018; Camarinha-Matos et al., 2010). The other factors influencing involvement in sustainable business networks include, access to capital, improved corporate image as well as the ability to access case studies of successful implementation of a CE. Rising costs of natural resources and raw materials such as energy, water, chemicals and the increased costs of disposing waste plays a major role in giving financial incentives for organizations to consider CE network participation. These factors vary from country to country due to differences in economic environments, regulatory pressures, economic incentives and resource prices.

BOX 1 Illegitimate motives to conform to a CE paradigm

Businesses are increasingly faced with pressures to conform to emerging sustainability concepts such as CE. Instead of adopting CE as a strategic business strategy, there is a group of organizations taking up CE and network participation as a public relations stunt and marketing gimmick. Greenwashing is also evident in sustainability programs (De Jong et al., 2017). Due to the increased scrutiny on the sustainability antics of businesses, there is a tendency to just follow the bandwagon of CE activities without aligning them to the corporate strategy. In this regard, these activities are difficult to ascertain. Therefore, not all network participants in sustainable business networks collaborate for genuine cognitions of business cases, social justice and moral persuasion to adopt a CE. Some have hidden motives to tick boxes and appear to be sustainable in the eyes of customers and investors. In some cases, network participation is just inspired by the possibility of getting project funding and nothing beyond the funded project is considered important.

A rare group of companies participates in network collaboration activities related to a CE merely for public relations and marketing motives. Such network collaboration activities are difficult to sustain and maintain in a long period of time. The pressures of identifying with a certain group of companies which are regarded as green and caring for the environment have resulted in some organizations implementing half-baked CE initiatives just to be identified as sustainable enterprises. An evaluation of network participation, impact and effectiveness is necessary in order to assess some of these emerging threats to genuine network participation. Apart from the genuine motives of CE facilitation, there are some networks which have members with ulterior motives (De Jong et al., 2017). Box 1 shows some of the ulterior motives of network participation. In addition, Box 1 presents examples of illegitimate motives for network participation.

In Sustainability Reports developed by organizations, there are requirements to disclose membership to professional bodies or business networks. While many of these sustainability reports present information that companies are implementing in the areas of environment, social and economic sustainability at times some network participation that they undertake is done with the need to tick a box in their sustainability report. This could be considered as an antic of greenwashing consumers and stakeholders. A typology of the different types of networks is presented in the next section.

3.9 | Types of networks

Sustainable business networks can take different forms, depending on the relationship between the actors. Some networks are made up of service providers and intermediaries. Partners in a network can include trade associations, ministries, consultancy agencies, research institutes, and individual firms (De Bruijn & Hofman, 2001). Relations in a network can be vertical in a case where one of the network actors takes a leading role. In other cases, there is equal power and superiority among the network actors. Different types of networks exist worldwide and these may include public networks, public–private networks and private networks (UNIDO, 2011). Some networks can be classified as private networks which involve multiple actors (UNIDO, 2011). When referring to the networks UNIDO alludes that:

> These can take many forms: business associations, industry, university collaboration, private regulatory initiatives, ...
>
> (UNIDO, 2011, p. 23)

Industrial clusters also form a key example of private–private networks and consist of network of organizations that could be situated in close proximity to each other in the eco-industrial parks or are grouped within the same sector (Madanhire & Mupaso, 2018; Mahuni & Bonga, 2016; Mbohwa & Rwakatiwana, 2010; Yin et al., 2022). The benefit of such clusters is that they act as a platform of knowledge transfer, innovation transfer, and information dissemination. There are generally less barriers to networking presented as a result of power relations. This is because all network members are essential. Cluster networking activities could involve regular meetings at cluster level, special workshops on key topics such as hazardous waste management, resource efficiency, energy management, and renewable energy.

Through industrial clusters, the laggards and industries that lag behind in terms of green technology can have the opportunity to improve their firm level capabilities. Networks can also be supply chain networks and could be at the level of industrial clusters. Emergence of eco-industrial parks is an opportunity for network formation and collaboration in the facet of a CE.

3.9.1 | Global Network on Resource Efficient and Cleaner Production

The UNEP-UNIDO Resource Efficient and Cleaner Production Programme resulted in the establishment of the RECP-Net. It was formed at the Nairobi Declaration in 2011. This network supports NCPCs in the implementation of RECP technologies in developing and transition countries (Al Hilali, 2012). Ever since this RECP-Net was formed it has co-opted members who were involved in pre-existing Cleaner Production Networks. It is still to be seen how the RECP-Net proceeds and how its activities can be improved. The network is involved in the activities such as capacity building, knowledge management, training, and quality control in RECP services (Al Hilali, 2012).

> RECP-Net contributes to the effective and widespread application of Resource Efficient and Cleaner Production (RECP) in developing and transition countries by bringing together the providers of RECP services. RECP-Net facilitates South-South and South-North-South collaboration and transfer of best practice RECP methods, techniques and policies.
>
> (UNIDO-UNEP, 2010)

However, due to lack of adequate finance to sustain its project and due to depletion of project funding, this network was discontinued. Scholars agree that networks can be affected by financial constraints and depletion of project funding. In the road to its demise, there was no effective strategy of how to finance the RECP-Net beyond program support. Although participating in network collaboration activities, not all of its members were willing to make subscriptions for its operation. Without the support of development partners, the RECP-Net and its members struggled to sustain the network. Project and program based network activities should be integrated with network interactions fueled from self-initiated networks.

3.9.2 | SWITCH-Asia Network Facility

The Switch Asia Network Facility was formed for Asian countries particularly to present a platform for sharing information, knowledge and expertise regarding SCP experiences. While acknowledging that vast knowledge already existed in the field of SCP the SWITCH Asia network facility provided a platform to ensure that there was a high chance of up-scaling and replicating SCP in Asian countries. The Switch Asia Network Facility is part of the SWITCH Project funded by the European Union in different Asia countries. It is coordinated by the UNEP Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production (CSCP). The network has a role in providing information, designing SCP tools for knowledge dissemination, compiling case studies, organizing events and cascading successful project experiences (Switch Asia Network Facility, 2013; Tetzel, 2012).

3.9.3 | European Roundtable for Sustainable Consumption and Production

The ERSCP is a network of stakeholders, organizations, universities involved in SCP in Europe. It carries out Roundtables in European countries enhancing the uptake and up-scaling of sustainable production knowledge. Through this networking platform, there is generation of new knowledge, innovation, presentation of case studies and creation of a foundation for collaborative projects. The coverage of participants from this network includes the academia, government departments, universities, cleaner production experts, non-governmental organizations (NGOs), and individuals who are interested in the field of green business. The ERSCP is also involved in organizing roundtables in different parts of Europe to harness different experts, harness knowledge, share experiences and present breakthrough novel findings in the trans-disciplinary research of SCP. These conferences are jointly organized with the Environmental Management for Sustainable Universities (EMSU). This is why it is common in recent years to see the networking

activities and roundtables being referred to as ERSCP-EMSU (2013). The ERSCP promotes resource efficiency, eco-innovation, sustainable lifestyles and fosters the principles of sustainable living. Industrial transformation is an integral component of the networking activities of this network with major players from the private sector also being involved in networking activities.

3.9.4 | African Roundtable on Sustainable Consumption and Production

The ARSCP is a regional not-for-profit making network that focuses on SCP in African countries. It was formed in 2004 with a clear mandate to increase the uptake of SCP technologies in African countries and steer the implementation of the 10 Year Framework Programmes on Sustainable Consumption and Production (10YFP) The network convenes a roundtable every 2 years where members share experiences, best practice, case studies and present lessons learnt from the implementation of projects in their respective countries. This network has a key role in increasing regional capacity in the field of SCP, carries out training and capacity building while also raising awareness among government officials. Network participation for any member therefore comes with benefits that include access to all these networking activities. However, the activities of the ARSCP since its formation have not been evaluated systematically by independent stakeholders. It is therefore essential to assess the performance of this network in terms of network activities and the impact and change if any in the recipient country industries particularly SMEs. It can be envisaged that if the ARSCP is effective as an institution then there is no reason why African SMEs should be lagging behind in terms of industrial transformation. This network has managed to carry out projects at regional level involving the different member countries and these have been carried out in a collaborative spirit. This network has got fully functional governance structures including an Executive Board and a President who form a team that makes decisions on the thematic focus and the priorities of this network. It is yet to be seen whether this is the appropriate governance mechanism of a green business network in the African context. Governance and funding challenges have continued to affect the success of this sustainable business network.

3.9.5 | Asia Pacific Roundtable on Sustainable Consumption and Production

The APRSCP was formed in 1997 (APRSCP, 2013). This is a network that incorporates experts from the Asia Pacific region through bringing together their innovative efforts toward achievement of sustainable development. It has undertaken Roundtable meetings for its members where lessons learnt and experiences in the field of SCP have been shared. It aims to develop a network of individuals and experts who are essential in bringing new knowledge for the benefit of other stakeholders as way of instilling transformation in production and consumption patterns in the Asia Pacific Region. According to the APRSCP Charter the APRSCP is involved in several activities including information dissemination, conferences, publications, training and acts as a clearinghouse on SCP related matters. It is essential to note that these are key activities that promote the advancement of novel concepts such as SCP and RECP (APRSCP, 2013).

The APRSCP can be regarded as a networking facility that brings together stakeholders for collaborative efforts toward achieving sustainable development. Evaluation of such networks is essential in order to determine efficiency, effectiveness, relevance of networking activities and how sustainable network innovations can be in the context of different countries. The APRSCP operates as an international, regional, NGO that is autonomous in running its operations and activities (APRSCP, 2013). This gives insights into its governance arrangements. The nature of governance of a network involved in CE determines its success. As part of the scope of this research we will develop an ideal networking model for green business networks and also determine whether autonomous networks governed without government interventions are successful or not. This includes also assessing factors that ensure effective collaborations.

3.9.6 | Business Council for Sustainable Development Zimbabwe

The BCSDZ is a network which operates in Zimbabwe, providing a networking facility for industrial stakeholders in Zimbabwe especially in the field of sustainable development. It was initially called the Environmental Forum of Zimbabwe and has been coordinating this networking platform for more than 30 years. This network facilitates interaction through an annual conference, establishment of technical committees on key resource efficiency, energy efficiency, and hazardous chemicals management (BCSDZ, 2013).

The BCSDZ also acts in a way as a clearinghouse for information through organizing several technical workshops and inviting different experts to address industrial stakeholders on issues related to the CE. The network is influential in reducing waste in Zimbabwean industries, fostering efficient water utilization, energy efficiency, and increased uptake of resource efficiency technologies. There has been no independent evaluation of the activities of this network and ascertaining the effects of the network activities on network actors (Foot, 2012). The BCSDZ also administers the Inclusive Business forum in collaboration with SNV Netherlands, Environment Africa. This network disseminates information to network members through newsletters and publications. This network has 100 members, is growing and already shows great potential of influencing industrial transformation in Zimbabwe. However not all measures are implemented by the membership.

The BCSDZ has implemented several programs in Zimbabwe including those related to a CE. Specific networking events, training and capacity building for a CE have been done. Due to network participation, organizations such as Schweppes Zimbabwe Limited have formed a recycling company with other beverage companies such as Delta Corporation and dairy companies such as Dairibord Zimbabwe Limited. The organization called PETRECO undertakes the recycling of Polyethlene (PET) in order to contribute toward a CE and reduce waste in Zimbabwe.

3.9.7 | Greening of Industry Network

The GIN is a network of different stakeholders which promoted the implementation of sustainable development. It undertakes various networking activities such as seminars, training, workshops, capacity building in areas related to Green Industry. Through network participation, members gain in new philosophies and methods of production and consumption which are less destructive to the environment. The GIN is an international network of professionals comprising of stakeholders drawn from multiple sectors such as research, education, business, government and civil society organizations, focusing on issues of industrial development, environment and society, dedicated to building a sustainable future (GIN, 2022). Through the impactful activities of the GIN, both organizations and individuals can acquire new skills in combating the world's leading global challenges related to sustainable development. Combining both research and action focus, the network has managed to enable industrial transformation. The network as formed in 1991 and has since undertaken 32 events in 15 countries as of 2022 (GIN, 2022).

3.10 | Measuring the impact of networks

Networks must be evaluated to establish whether or not they are making progress in the dissemination of green business practices. From the review of literature, it is a quite prominent realization that most networks do not evaluate their CE activities and impact. The practice of evaluating networks enables lessons to be learnt and a clear identification of the constraints faced by network actors. The SWITCH Asia Network facility suggests that networks are not yet widespread in Europe and Asia, hence the need for improved cooperation on projects, establishing new tools, knowledge management and engaging policy making stakeholders (Switch Asia Network Facility, 2013). These can also be considered as indicators of success.

One factor which can ensure the success of any given network is the availability of funding to implement projects identified at the network level. This is another indicator of success. This essential aspect is demonstrated in the SWITCH Asia Network Facility which is funded by the European Commission; managed by the UNEP Wuppertal Institute Collaborating Centre in Sustainable Consumption and Production (CSCP) and UNEP Wuppertal Institute for Climate Environment and Energy. Funded network activities have a higher impact especially when network participants have the incentive to participate in projects. This may not always be the case because some networks such as the ARSCP have achieved considerable impact without significant funding.

3.11 | Theoretical framework of sustainable business networks

In order to understand the dynamics of sustainable business networks, there are several theories which underline the transition phenomenon. The sustainability theory, innovation theory and the organizational theory (Specifically Institutional Isomorphism) for the core theoretical foundations of the need for networking on issues of a CE.

Sustainability theory elaborated in WCED (1987) is concerned about the development which meets the present without compromising future generation. In this research it is within the context that firms can implement activities that benefit environment, society and people in order to attain favorable outcomes. In the context of this research, sustainable business networks are catalysts of enabling sustainable development in enterprises. Networks offer knowledge, capacity building and models of innovation related to a CE.

The innovation theory elucidated in (Rodgers, 1962), considers the fact that companies undergo a process of corporate learning to innovate new ideas. Within the framework of this research, the innovation is within the context of green industry (energy efficiency, water efficiency, safe chemicals management, waste management, pollution prevention).

The organizational theory (Specifically Institutional Isomorphism) articulated in Dimagio and Powell (1983) provides theoretical foundations related to how organizations become similar in terms of adopting sustainable development. The theory considers that organizations gradually become similar due to three pressures (coercive, mimetic, and normative). In the coercive dimension the theory postulates that pressures due to force and regulation influences firms in their behavior. In its mimetic form the theory proposes that firms will follow what model companies are doing to get success as a means of legitimacy. Mimetic dimension proposes that firms will improve and conform to certain practice due to professionalization. In this research, isomorphism is taken in the context of becoming sustainable in industrial practices as a result of coercive forces, mimetic and legitimate drivers of being part of a network, grouping or association. Furthermore, Dimagio and Powell (1983) promulgate the notion that networks achieve sustainable development through exerting isomorphic pressures. Corporations are encouraged to implement the sustainability measures in their operation in order to have legitimacy and approval among their peers.

The Contextual Interaction Theory (CIT) by Hans Bressers (2007) postulates that with respect to the implementation of environmental policy options success or failure is determined by contextual factors including—power, cognitions, and information. Within the context of sustainable business networks, the context within which they are operating has an effect on the outcomes and impact of their network activities. The relevance of the CIT facilitates the predicting and understanding contextual factors, success factors and barriers to the impact of networks in promoting a CE. Accordingly, there are a number of factors that influence the outcomes of interactions among actors which act within a wider context structural contexts and specific inputs (Bressers, 2007). Understanding the effect of these contexts in different country circumstances is needed in order to inform policy actors. In the context of developing African countries such as Zimbabwe and Kenya, the assessment of the Contextual Interaction Theory and its effects on sustainable business networks have not been fully understood in order to assess the contribution to the attainment of a CE.

Analyzing these theoretical foundations show us that network collaboration on its own may not yield desired outcomes toward transforming a CE. Pressures from regulatory and policy regimes, coupled with the pacesetting effect of similar organizations, organizational culture all play an intrinsic role in scaling up a CE. If the isomorphic pressures are weak, the network activities may end up being ineffective in some cases. In the context of corporate learning, networks provide an opportunity for corporates to learn from each other and transfer innovation (Dimagio and Powell, 1983; Rodgers, 1962). Given such a scenario, research should be designed in a manner which facilitates effective measurement of the effects of networks and be able to isolate these effects from other initiatives that may be influencing transition toward a CE.

3.12 | Challenges and disadvantages of networks

Contrary to obvious notions that networks are key enablers of a CE, emerging research proposes an opposite effect. Stegehuis et al. (2020) argue that networks can actually hinder circular innovation processes although they facilitate access to external resources. In addition, Van Bommel (2016) argues that without external regulatory pressures, networks such as supply chain networks struggle to make an impact. Such revelations, paradoxically place the theory of network collaboration as a vehicle to a CE, into a debatable notion requiring further research in multiple country contexts.

Some scholars (Brown et al., 2018) suggest that networks may result in loss of control of the sustainability strategy of an organization due to influences from network activities. The loss of identity may pressure an organization to abandon its CE programs in order to match activities promoted by the network. Furthermore, sustainable business networks may brew an element of dependency of on the sustainability programs of the network, thereby slowing down innovative capabilities of the firm (Stegehuis et al., 2020).

Multifaceted nature of organizations implies that they have different interests. Aims and priorities varies from organization to organization. Therefore, trying to promote a CE is difficult in certain contexts because the organizations face different issues. In cases where top management is not concerned with sustainability, it is very difficult to align the company

BOX 2 Business models of operating sustainable business networks

Networks require financing for them to undertake CE activities and to make an impact in Small to Medium Sized Enterprises. According to Hub Brussels (2023), several models of financing network activities have been demonstrated globally. Typical business models include membership subscriptions, donor financing for network activities, consultancy model, fiscal funding from government. When the network relies on its members for subscriptions it has greater control and ownership of its financial viability but this depends on the number of members subscribed to the network. Donor financed networks can sustain during the tenure of the project or financing duration and it may be difficult to attract members beyond the donor financed period. A few networks thrive on government funding and support. The success of government financed networks will depend on the level of financing available. Another group of sustainable business networks thrives on consultancy basis, meaning that the network charges for CE services that it offers. It can be able to cover the cost of activities as a result of charging commercial value for the activities. The success depends on the demand for CE services in the specific market as well as the pricing of the services. Moreover, the mere existence of affordable price without value addition is a cause of concern. Increasingly networks are becoming hybrid, with a combination of business models in order to survive. Network failure has been attributed to the lack of effective business models to sustain the network activities beyond program funding.

to practical implementation of network goals. Harmonizing the energy, water, chemicals and resource efficiency priorities of companies is difficult especially due to the fact that different products and services are produced. One of the leading challenges for those who formulate and manage network collaboration is to develop networks which meet the needs of differing organizational interests. Differing priorities can be catalysts for the disintegration of a network for CE.

Financing network activities remains a challenge the world over. This could be at a network level or at the corporate level. A number of sustainable business networks rely on membership subscription from member companies in order for them to sustain their activities. Subscriptions are meant to cover costs related to administration (secretariats), conferences, workshops, seminars, technology demonstrations. Without subscriptions some network activities cannot be done. The danger with such networks is that they are membership driven and at times the focus can be on subscription and not entirely on the commitment to implement concrete CE measures at corporate level. Reliance on subscriptions without viable measures of how to enhance network collaboration and attaining high collaborative impact can result in subdued implementation of resource efficiency. Financing gaps in sustainable business networks also exist at company level where some members of the networks are not able to afford implementation of the dossier of sustainability measures prescribed by the network. Despite mimetic pressures and coercive pressures, some organizations simply do not have the upfront capital to implement CE measures promulgated by the network. Formulating networks for transition toward a CE, on its own is not adequate without a clear funding strategy of how to finance CE activities arising from network participation. Box 2 presents some examples of business models for sustainable business networks. The RECP-Net showed significant promise as a sustainable business network, but suffered from lack of subscriptions by its own members. Some leading NCPCs took junior membership positions such as: observer membership which was meant for new service providers and unpaid for.

Reliance on network collaboration for decision making at corporate level can result in the organization developing a certain level of dependency on the network. Organizations have failed to make independent decisions due to the pressure to conform to network positions and consulting network members before major activities. The mimetic pressures associated with comparing one's corporate performance with your peers is a key challenge in implementing CE activities. The typology of challenges faced by networks is presented in Figure 4.

3.13 | Legal and policy influence on formation, growth, and impact of sustainable business networks

Sustainable business networks are greatly influenced by the legal and policy regimes endemic in countries. While most networks are voluntary, the work of a hidden force of the law can act as a catalyst to promote growth of networks for a CE. Masocha and Fatoki (2018) propose that coercive pressures can influence actors in the economy to adopt sustainable

FIGURE 4 Challenges associated with networks for a Circular Economy.

development practices. For example, there are networks which are formed due to increased pressures of environmental regulations and policy. In order to overcome legal impingements, companies tend to group together to share knowledge, experience and innovation. Collaborating with similar organizations helps to overcome potential violations related to environmental law. Sustainable business networks can be formed as an antidote to compliance needs of companies.

The level of policy implementation and enforcement is a key enabler to the scale and development of sustainable business networks. In countries where environmental law is weak, network development occurs albeit at a voluntary scale. In such circumstances the implementation of sustainable innovation measures is done at the volition of the corporate or firm without fear of reprisals at law.

As legal regimes grow and policy framework becomes prominent, networks can grow to become idea shapers in a CE and provide a platform for dealing with legal and policy weaknesses of the organization (Masocha & Fatoki, 2018).

Legislating specific professions can also be considered as a mechanism to promote network development. Organizations such as Zimbabwe Institution of Engineers (ZIE) are regulated and membership is required if someone is to practice as a professional engineer. The institute also addresses issues related to sustainable infrastructure, building and construction, thereby promoting a CE. Regulating networks can be counterproductive and they should be left to proliferate naturally based on collaborative forces that bring together firms on the basis of geographical proximity or values (OECD, 2004). Policies that promote company innovation are key enablers of network formation. In order to assess the effectiveness, efficiency, sustainability and impact of networks, (OECD, 2010) has established evaluation guidelines which can be used in multiple country contexts.

Government plays a key role through facilitating PPPs, Special Economic Zones and Geographically supported networking zones focusing on CE. Networks on renewable energy clustered of equipment access can grow due to national laws and regulations on clean energy as well as laws which facilitate tax incentives for clean energy implementation. OECD (2004) recognizes the fact that PPPs contribute to higher network participation of SMEs in business networks. The regulatory approach plays a key role in triggering interest in SMEs which may be focusing on short term operational requirements. However, due to the fact that networks are purely based on cooperation, the effectiveness of regulation is not well proven and it varies with multiple country contexts.

4 | CONCLUSION

The Systematic Literature review provided insights about the existing works that allow the researchers to conclude that the emergence of networks as key actors collaborating for the cause of industrial transformation, enables, to some extent, the transition toward a CE. However, the level of impact of networks is determined by the context within which the networks

operate (legal, financial, technological, social, and other factors)—such as in a country or region. Empirical perspectives based on experience and theoretical perspectives based on new arguments presented in this article, further elucidates the different examples of how networks have delivered CE activities. The systematic literature review revealed knowledge gaps that exist in the body of knowledge for network collaborations involved in CE. Other important elements were identified from the papers through thematic analysis of network roles, functions, business models, contextual factors, barriers, challenges and governance structures. One of the key aspects arising from the systematic literature review was the very limited research that has been done on networks in developing regions such as in Africa and the need to gather new knowledge about networks in multiple contexts.

From the outputs of this research, it can be said that further research might be focused on business models for sustainable business networks in delivering a CE. The research on business models should elucidate mechanisms of ensuring that the network does not collapse under financial distress. In addition, there is need to assess the effect of legal status and governance structure on the effectiveness of a sustainable business networks. Research on the other causal factors influencing a CE transition is imperative in order to effectively isolate the effects of sustainable business networks on the CE performance of organization.

NOTES

According to the UNIDO, implementing RECP is an effective strategy for achieving a CE in developing and transition countries.[2]

AUTHOR CONTRIBUTIONS

Tawanda Collins Muzamwese: Conceptualization (lead); data curation (lead); formal analysis (lead); investigation (lead); methodology (lead); project administration (lead); validation (lead); writing – original draft (lead); writing – review and editing (lead). **Laura Franco-Garcia:** Conceptualization (supporting); data curation (supporting); methodology (supporting); supervision (equal); validation (equal); writing – original draft (supporting); writing – review and editing (supporting). **Michiel A. Heldeweg:** Conceptualization (supporting); formal analysis (supporting); investigation (supporting); methodology (supporting); supervision (lead); validation (equal); writing – original draft (supporting); writing – review and editing (supporting).

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The authors declare no conflicts of interest.

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RELATED WIREs ARTICLES

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ENDNOTES

[1] Planetary boundaries concept suggests that we have reached the limit in a number of natural resource dimensions.

[2] RECP entails a continuous application of a preventive approach to processes, products and services in order to increase overall efficiency and reduce risks on human health and the environment.

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