

# Contribution of Circular Economy on Achieving Sustainable Development

Dr. Haga Elimam<sup>1</sup>

<sup>1</sup> Economics Department, Faculty of Economics & Administration, King Abdulaziz University, Saudi Arabia

Correspondence: Dr. Haga Elimam, Economics Department, Faculty of Economics & Administration, King Abdulaziz University, Saudi Arabia.

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## Abstract

Being the world's largest oil states and highest per capita income recorded, Qatar and Kuwait are the two most developing countries in the world but the situation of the Circular Economy and its implementation is not taken into consideration. The study aims to estimate the impact of the contribution of the circular economy (CE) on sustainability development. In this research, A self-generated questionnaire was sent to 300 companies situated in Qatar and Kuwait. This is a closed-ended survey. A Random Sampling technique is used to collect the data. The findings indicate that awareness on the subject of circular economy policies is not sufficient while the policies and laws to maintain sustainability are present. The communities are sufficiently using some of the strategies to implement CE for maintaining sustainability but recycling is not done properly. The study implies that the betterment of law-and-order situations in the community is required and awareness campaigns and tactics should be focused on.

**Keywords:** circular economy, economy, environment, society, sustainability

## 1. Introduction

A circular economy (CE) is a way to develop an economy that is meant to benefit businesses, the environment, and society. According to the take-make-waste linear model, the circular is regenerative in terms of design and aims to progressively decouple growth from the consumption of limited resources (Elisha, 2020). In a circular economy, economic activities build and rebuild the overall health of the system. The circular economy identifies the importance that the economy needs to work efficiently at all scales be it big or small businesses or organizations and individuals either locally or internationally (Pomponi & Moncaster, 2017). In short, the circular economy is a new way of production and consumption that makes sure that sustainable growth is attained over time. With the help of CE, countries can make use of the resources at an optimum level, decrease the consumption of raw materials and recover waste by recycling or providing a 2nd life as a new product (Manninen et al., 2018). Thus, CE aims to make use of the resources available by applying 3 basic principles such as reduce, reuse, and recycle. Through this the life cycle of the products is increased, waste is utilized more effectively and sustainability is attained over time (Smol et al., 2020).

Recently, CE has been gaining a grip as a means to attain sustainability at local, national, and global levels. The concept of CE has been getting attention from multinational companies and policymakers in industrialized countries. In the current times, there is a need to protect the environment we are living in (Ulgiati et al., 2021). Everyone is aware of the theory of economies that humans have unlimited desires with limited resources to be fulfilled. Not to deny the fact that the population is increasing, the use of advanced technology, the era of urbanization and industrialization, climatic conditions, and the destruction of the environment have reached their height (Mensah, 2019). In this context, the international union of nature conservation published a report about the global environment in the 1950s. The report was meant to find a balance between economic needs and development and at the same time consider the ecological system (Priyadarshini & Abhilash, 2020).

In line with this, academic researchers and international development practitioners have now started to pay attention to circular economy practices in developing parts of the world. Therefore, this study investigates the contribution of CE to maintaining environmental balance and achieving sustainability. Sustainability is a global issue and scientific development in this area although being very progressively innovative seems to be failing in

achieving the goal. Communities that play a vital role in achieving sustainability seem unaware. Based on the aim of the study, the following research questions have been formulated:

RQ1: How does the circular economy contribute to maintaining the environmental balance?

RQ2: What is the relationship between the circular economy and sustainable development?

RQ3: To what extent circular economy practices are important to implement sustainable development goals (SDG)?

RQ4: What are the challenges faced in the use of circular economy principles to achieve sustainable goals?

## **2. Literature Review**

The efforts to maintain sustainability over the decades are inevitable and by far the most vital element in living. Every human has the will to survive but given the current situation, environmental sustainability is threatened. Scientist gave their utmost effort to the subject and policy and action have been revised globally but human is not able to attain sustainability (Shrivastava et al., 2020). The United Nation's Sustainable Development Goals (SDGs) require a peaceful environment for human life to live, grow, and prevail in the world, especially after the global pandemic due to COVID-19 (Nundy et al., 2021). Thus the concept of sustainability is necessary for the global heritage.

### *2.1 Circular Economy and Environmental Balance*

Recently, the change towards more effective resource production and consumption patterns has been the main challenge for government bodies due to the potential threats to human well-being, the environment, and the economy (Huysman et al., 2015). In this regard, the European Commission (EC) took an initiative termed 'The Roadmap to Resource Efficient Europe' that proposes ways and means to enhance resource productivity and decouple economic growth from resource use and its environmental influence (Moraga et al., 2019). There are a considerable number of benefits of transitioning toward a circular economy and among them lies the decrease in environmental pressures and minimizing the high and increasing dependence on imports. The circular economy strategies could also result in cost savings, and an increase in the competitiveness of a country's industry while delivering net benefits in context with job opportunities. For example, businesses are employing new business models like service and function-based models and collaborative consumption (Agyemang et al., 2019).

Governments are increasingly fostering waste prevention, reuse, and repair. The CE represents a kind of corporate production in the context of environmental resources (Tencati et al., 2016). The growing economy for any country is consuming energy, water, and other resources which lack and generates sewerage and solid waste which should be disposed of. It can be challenging for any country where resources and land are scarce and to overcome this problem and continue to maintain sustainability, it must move towards a circular economy approach which requires a move from using and throwing mentality to one where resources are reused and recycled for as long as it is possible (Abdel-Shafy & Mansour, 2018).

A circular economy aims to create a positive influence on the ecological system which will not diminish or overload. This is seen in the ecological benefits of the circular economy. For instance, a CE releases fewer greenhouse gases, air, soil, and water remain necessary and natural reserves are preserved. By following the values of CE, greenhouse gas emissions are reduced automatically on a global level. Changes in climate and the use of materials are closely associated (Joensuu et al., 2020). According to CE calculations, 62% of the global greenhouse gas emissions come from the extraction, processing, and production of goods that meet the need of society, and only 38% are emitted in the supply and use of services and products (Circle Economy, 2019).

According to SITRA (2018), the emissions from the industry in the EU would decrease by 56% in 2050 if CE becomes a reality. The decrease in emissions measured globally will be greater as the EU will not import raw materials from countries that lie outside the union, this will also help to decrease greenhouse gas emissions in those countries. The application of this type of economy produces vital ecosystems like soil, air, and water bodies. These ecosystems provide services like cleaning, products like fertile farmland, clean drinking water, and pollination. On the contrary, in a linear economy, these services are eventually exhausted by the constant withdrawal of products or perhaps overburdened by throwing away toxins. If these products are used in a cycle and the services are not burdened by toxins, the air, soil, and water bodies will remain robust and productive (SKYE, 2018).

### *2.2 Relationship between CE and Sustainable Development*

Organizations are continuously engaging with the concept of CE, and integrating CE practices within the sustainable strategies of the company. With the evolving definitions and possibilities of CE, the relationship with

sustainability requires a re-clarification of the 2 concepts. According to Sauve et al., (2016), the transdisciplinary nature inherent to SD leads to difficulties in formulating a single conceptualization. This is due to the reason of intermeshing of diverse disciplines, stakeholders and vocabularies. Few authors state that the interpretive flexibility of sustainability is a forte as it allows the concept to be modified to a variety of contexts and institutions (Leach et al., 2010). Other researchers argue that the vagueness of sustainability hampers operationalization (Middleton et al., 1993). Efforts are made to find a consensus on the concept of SD based on the global sustainable development goals (United Nations, 2015). In several ways, the uncertainty of SD can be drawn out to the concept of CE (Connelly, 2007; Kirchherr et al., 2017).

A wide range of conceptual interpretations exists for both CE and sustainability in the literature related to CE (Connelly, 2007; Kirchherr et al., 2017). CE and sustainability have become prominent topics of discussion (Bassi & Dias, 2019; Millar et al., 2019; Cecchin, et al., 2021; Schögl et al., 2020). According to Sauve et al. (2016) CE gives a clear direction to solve problems related to the environment. Similarly, Geissdoerfer et al. (2017) suggest 3 general groups of the relationship between CE and SD a conditional, beneficial, and trade-off relationship. A Study by Schögl et al. (2020) highlights that circular economy solutions can also lead to negative outcomes of sustainability due to rebound effects (Blum et al., 2020). The study also identified the extent to which circular economy practices were relevant for SDG to be implemented. The association between CE and sustainability ranges from weak to strong or direct.

The academic debate on the association between CE and sustainability is active, and the companies' perspectives to remain active in CE seem to be overlooked in the existing literature about CE. Still, this perspective carries potential insights about their envisioned contribution to solving the prevailing sustainability issues through the real-world impact of organizations' CE solutions. Several organizations are analyzing the hurdles and drivers to implement CE solutions at the organizational level but they do not know how the concepts of CE and sustainability are associated. A study by Brown et al. (2019) investigated why organizations engage themselves in CE collaboration and they found that the factor's motivations are deeply rooted in the normative values to attain sustainability but the study was not able to evaluate the connection between CE and sustainability. Another similar study by Ritzén and Sandström (2017), inquired the manufacturing firms about the hurdles and barriers to CE and found that lack of integration of various domains like sustainability and CE, forms hurdles to CE transition. Moreover, Deutz et al. (2017) have shown that the comprehension and manifestation of industrial ecological approaches like industrial symbiosis can differ considerably, both within and among the nations.

### *2.3 Circular Economy and Implementation of SDG*

Recently, the circular economy has gained increasing importance as a means to find solutions to some of the most persistent cross-cutting sustainability challenges. CE has been suggested as a way to address ecological disturbances by cutting resource extraction and limiting warming to 1.5 degrees. Transformational change is described as a system where waste is designed out, the value of the materials is preserved at its highest level and natural systems are regenerated (Singh et al., 2021). The practitioners are observing for a more holistic approach that could make way towards a better and more inclusive future for everyone: CE with ethical and social concerns at its heart. If CE is managed adequately, it has the potential to establish new and decent job openings, ensure a more appropriate way to manage resources, and combat inequalities and other societal crises by giving resilient and booming local economies (Esposito et al., 2017).

The year 2015 was a crucial year for climate and social activism. The year saw the signing of the landmark Paris Agreement along with the formation of a blueprint to eradicate poverty, deal with inequality, and protect the Earth (Kinley, 2017). The SDG with its 17 overarching goals and 169 targets, the governments around the world are aiming to meet by 2030. Almost 7 years have passed and the race is still on. Currently, the progress reports depict where the efforts should be focused, while economy-related targets are near to being achieved, education, communities, and cities sustainability especially climate change lag behind (Pineda-Escobar, 2018). Substantial progress is observed in the context of poverty, health, and inequality but still, there is a way to go. This is the point where CE can play a role by circulating resources several times. The CE deals with issues of scarcity and permits everyone to access whatever they need without overburdening the planet. If CE is implemented adequately and appropriately, paying attention to social considerations and reasonable distribution of resources; it offers a way to achieve SDGs and the association between the two is everlasting and grows stronger. Researches show that the association between CE and SDG is prominently evident for example, clean water and sanitation, decent work and economic growth, affordable and clean energy, responsible consumption and production, and life on land (Saidani et al., 2019).

According to the existing literature, CE approaches can bring important benefits of cost savings, job openings, innovation, resource efficiency, productivity, and innovation in developing and developed countries (Yuan et al., 2006; MacArthur, 2013; Gower & Schroeder, 2016). When comparing the take-make-consume-dispose policy of the linear economy model, the made-to-be-made-again policy of the CE model has several opportunities to not only reduce the requirement of virgin resources drastically but also to rethink the whole process of managing the resources and wastes, redesign the product in such a manner that it eventually becomes cost-effective, create jobs and facilitates new and innovative technologies that produce environmentally-friendly exercises. CE approaches focus on the sustainable management of resources in which the components of the materials are reused, shared, refurbished, repaired, recycled, and remanufactured to establish a closed-loop system and reduce the use of natural resources (Khajuria et al., 2022).

The CE model was based on the idea of bringing back the waste partially into the production streamline so that it goes back to the production loop and becomes a resource for the next production cycle or becomes a new independent product (Zeng et al., 2022). This procedure of reutilizing the waste can revolutionize the economy because it circulates the resources and progressively decouples the economic activities from consuming limited resources thus allowing the environment to be safe and saving the natural resources for future generations (Vasiljevic-Shikaleska et al., 2017).

#### *2.4 Challenges Faced in Using CE to Attain SDG*

The circular economy can help to resolve environmental and developmental challenges related to the overconsumption of resources on global and local levels. Globally, the number of materials extracted has doubled since 1980 and reached 72 gigatonnes in 2010, and it is estimated to reach 100 gigatonnes by 2030 (Tisserant et al., 2017). In context with waste, the CE practices of recycling offer opportunities to cope with waste management crises in developing countries. When it comes to waste, the CE economies have created prospects for the recycling industries that also serve as an example for the developing nations and middle-income states such as Brazil and Mexico that use landfill sites to manage the industrial as well as end consumer wastes (Tisserant et al., 2017).

Adoption of the practices of environmental management in industry i.e., clean energy resources, mitigation of pollution, energy conservation, and energy audits, have become central areas of focus for international cooperation. It has increased the significance of research, environmental-friendly projects, and policy cooperation (Gower & Schroeder, 2016). However, it can be observed that most of the developed nations still have not adopted CE as an alternative approach to industrial development. Creating employment is another prospect of the CE. Similarly, it has sensitized the significance of health and sanitation in developing states (Gower & Schroeder, 2016). However, improvement in such policies is yet required that can be brought about via implementing international development programs to get the most out of it (Schmitz, 2016).

Another perspective of e-waste deals with recycling used mobile phones. It is a matter of fact that recycled mobile phones could not be parallel to the new phones. However, for the people of developing nations, it can be an economical choice for connectivity (Zink & Geyer, 2017). More specifically, emerging businesses in the development sectors can play a decisive role to transform the CE and increase development cooperation (WachandThorpe, 2015). Resultantly, they are likely to ease the transition of the conventional

Economies to CE in the developing nations (Schroeder et al., 2017).

### **3. Methodology**

#### *3.1 Study Design*

The study used a quantitative research design to survey strategies and challenges in the circular economy for maintaining sustainability. This study design gives numeric results with which the significance of the impacts and results are more precise and readable for the contribution of the circular economy (Creswell & Creswell, 2017).

#### *3.2 Setting*

The study focused on circular economy policies in Qatar and Kuwait. The data was collected from a total of 300 companies across the two countries. The authorities of these companies would allow a comprehensive examination, and the results obtained can be generalized for the entire population.

#### *3.3 Sampling*

The study explores the impact of CE on sustainability in several firms across Qatar and Kuwait. A questionnaire was formulated for a closed-ended survey. A random sampling technique was used for a generalized opinion.

According to the online sample size calculator Raosoft, the recommended sample size was 169 for 300 population size with a confidence interval of 95% and 5% of error marked. The questionnaire was sent to these 300 companies.

### 3.4 Study Tool

A close-ended questionnaire was formed, with general opinions and an overview of the strategies that could be useful for maintaining sustainability and the challenges faced by CE to implement these strategies. The questionnaire consisting of two sections A and B included information about the participants (demographic details) and focused on variables related to challenges and strategies adopted to maintain sustainability, respectively. The first part of section B was about the strategies used in maintaining sustainability through CE contribution. The second part of the second section was about the challenges faced by CE.

### 3.5 Data Collection

Small to medium enterprises (SMEs) of the two countries were contacted. The questionnaire was sent via email. The data collection took place over two months, from November 2022 to January 2023. Out of 300 companies, 200 responded. 183 questionnaires were found relevant and reliable.

### 3.6 Reliability

To determine the reliability of the items on the questionnaire, a Cronbach alpha was calculated using a sample of 15 respondents. Table 1 gives the value of 0.83 for Cronbach's alpha which is greater than 0.70 and is generally considered to indicate a high level of validity and reliability of the questionnaire, as per the guidelines provided by Hair et al. (2010).

Table 1. Cronbach's alpha for reliability analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
0.83	10

### 3.7 Data Analysis

IBM SPSS version 23 was used in this study to conduct statistical analysis. Descriptive analysis was used to examine categorical variables, while advanced statistical tests such as stepwise regression were used to analyze continuous variables. The stepwise regression process involves using a combination of independent variables to predict the dependent variable. In this study, this method was used to explore the challenges and strategies adopted to maintain sustainability. Linear regression analysis was used to examine the overall impact of adopting CE strategies on sustainability. The p-values were considered statistically significant at  $p < 0.05$ .

## 4. Results

Table 2 shows the responses of the participants based on their demography. The results indicate that many of the participants were of age group 20-30 with a higher rate of male participants.

Table 2. Participants' Demographics

Participant's characteristics	Categories	Frequency	Frequency %
Age	20-30 years	65	35.7
	30-40 years	63	34.6
	40-50 years	54	29.7
Gender	Male	92	50.5
	Female	90	49.5
Qualification	Primary	39	21.4
	Secondary	36	19.8
	Higher-secondary	41	22.5
	Graduate	29	15.9
	Postgraduate	37	20.3
Marital Status	Married	89	48.9
	Unmarried	93	51.1

Table 3 displays that building factories outside the cities is the most significantly used strategy with a p-value ( $0.025 < 0.05$ ) in the regions to maintain sustainability while recycling garbage instead of burning it is highly insignificant with a p-value ( $0.953 > 0.05$ ). Table 3 also demonstrates that participants were not aware of the policies for the circular economy was the biggest challenge to maintaining sustainability, the results were found highly significant with a p-value ( $0.034 < 0.05$ ) while legal actions not taken against environmental pollution is found to be insignificant with p-value ( $0.966 > 0.05$ ).

Table 3. Rate of the responses and their significance

Questions	Components of the scale	Frequency	Frequency %	significance
Strategies to maintain environmental balance				
Recycling garbage instead of burning	Never	32	17.6	0.953
	Rarely	35	19.2	
	Sometimes	31	17.0	
	Often	37	20.3	
	Always	47	25.8	
Avoid littering the street	Never	33	18.1	0.292
	Rarely	41	22.5	
	Sometimes	32	17.6	
	Often	36	19.8	
	Always	40	22.0	
Save the excess food	Never	39	21.4	0.703
	Rarely	29	15.9	
	Sometimes	41	22.5	
	Often	42	23.1	
	Always	31	17.0	
Discard garbage in disposal bags	Never	29	15.9	0.716
	Rarely	39	21.4	
	Sometimes	40	22.0	
	Often	38	20.9	
	Always	36	19.8	
Using paper bags	Never	30	16.5	0.653
	Rarely	38	20.9	
	Sometimes	49	26.9	
	Often	40	22.0	
	Always	25	13.7	
Avoid smoking	Never	37	20.3	0.560
	Rarely	39	21.4	
	Sometimes	40	22.0	
	Often	34	18.7	
	Always	32	17.6	
Participate in plantation	Never	41	22.5	0.835
	Rarely	29	15.9	
	Sometimes	34	18.7	
	Often	39	21.4	
	Always	39	21.4	
Joining sustainability campaigns	Never	29	15.9	0.392
	Rarely	37	20.3	
	Sometimes	44	24.2	
	Often	35	19.2	
	Always	37	20.3	
Aware of Circular economy start-ups	Never	39	21.4	0.641
	Rarely	36	19.8	
	Sometimes	36	19.8	
	Often	24	13.2	
	Always	47	25.8	
Building factories outside the cities	Never	43	23.6	0.025
	Rarely	40	22.0	
	Sometimes	31	17.0	
	Often	34	18.7	
	Always	34	18.7	
Challenges faced in implementing circular economy principles to achieve sustainability				
Do not dispose of garbage properly	Never	40	22.0	0.494
	Rarely	34	18.7	
	Sometimes	39	21.4	
	Often	29	15.9	
	Always	40	22.0	
Carelessly disposing of glass and edgy material	Never	37	20.3	0.677
	Rarely	42	23.1	
	Sometimes	30	16.5	
	Often	41	22.5	
	Always	32	17.6	
Using plastic bag	Never	40	22.0	0.108
	Rarely	47	25.8	
	Sometimes	24	13.2	

No awareness about circular economy policies	Often	41	22.5	0.034
	Always	30	16.5	
	Never	35	19.2	
	Rarely	41	22.5	
	Sometimes	34	18.7	
A negative response to a circular economy policies	Often	35	19.2	0.623
	Always	37	20.3	
	Never	38	20.9	
	Rarely	31	17.0	
	Sometimes	33	18.1	
Insufficient funds for maintenance	Often	33	18.1	0.698
	Always	47	25.8	
	Never	32	17.6	
	Rarely	46	25.3	
	Sometimes	35	19.2	
Research is not conducted	Often	31	17.0	0.215
	Always	38	20.9	
	Never	36	19.8	
	Rarely	31	17.0	
	Sometimes	41	22.5	
No law against littering and wastage	Often	37	20.3	0.957
	Always	37	20.3	
	Never	42	23.1	
	Rarely	36	19.8	
	Sometimes	34	18.7	
No Legal actions taken against environmental pollution	Often	34	18.7	0.966
	Always	36	19.8	
	Never	30	16.5	
	Rarely	29	15.9	
	Sometimes	39	21.4	
	Often	36	19.8	
	Always	48	26.4	

Table 4 displays the results of the regression analysis in maintaining sustainability shows that among all the strategies, using paper bags was the most effective strategy with a p-value ( $0.043 > 0.05$ ) while awareness about Circular economy (CE) start-ups in the region was very less and has the most obsolete impact p-value ( $0.869 > 0.05$ ). Among the challenges faced by circular economy policies, less awareness in the region had the most significant impact in maintaining sustainability with a p-value ( $0.022 > 0.05$ ) while no law formulation for CE has the most insignificant impact with a p-value ( $0.976 > 0.05$ ).

Table 4. Regression Analysis of the strategies used and challenges faced in terms of a circular economy

Questions	t-value	significance
<b>Strategies to maintain environmental balance</b>		
Recycling garbage instead of burning	-1.355	0.177
Avoid littering the street	-0.984	0.327
save the excess food	-0.386	0.700
Discard garbage in disposal bags	1.262	0.209
Using paper bags	1.771	0.043
Avoid smoking	1.477	0.142
Participate in plantation	-1.002	0.318
Joining sustainability campaigns	-0.605	0.546
Aware of Circular economy start-ups	0.165	0.869
Building factories outside the cities	0.477	0.634
<b>Challenges faced in implementing circular economy principles to achieve sustainability</b>		
Do not dispose of garbage properly	1.391	0.166
Carelessly disposing of glass and edgy material	-0.106	0.916
Using plastic bag	0.462	0.644
No aware about circular economy policies	-2.318	0.022
A negative response to the circular economy policies	-0.948	0.345
Insufficient funds for maintenance	-0.574	0.567
Research is not conducted	-0.461	0.645
No law against littering and wastage	0.03	0.976
No Legal actions taken against environmental pollution	-0.578	0.564

## 5. Discussion

The study aimed to investigate the contribution of CE to maintaining environmental balance and achieving sustainability. The study found 2 perspectives that showed an association between CE and sustainability as explained by the study participants. The 1<sup>st</sup> perspective is that CE is implemented to attain sustainability. The 2<sup>nd</sup> perspective is that CE faces legal and environmental challenges to attain sustainability. The study also found that the opinions about CE and its association with sustainability did not vary to a large extent between the two selected countries. The results are explained in detail in connection with these 2 perspectives as well as in the connection between sustainability and CE from sustainable development perspectives.

The results indicated that elder people were unresponsive toward the matter in most cases. It was also observed that qualification affects the response rate with a large number of respondents being highly qualified. The response rate of men was higher than women (Table 2). The first perspective came with a significant response for building factories outside the city which indicates that the participants are knowledgeable about the health hazards faced due to the toxic and harmful chemicals diffused by the factories (Table 3). The results also indicated that recycling garbage instead of burning it is the most uncommon practice in these countries (Table 3). A study in Qatar states that due to the increased migration rate in the country, solid waste is produced in abundance, and a revised policy is needed in the region for recycling (Al-Maaded et al., 2021). While in Kuwait no recycling strategies other than landfilling are found (Albeeshi et al., 2020). The community needs awareness about the dangers of burning garbage in a public area that will not only deteriorate air quality but also may lead to breaking out a fire that is equally harmful to living things. The use of plastic bags is found to have the most significant impact on sustainability (Table 4). People are mostly unaware of the strategy to have new start-ups about circular economics thus it has the most insignificant impact on sustainability (Table 4).

The most prominent perspective is that sustainability and CE are two different concepts that are closely linked: implementation of CE is a way to attain sustainability. Firms of all sizes and sectors show that CE can positively contribute to influencing sustainability. Specifically, CE was observed by the majority of the respondents being an important means to achieve SDGs but not just the only one to do so. Whereas, different opinions were observed such as organizations using CE to attain sustainability without having CE as their ultimate goal. This is in line with a study conducted by Schroeder et al. (2019) as they see CE as a way to an end instead of an end itself by yellow arrows leading to sustainability. The reasons given by the interviewees were that sustainability was more inclusive compared to CE in terms of the social dimension. This is why CE is not the only way to attain sustainability as it does not cover the 3 dimensions to the same level. Therefore, CE is explained as more practical, operational, and compatible with the existing business strategies for profit and focuses on resources. This is in line with the findings of Schoggl et al. (2020) as they described that CE and SD form a subset type of relationship.

The response to the challenges in implementing CE to maintain sustainability indicates that most of the participants were found to be unaware of the policies for implementing CE in sustainability (Table 3). The results also gave an insignificant result for not formulating law-and-order in the region CE (Table 3). The most significant challenge faced by communities on the matter of awareness about the policies in the regions (Table 4). On the other hand, the results indicate that respondents believe that there will be a positive impact on the policy implementation of CE in the region (Table 4).

The 2<sup>nd</sup> perspective that was observed was that not all the participating organizations considered the legal challenges as an area to be concerned about most of them were found to be unaware of the legal policies although the law exists for CE, implementation of these laws is not significant. A lack of awareness on the subject is harmful to the community. This gap should be filled by introducing new start-ups in the region. Online resources can also be used like advertisements to the awareness. A study in Qatar indicated that awareness of the recycling factors and water production process should be emphasized and transmission from linear to CE strategies should be made. Moreover, the educational system should also include CE education to spread awareness, these approaches can be very beneficial (Ibrahim & Shirazi, 2021). A study in Kuwait suggests raising awareness among property stakeholders about recycling benefits to improve land and solid waste recycling (Al-Raqeb et al., 2023). Several respondents mainly from consultancy firms stated some existing barriers to CE that would benefit the organizations to a great extent. The respondents believe CE is an evolution towards sustainability. These participants also viewed CE as integrally covering all 3 sustainability pillars environment, social responsibility, and economics (Beattie, 2019).

## 6. Conclusion

This research was conducted to explore the strategies and tactics used in implementing CE strategies and to study



the environmental and legal challenges faced for the implementation of sustainability by using CE tactics. The study concludes that the communities are aware of the harmful effects of pollution caused by factories but not aware of the harmful effect of burning garbage in the streets which shows less literacy rate in the population. The study indicates less awareness among the population about the policies of CE. The study shows satisfying results about the presence of laws to control pollution and other aspects that affect sustainability but the restriction to follow this law is not sufficient. The study shows that both sustainability and CE are constantly undergoing change and serving as an umbrella for various practices with different meanings in the context of business. The study implies that a better law and order situation is needed and more awareness on the subject should be spread through campaigns and online resources. A restriction under the law should be implemented in the community for CE policies and Recycling should be on priority. The study also recommends future studies to emphasize a revised plan for the policies of CE for achieving global suitability.

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### References

- Abdel-Shafy, H. I., & Mansour, M. S. (2018). Solid waste issue: Sources, composition, disposal, recycling, and valorization. *Egyptian Journal of petroleum*, 27(4), 1275-1290. <https://doi.org/10.1016/j.ejpe.2018.07.003>
- Agyemang, M., Kusi-Sarpong, S., Khan, S. A., Mani, V., Rehman, S. T., & Kusi-Sarpong, H. (2019). Drivers and barriers to circular economy implementation: An explorative study in Pakistan's automobile industry. *Management Decision*. <https://doi.org/10.1108/MD-11-2018-1178>
- Albeeshi, A., Alsulaili, A., & Al-Fadhli, F. (2020). Food waste management in Kuwait: Current situation and future needs. In *EurAsia waste management symposium* (p. 26-28).
- Al-Maaded, M., Madi, N. K., Kahraman, R., Hodzic, A., & Ozerkan, N. G. (2012). An overview of solid waste management and plastic recycling in Qatar. *Journal of Polymers and the Environment*, 20, 186-194. <https://doi.org/10.1007/s10924-011-0332-2>
- Al-Raqeb, H., Ghaffar, S. H., Al-Kheetan, M. J., & Chougan, M. (2023). Understanding the Challenges of Construction Demolition Waste Management Towards Circular Construction: Kuwait Stakeholder's Perspective. *Cleaner Waste Systems*, p.100075. <https://doi.org/10.1016/j.clwas.2023.100075>
- Bassi, F., & Dias, J. G. (2019). The use of circular economy practices in SMEs across the EU. *Resources, Conservation and Recycling*, 146, 523-533. <https://doi.org/10.1016/j.resconrec.2019.03.019>
- Beattie, A. (2019). *The 3 Pillars of Corporate Sustainability*. Investopedia.
- Blum, N. U., Haupt, M., & Bening, C. R. (2020). Why "Circular" doesn't always mean "Sustainable". *Resources, Conservation and Recycling*, 162, 105042. <https://doi.org/10.1016/j.resconrec.2020.105042>
- Brown, P., Bocken, N., & Balkenende, R. (2019). Why do companies pursue collaborative circular-oriented innovation?. *Sustainability*, 11(3), 635. <https://doi.org/10.3390/su11030635>
- Cecchin, A., Salomone, R., Deutz, P., Raggi, A., & Cutaia, L. (2021). What is in a name? The rising star of the circular economy as a resource-related concept for sustainable development. *Circular Economy and Sustainability*, 1(1), 83-97. <https://doi.org/10.1007/s43615-021-00021-4>
- Circular Economy. (2019). *The Circularity Gap Reporting Initiative: a global score for circularity*. Retrieved from <https://www.circularity-gap.world/>
- Connelly, S. (2007). Mapping sustainable development as a contested concept. *Local environment*, 12(3), 259-278. <https://doi.org/10.1080/13549830601183289>
- Creswell, J. W., & Creswell J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approach*. Sage publications.
- Elisha, O. D. (2020). Moving beyond take-make-dispose to take-make-use for sustainable economy. *International Journal of Research in Education and Science*, 13, 497-516.
- Esposito, M., Tse, T., & Soufani, K. (2017). Is the circular economy a new fast-expanding market?. *Thunderbird International Business Review*, 59(1), 9-14. <https://doi.org/10.1002/tie.21764>
- Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017) The Circular Economy – A new sustainability paradigm? *Journal of cleaner production*, 143, 757-768. <https://doi.org/10.1016/j.jclepro.2016.12.048>

- Gideon, L. ed. (2012). *Handbook of survey methodology for the social sciences* (p. 109). New York: Springer. <https://doi.org/10.1007/978-1-4614-3876-2>
- Gower, R., & Schröder, P. (2016). Virtuous Circle: how the circular economy can create jobs and save lives in low and middle-income countries. *Institute of Development Studies and Tearfund*, UK.
- Huysman, S., Debaveye, S., Schaubroeck, T., De Meester, S., Ardente, F., Mathieux, F., & Dewulf, J. (2015). The recyclability benefit rate of closed-loop and open-loop systems: A case study on plastic recycling in Flanders. *Resources, Conservation and Recycling*, 101, 53-60. <https://doi.org/10.1016/j.resconrec.2015.05.014>
- Ibrahim, A. J., & Shirazi, N. S. (2021). Energy-Water-Environment Nexus and the Transition Towards a Circular Economy: The Case of Qatar. *Circular Economy and Sustainability*, 1-16. <https://doi.org/10.1007/s43615-021-00037-w>
- Joensuu, T., Edelman, H., & Saari, A. (2020). Circular economy practices in the built environment. *Journal of cleaner production*, 276, 124215. <https://doi.org/10.1016/j.jclepro.2020.124215>
- Khajuria, A., Atienza, V. A., Chavanich, S., Henning, W., Islam, I., Kral, U., Liu, M., Liu, X., Murthy, I. K., Oyedotun, T. D. T., & Verma, P. (2022). Accelerating circular economy solutions to achieve the 2030 agenda for sustainable development goals. *Circular Economy*, 1(1), 100001. <https://doi.org/10.1016/j.cec.2022.100001>
- Kinley, R. (2017). Climate change after Paris: from turning point to transformation. *Climate Policy*, 17(1), 9-15. <https://doi.org/10.1080/14693062.2016.1191009>
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, conservation and recycling*, 127, 221-232. <https://doi.org/10.1016/j.resconrec.2017.09.005>
- Leach, M., Stirling, A. C., & Scoones, I. (2010). *Dynamic sustainabilities: technology, environment, social justice* (p. 232). Taylor and Francis. <https://doi.org/10.4324/9781849775069>
- MacArthur, E. (2013). Towards the circular economy. *Journal of Industrial Ecology*, 2(1), 23-44.
- Manninen, K., Koskela, S., Antikainen, R., Bocken, N., Dahlbo, H., & Aminoff, A. (2018). Do circular economy business models capture intended environmental value propositions? *Journal of Cleaner Production*, 171, 413-422. <https://doi.org/10.1016/j.jclepro.2017.10.003>
- Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: A literature review. *Cogent social sciences*, 5(1), 1653531. <https://doi.org/10.1080/23311886.2019.1653531>
- Middleton, N., O'Keefe, P., & Moyo, S. (1993). The tears of the crocodile: from Rio to reality in the developing world. *Pluto Press*. <https://doi.org/10.1177/030913259401800230>
- Millar, N., McLaughlin, E., & Bürger, T. (2019). The circular economy: swings and roundabouts? *Ecological economics*, 158, 11-19. <https://doi.org/10.1016/j.ecolecon.2018.12.012>
- Moraga, G., Huysveld, S., Mathieux, F., Blengini, G. A., Alaerts, L., Van Acker, K., ... Dewulf, J. (2019). Circular economy indicators: What do they measure? *Resources, Conservation and Recycling*, 146, 452-461. <https://doi.org/10.1016/j.resconrec.2019.03.045>
- Nundy, S., Ghosh, A., Mesloub, A., Albaqawy, G. A., & Alnaim, M. M. (2021). Impact of COVID-19 pandemic on socio-economic, energy-environment and transport sector globally and sustainable development goal (SDG). *Journal of Cleaner Production*, 312, p.127705. <https://doi.org/10.1016/j.jclepro.2021.127705>
- Pineda-Escobar, M. A. (2019). Moving the 2030 agenda forward: SDG implementation in Colombia. *Corporate Governance: The international journal of business in society*. <https://doi.org/10.1108/cg-11-2017-0268>
- Pomponi, F., & Moncaster, A. (2017). Circular economy for the built environment: A research framework. *Journal of cleaner production*, 143, 710-718. <https://doi.org/10.1016/j.jclepro.2016.12.055>
- Priyadarshini, P., & Abhilash, P. C. (2020). Circular economy practices within energy and waste management sectors of India: A meta-analysis. *Bioresource Technology*, 304, 123018. <https://doi.org/10.1016/j.biortech.2020.123018>
- Ritzén, S., & Sandström, G. Ö. (2017). Barriers to the Circular Economy—integration of perspectives and domains. *Procedia Cirp*, 64, 7-12. <https://doi.org/10.1016/j.procir.2017.03.005>
- Saidani, M., Yannou, B., Leroy, Y., Cluzel, F., & Kendall, A. (2019). A taxonomy of circular economy

- indicators. *Journal of Cleaner Production*, 207, 542-559. <https://doi.org/10.1016/j.jclepro.2018.10.014>
- Schöggl, J. P., Stumpf, L., & Baumgartner, R. J. (2020). The narrative of sustainability and circular economy-A longitudinal review of two decades of research. *Resources, Conservation and Recycling*, 163, 105073. <https://doi.org/10.1016/j.resconrec.2020.105073>
- Schroeder, P., Anggraeni, K., & Weber, U. (2019). The relevance of circular economy practices to the sustainable development goals. *Journal of Industrial Ecology*, 23(1), 77-95. <https://doi.org/10.1111/jiec.12732>
- Shrivastava, P., Smith, M. S., O'Brien, K., & Zsolnai, L. (2020). Transforming sustainability science to generate positive social and environmental change globally. *One Earth*, 2(4), 329-340. <https://doi.org/10.1016/j.oneear.2020.04.010>
- Singh, S., Babbitt, C., Gaustad, G., Eckelman, M. J., Gregory, J., Ryen, E., Mathur, N., Stevens, M. C., Parvatker, A., Buch, R., & Marseille, A. (2021). Thematic exploration of sectoral and cross-cutting challenges to circular economy implementation. *Clean Technologies and Environmental Policy*, 23(3), 915-936. <https://doi.org/10.1007/s10098-020-02016-5>
- SITRA. (2018). *The circular economy – a powerful force for climate mitigation*. Retrieved from <https://www.sitra.fi/en/publications/circular-economy-powerful-force-climate-mitigation/>
- SKYE Policy Brief. (2018). *A future the planet can accommodate*. Retrieved from [https://helda.helsinki.fi/bitstream/handle/10138/235418/PB\\_A-future-the-planet-can-accommodate.pdf?sequence=1&isAllowed=y](https://helda.helsinki.fi/bitstream/handle/10138/235418/PB_A-future-the-planet-can-accommodate.pdf?sequence=1&isAllowed=y)
- Smol, M., Adam, C., & Preisner, M. (2020). Circular economy model framework in the European water and wastewater sector. *Journal of Material Cycles and Waste Management*, 22(3), 682-697. <https://doi.org/10.1007/s10163-019-00960-z>
- Tencati, A., Pogutz, S., Moda, B., Brambilla, M., & Cacia, C. (2016). Prevention policies addressing packaging and packaging waste: Some emerging trends. *Waste management*, 56, 35-45. <https://doi.org/10.1016/j.wasman.2016.06.025>
- Tisserant, A., Pauliuk, S., Merciai, S., Schmidt, J., Fry, J., Wood, R., & Tukker, A. (2017). Solid waste and the circular economy: a global analysis of waste treatment and waste footprints. *Journal of Industrial Ecology*, 21(3), 628-640. <https://doi.org/10.1111/jiec.12562>
- Ulgiate, S., Casazza, M., & Yang, Z. (2021). Circular economy and urban ecological management. In *Urban Metabolism and Ecological Management: vision, tools, practices and beyond* (p. 137-162). *EDP Sciences*. <https://doi.org/10.1051/978-2-7598-2520-2.c010>
- United Nations. (2015) Transforming our world: the 2030 Agenda for Sustainable Development. In: *Sustain. Dev. Knowl. Platf.* Retrieved from <https://sustainabledevelopment.un.org/post2015/transformingourworld>.
- Vasiljevic-Shikaleska, A., Gjozinska, B., & Stojanovikj, M. (2017). The circular economy—a pathway to sustainable future. *Journal of Sustainable Development*, 7(17), 13-30.
- Yuan, Z., Bi, J., & Moriguchi, Y. (2008). The circular economy: A new development strategy in China. *Journal of Industrial Ecology*, 10(1-2), 4-8. <https://doi.org/10.1162/108819806775545321>
- Zeng, X., Ogunseitan, O. A., Nakamura, S., Suh, S., Kral, U., Li, J., & Geng, Y. (2022). Reshaping global policies for the circular economy. *Circular Economy*, 100003. <https://doi.org/10.1016/j.cec.2022.100003>
- Zink, T., & Geyer, R. (2017). Circular economy rebound. *Journal of Industrial Ecology*, 21(3), 593-602. <https://doi.org/10.1111/jiec.12545>

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