Journal of Economic Cooperation and Development, **41**, 1 (2020), 89-120

The Role of Islamic Finance in Fostering Circular Business Investments: the Case of OIC Countries

Abdul-Jalil Ibrahim[1] and Nasim S. Shirazi[2]

The linear economic approach described as the "take, make, dispose of" model where the bulk of the material used to make products is ultimately thrown away is recognized as a contributor to the natural resource constraints faced by humanity. Responding to this problem requires an economic paradigm of "reduce, reuse and recycle" conceptualised as Circular Economy(CE). The paper explores ways Islamic finance can support circular businesses within OIC countries to achieve economic growth that is not at the expense of the environment. The study concludes that Islamic finance can use compassionate contracts, equity-like, and risk-sharing financing modes to support circular businesses motivated by the holistic objective of Maqasid.

Keywords: circular economy and Islamic finance, sustainability, Islamic finance and SDGs, blended finance, green Sukuk, Islamic banks and impact

Introduction

Health, food, wealth, and security as drivers of human wellbeing and foundations of the modern society are built on and nourished by natural capital estimated at US$125 trillion a year. This natural capital constitutes the services involved in many economic activities provided by nature (WWF, 2018, p 6). On the back of this vast services offered by nature, and the worrying development of declining nature and biodiversity reserves, the business and finance industry is increasingly becoming critical on addressing the impact of global environmental risks on the economic performance of countries and economic sectors (WWF, 2018, p 6). The level of consumption of natural stock through human consumer

[1] Hamad Bin Khalifa University, Islamic Finance Department P.O. Box: 34110, Education City, Doha, Qatar. E-mail: abdibrahim@mail.hbku.edu.qa
[2] E-mail: nshirazi@hbku.edu.qa

behavior and wealth creation have adverse impacts on the sustainability of the planet.

The Global Footprint Network report for 2019 concludes that it will take 1.75 piles of earth for humanity to sustain and meet the current demand of human wellbeing through the "planet's ability to recover from what resources consumed within each year—like regrow the trees we cut down, absorb the carbon dioxide we emit, and replenish the seas with the fish we harvest, to name a few". The report further estimates that the planet exhausts its stock of resources the earth can regenerate in 365 days within 209 days (Global Footprint Network National Footprint Accounts, 2019). The 2019 figure is three days less compared to the 2018 figure of 212 days. The regeneration deficit continues to grow occasioned by increasing the human population and appetite for high consumption. Figure 1 presents the World Overshoot Days of countries, which indicates how the Earth will overshoot if the world population lived like this.

Figure:1 Country Overshoot Days in 2019

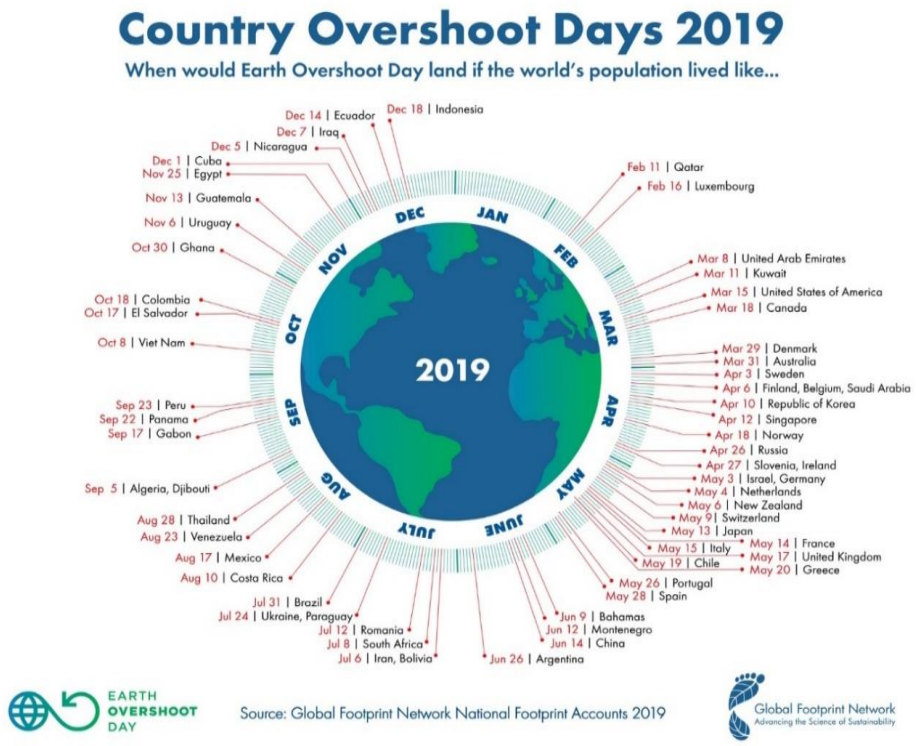
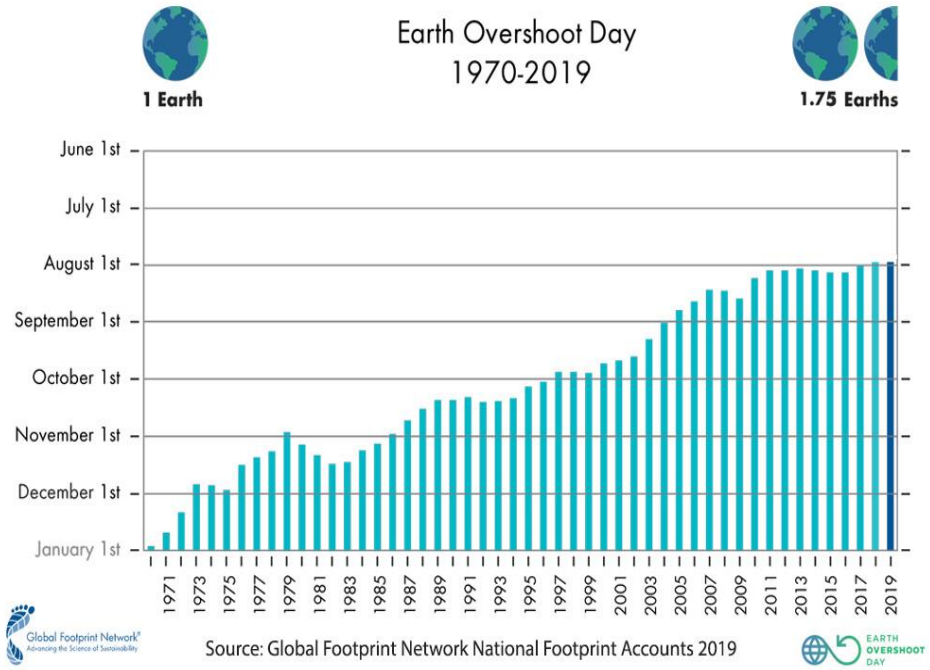


Figure:2 Earth Overshoot Day 1970- 2019



The linear economy is the legacy of the Industrial Revolution, in which the world witnessed record wealth growth, which has led to the glorification of consumer sovereignty by producing various goods and services to satisfy insatiable consumer needs (Working Group Finance, 2016, p 15). Motivated by the notion that natural resources are limitless and there is infinite space for waste disposal, a linear economic approach emerged, usually referred to as the "take, make, dispose of" model (Working Group Finance, 2016, p 15). In this production model, the majority of the material used for making products was trashed at the end of the product's useful life (Working Group Finance, 2016, p 15). In this paradigm, the risks connected with the supply of limited resources exacerbated by the externalization of the negative cost associated with its extraction (such as biodiversity loss and climate change) are critical in analyzing the sustainability impact of the linear economy. Working Group Finance (2016, p 15) concludes that the destruction of the value in the natural capital as a result of the linear economic model has increasingly become evident, and this justifies the need to explore the potential for an alternative production approach. This circular approach

ensures that in designing goods and services, the principles of regeneration and restoration of materials provide the central value proposition. The consequence of perpetuating the linear economic principles will include unavailability of certain materials, increasing-price fluctuations of materials and the continued loss of the environmental ecosystem (Working Group Finance, 2016, p 15). Tackling this challenge necessitates a new economic model of "reduce, reuse and recycle," the Circular Economy(CE) concept (ING, 2015, p 4). The CE concept seeks not only to present a solution for enhanced revenue through value creation from existing materials but also touching on social and environmental impact. This ensures that businesses can grow but not at the cost of the environment and society and the coming generations (ING, 2015, p 4).

Financial institutions can support the changeover towards a CE. This is done by empowering companies to make the transition through their financial decisions and investments. Also, financial institutions need to review and realign their business models in terms of products and services to cater to the requirements of circular business models (Working Group Finance, 2016, p 29). Even though there is a consensus among Islamic financial institutions that sustainable finance aligns with Islamic finance principles, less than one-third of respondents in a survey indicated they had developed sustainable finance policies and a quarter of respondents are found to be developing tools for measuring their impact on the environment (Al-Mubarak and Goud, 2018, p 46). Khan (2019a, p 3) emphasizes that to achieve comprehensive human development as envisaged by the Islamic finance theorists; there is a need for a paradigmatic and regulatory reform to address the objectives of Sharīʿah (maqāṣid al-Sharīʿah) to ensure that ecological environment is recognized as a resource. This will be an avenue to implement the OIC Fatwa on environmental protection, which declares that it is impermissible to undertake any activity that unleashes harm on the environment or destructs the ecological balance(OIC Fiqh Academy resolution number 185). The OIC Fiqh Academy recommends the setting up of Waqf to promote the protection of land, air, and water and ecosystem preservation. In this regard, the ḥalāl alone is deemed insufficient to tackle the issue of waste as the linear economy can be waste ridden. Thus it will be important if the halal waste-driven linear economy is replaced with a new zero-waste ḥalāl CE economic arrangement, which is in line with the Islamic vision of entrepreneurship (Khan, 2019b, p 4). According to IDB(2016), Islamic finance in comparison with conventional finance provides wide

range of instruments that can be used for climate finance. Some of the tools such "debt-based (e.g. qard, qard with service charge), sale-based (murabaha, muswama, bai-bithaman-ajil, salam, istisna, istijrar), leasing-based (ijara, ijara-thummal-bai), partnership-based (mudharabah, musharakah,)." There are some composite products such as green sukuk, which are designed and structured using instruments such as guarantee (kafala), agency (wakala), and service charge (ujr)(IDB, 2016, p 3). This demonstrates the potential of Islamic finance to support USD 93 trillion in infrastructure investment across transport, energy, and water systems required in the next 15 years as estimated by New Climate Economy report(2014, p 2).

According to Kanoc(2004), OIC member countries have recognized the importance of environmental sustainability and has incorporated this into their development effort. The paper acknowledges the technology gap within OIC member countries in achieving sustainable development and concludes that there is a need for global collaboration among nations to help heal the world and preserve the planet ecosystem. This study is to explore the role of Islamic finance in fostering investments towards the CE to optimize resource use and avoid waste in the course of economic growth. Thus, decoupling economic growth from resource use. Whereas Khan (2019b) is proposing the use of Waqf venture as a vehicle for circular business financing, our paper is looking at it from the meso perspective with a focus on how Islamic finance can contribute to building circular business financing ecosystem, with particular focus on economies with Islamic finance presence such as Saudi Arabia, Qatar, UAE, Bahrain, Nigeria, Turkey, Morrocco, Malaysia, Indonesia, Pakistan, and OIC countries in general. The case of these countries is magnified by the fact that they are for instance faced with high ecological footprint and biocapacity deficit and thus it is essential to come out with proactive ways of leveraging Islamic finance unique value proposition as manifested in the structuring of Islamic finance contracts to attract investments and financing of the CE within these countries.

Relevant literature review

The circular economy study has seen some marked attention in recent years since its debut in the late 1970s (Ellen MacArthur Foundation, 2013b, p 30). The introduction of the concept of CE is attributed to Pearce and Turner (1989), as noted by Andersen (2007, p 133), Ghisellini et al.

(2016, p 15), and Su et al. (2013, p 216). Geissdoerfer et al. (2017, p 5) describe it as an economy that is influenced by natural capital, detailing how they provide inputs for production as well as avoiding waste in output. This study was influenced by Boulding's (1966, pp 8-10), which refers to the earth as a closed and circular system with a limited capacity to assimilate, concluding that at equilibrium the economy and the environment should coexist. It is essential to mention that some prior theoretical works influence the current understanding and practice of the CE. Notable of these studies are cradle-to-cradle (McDonough and Braungart, 2002, p 76), laws of ecology (Commoner, 1971, pp 16-23), looped and performance economy (Stahel, 2010, pp 8-14), and the blue economy (Pauli, 2010, p 14).

The most famous definition of CE has been that of the Ellen MacArthur Foundation. It describes it as "an industrial economy that is restorative or regenerative by intention and design" (2013b, p 7). This configuration of the production process ensures that products are not seen as permanent repositories but constant recycling of material flow occurring in the form of input-output-input in continuous. The continuous flow of materials and eliminating waste in a CE is manifested either through a biological cycle or technical cycle. The technical cycle is achieved, for instance, where materials such as plastics and metal can be drivers of new value creation through human action. Crops and plantations are served through new organic matter sourced from biological nutrients (Ellen MacArthur Foundation, 2012, p 7).

Geng and Doberstein (2008) focus on the Chinese application of the concept, label the CE as the "realization of a closed-loop material flow in the whole economic system". Webster (2015, p 6) adds that "a CE is one that is restorative by design, and which aims to keep products, components, and materials at their highest utility and value, at all times".

Kirchherr et al. (2017, pp 228-230) findings after the exploration of 114 definitions of CE conclude that the CE is mostly depicted in the activities of the 3Rs(reducing, reusing and recycling). The paper criticized the CE research that the necessities of a systematic shift are often not emphasized. The authors argue that the definitions of CE only demonstrate a few categorical connections of the concept of sustainable development. The paper findings with regards to the economic prosperity of the CE are similar to Geissdoerfer et al. (2017, p 7) that the concept aims at economic

prosperity, followed by environmental quality and its impact on social equity, and coming generations are hardly stated or stressed.

The view motivates the embrace of CE from both policy and business development perspectives by some as a way to attaining sustainable environmental and economic development (Ellen MacArthur Foundation, 2015, p 19 and European Commission, 2015, p 9). There is a significant concern with the incumbent view of the modern economic system of the linear extract-produce-use-dump material and energy flow model. This flow model is viewed as upfront to social, economic, and environmental sustainability (Frosch and Gallopoulos, 1989, pp 144-152). Consequently, CE is promoted as a model that will spur the economic system with a different flow model, one that is recurring and reformative (Ellen MacArthur Foundation, 2015, p 46) and Geissdoerfer et al., 2017, p 22). The concept of CE has been around for many decades but has been popularized in recent years owing to the advocacy by some non-governmental organizations such as the Ellen MacArthur Foundation, which has conducted extensive studies on the topic (Geissdoerfer et al., 2017, p 7). According to the 73rd UN General assembly "the CE holds particular promise for achieving multiple SDGs, including SDGs 8 on economic growth, 6 on energy, 11 on sustainable cities, 12 on sustainable consumption and production, 13 on climate change, 14 on oceans, and 15 on life on land"(UN Economic and Social Council). The CE transition will require a concerted effort from multiple stakeholders, including industry and community, but policymakers have a critical role to play in designing appropriate incentives and access to financing that promote reuse of material and higher resource efficiency (Ellen MacArthur Foundation, 2015, p 32).

Recognizing the enormous benefit of the CE, many countries formulating policies and strategies geared towards transiting from the linear economy to the CE across the world. The European Union has been at the front of the CE transition with The Lisbon Treaty outlining the blueprint of the EU environmental protection policy. The EU issued the implementation plan of the CE through the CE package in 2015 to support the transition of European states towards a more sustainable economy (European Commission, 2015b). This policy was withdrawn and replaced by a new one titled "Closing the Loop – An EU Action Plan for the CE" which appeared to place much focus on eco-innovation by covering the whole process of design, disposal, and recovery/recycling. The legislative

proposal set targets of 65% recycling domestic waste by 2030, 75% of recycling of package waste by 2030, and limiting landfill use for waste to 10%.

In Asia, China is providing a leading role in the CE transition by enacting a CE Promotion Law of the People's Republic of China. The essence of the law is to provide a legal and policy framework for promoting CE, improving resource efficiency, and caring and improving the environment in a sustainable way (Lacy and Rutqvist, 2015, p 173). Zhu (2014) outlines some of the activities undertaken by stakeholders in China towards CE adoption including working with some strategic enterprises at the micro-level, the establishment of circular industrial parks at the meso level and the selection of some cities and regions to champion the pioneering work of CE transition at the national level. In summary, China's current development effort is trying to synch with the CE, including massive investments in the shift to renewable energy, the rapid development of digital technologies, and a boom in asset-sharing platforms (EllenMarcArthur Foundation, 2018, pp 10-11).

In the GCC, there is no comprehensive policy on CE despite the enormous potential within the countries in the region. According to a report by the World Government Summit, GCC countries can save almost $138 billion by 2030 if they adopt a circular economic model. This corresponds to nearly 1 percent of the region's cumulative GDP between 2020 and 2030. Despite the lack of CE policies, GCC countries have in one way or the other have started to explore sustainable solutions in their development policies. Some of them have captured targets of renewable energy, addressing suitable consumption and reduction and waste management in their national visions and strategic objectives (World Government Summit, 2019, p 8). For instance, Qatar National Vision 2030 outlines how the country can achieve sustainable economic and environmental development (QNV2030, 2008). UAE Vision 2021 includes ambitious targets on waste treatment, renewable energy development, and water recycling, and all these are all policies that will ultimately lead to transition towards a CE. Saudi Arabia Vision 2030 also captures safeguarding the environment by increasing the efficiency of waste management, launching large recycling projects, and pollution reduction of all forms (Al Soudan, 2019).

Malaysia launched its roadmap towards zero-use plastics (2018-2030) with the vision to "Towards zero single-use plastics for a cleaner and healthier environment in Malaysia by 2030". Environmental problems related to plastic waste have become a significant problem in Malaysia as it is ranked 8th among the top ten countries with mismanaged plastic waste in the world(Ministry of Energy, Science, Technology, Environment & Climate Change, 2018). Among the key targets are to provide incentives for eco-friendly alternatives, develop a Circular Economy Roadmap for bottles and other single-use plastics, implement federal pollution levy on plastic manufacturers and Research and development on other options.

The literature on Islamic finance's role in sustainable development and CE is limited and emerging. Some the issues being discussed include environmental ethics from Islamic perspective; Islamic finance's role in mitigating climate change; green sukuk and finance; the role of Islamic finance in achieving SDGs; using Waqf to respond to the financing of SDGs; structuring venture Waqf to achieve circular economic growth and reforming Islamic finance to achieve SDGs (Khan, 2019a, Khan, 2019b; Obaidullah, 2018; Aassouli et al., 2018; Ahmed et al., 2015; Moghul and Safar-Aly,2014; Aliyu et al., 2017; Bin Mahfouz and Hassan, 2013).

There is an implicit need to pursue environmental sustainability to achieve the objectives of Sharia(Aliyu et al., 2017, p 1). Ahmed et al. (2015, p 30) identified Islamic finance principles to promote socially-inclusiveness, environmentally-friendly, and development-oriented outcomes. The authors criticized the industry's practice regarding these objectives concluding that the industry's impact premised on these objectives has been disappointing looks at its potential. Concerning the effects of environmental screening on investment performance, Bin Mahfouz and Hassan (2013) findings show that sustainability screening within Sharia context does not harm the performance and systematic risk of investment portfolios compared to their unrestricted conventional portfolio.

The inter-relationship between Material Flow Analysis and Society-Nature within the context of Islamic economics has been studied (Hassan, 2005, pp 15-28). The paper concludes that reducing human socio-

economic metabolism[3] and technological innovation and adoption are not inconsistent with the Islamic economic system. Understanding the nature of wellbeing and the determining factor of the causality of intent and activity is crucial, and Islamic economics can play an essential role in this conundrum of economics and environmental balance(Hassan, 2005, p 28).

The role of Islamic finance in the transition towards a CE

Maqasid al-Sharī'ah provides a vital objective that Islamic law seeks to protect, including life, faith, intellect, family, and wealth. According to Chaprah (2008), the Maqasid framework is aligned with SDGs, and thus, Islamic finance can contribute to achieving the SDGs. Islamic financial institutions operating under the franchise of Islam are morally and ethically bound to be concerned about the outcome of their operations on the Planet(Obaidullah, 2018, p 32). It is in line with this that the President of the Islamic Development Bank posits that Islamic finance should be positioned as a sustainability leader(FT, 2019).

According to Islamic teachings, wasting of resources is discouraged, and there are canonical texts in Qur'ān 6:141 and 7:31 that emphasizes this:

"However, waste not by excess: for Allah loveth not the wasters" and "Eat and drink, but waste not by excess; Verily He loves not the excessive "

The canonical texts presented above highlight the importance the Lawgiver attaches to conserving resources and abhorrence on wastefulness. This is further given impetus in the practice where believers are admonished not to waste water in performing ablution even if they are in the middle of river. Islamic teachings also emphasize the need to uphold the ecological balance put in place by Allah, and this is evidenced in the Quran 55: 7-8:
" And the heaven He raised and imposed the balance" and "That you do not transgress within the balance.

[3] According to (Haasna 2005, p 3) socio-economic metabolism is described as "The socio-economic metabolism consists of a network or circulation of physical flows of materials and energy (input and output) between nature and the economy, and the transformation and accumulations of these flows for human production and consumption within the economy"

Nature values resources continued use and interdependence, which ensures that balance and continuous flow of materials are achieved within the natural ecosystem such as water cycle, oxygen and carbon cycle, food cycle, and photosynthesis (Al-Mubarak and Blake, 2018, p 15).

Islam is not only concerned with only human beings but also recognizes the need to be conscious in the sustainability of the environment and its inhabitants, and this demonstrated in its ethical-legal framework supporting the concern for the well-being of the Earth and its diverse dwellers (Moghul and Safar-Aly, 2014).

"Have you considered that if one morning your water were to disappear into the Earth, who then could bring you flowing water?" Qur'an 67: 30.

This verse of the Holy Qur'an reminds of the importance of not just water but flowing water. Islam thus values maintaining the environmental balance and circularity of resources as recognized in the various verses from the Qur'an.

Financing economic activities that harm the environment needs to be curtailed or assessed with higher risks within the spirit of Maqasid. Conversely, businesses and projects that promote circular economic growth should be encouraged and allocated more financing by Islamic financial institutions in order the achieve sustainable growth.

Islamic financial institutions create debts, and this has seen significant growth over the years. The industry practice of high appetite for debts addresses the needs of persons in the high-income ladder and corporates. In this context, Islamic financial institutions failed to offer any differentiated service from conventional financial institutions which are usually in the race for profit maximization in the short term horizon to the neglect of longer-term value creation activities. This development has made some Islamic economists question the commitment of Islamic finance practitioners' contribution towards addressing development-related issues, and contemporary societal concerns (Obaidullah, 2018, p 41). This shows that the Islamic financial sector can magnify some of the risks associated with climate change. This has implications for Islamic financial institutions' asset allocations and sustainability. When an Islamic bank invests more in Murabahah, such as financing multiple cars for a client instead of supporting the circular business of sharing such as

Uber or public transport, the implication is that more cars on the street will lead to higher pollution and this affects climate change. When climate change-induced disasters such as flooding occur, then it may affect their assets directly or indirectly. So the risks associated with Murabahah car financing should also consider the implication of the financing on carbon footprint. Thus there is a need for Islamic bank practitioners and policymakers to assess its role towards CE and put measures at micro, meso, and macro levels to address this. For instance, Islamic banks and non-bank institutions should integrate climate risks into financial risk management. With this, the borrower and deal-level financial analysis should be encouraged to include climate-related impact analysis and prices. If emerging risks are identified and quantified, they need to be reflected in the risk ratings of the borrowers.

Circular economic models can be viewed from both product level or growth stage perspectives, as presented in Tables 1 and 2. From the product perspective, circular supplies, resource recovery, product life extension, sharing platforms and product as a service are presented (see table 1.)). Three business models categories are identified in CE business development including designing and sourcing products (CIM), the use stage (CUM), and treating products after use (COM).

The circular use and the circular growth stages models present some financial issues and risks which need to be addressed. Replacing tangible assets with service will have an impact on a company's financial planning function, especially on working capital, cash flow and balance sheet (Finance Working Group, 2016, p 101). The risks are magnified by the uncertainties surrounding the residual value of the assets, unclear demand, legal structures limitation. Consequently, asset prices are unlikely to reflect these risks sufficiently, which can lead to demand for a high rate of return or refusal to direct credit into circular businesses in the case of conventional banks. The challenges facing circular firms is not as peculiar as any innovation geared towards solving society's problem always comes with scepticism and its attendant risks (Finance Working Group, 2016, p 103). These challenges make banks see circular business financing as high risk and thus will be unwilling to finance.

According to ING (2015, pp 34-52), getting familiar with CE business models is an essential starting point for banks. This will allow them to assess how CE can contribute to the sustainability of their businesses as

well as supporting their clients for innovative value-creation that ensures maximizing resource use. This will require that the right incentives are put in place to attract banks to channel credit towards the CE. Financial institutions will have to incorporate the 'circular value' of resources in the financial business case, emphasizing the cashflow of these models as well.

Islamic financial institutions should respond to the needs of society by considering their impact on community social welfare and promoting sustainable development projects and alleviating poverty. Achieving this will be in tandem with the objectives of the CE (Dusuki, 2008). Islamic banks have financing and investment instruments that are fit-for-purpose for circular business financing and investment. Mudarabah, Musharakah, Ijarah, and a blend of some of the contracts, such as blended Murabahah come handy. It is also important to mention that, apart from Islamic banks, other Islamic financial institutions can play a significant role in fostering the needed investments for circular businesses. Venture Waqf and Islamic Venture Capital instruments provide the needed investments tools to incentivize and protect investments into circular businesses(See Kahf and Ibrahim, 2020, pp 8-15 and Khan, 2019b, pp 11-18 for details).

Table:1 Circular business models viewed from the product dimension

Model	Explanation	Some Islamic financing and investment tools
Circular supplies	Business model which is based on supplying fully renewable, recyclable, or biodegradable resource inputs that underpin circular production and consumption systems.	Murabahah Blended Murabahah Venture Waqf
Resource recovery	Value is created from a products end lifecycle as an input into a new product This ensures that lifespan of material is not inflexibly predetermined but achieved continuous flow	Mudarabah Diminishing Musharakah, Murabahah Blended Murabahah Venture Waqf
Product life extension	This business model makes it possible for companies to prolong the lifecycle of products and assets. Values that would usually be lost at the end of the life cycle are maintained or improved by repairing, upgrading, remanufacturing	Ijarah, Blended Murabahah Mudarabah, Musharakah, Venture Waqf
Sharing platforms	This business model creates a platform for cooperation among product users and this can be either individuals or organizations. This can take the form of sharing of overcapacity or underutilization	Ijarah, Murabahah, Mudarabah, Diminishing Musharakah and Venture Venture Waqf
Product as a service	This business model provides an alternative to the traditional model of "buy and own." Products are used by one or many customers through a lease or pay-for-use arrangement. This business model addresses issues of product longevity, reusability and sharing and turns the risk of cannibalization into opportunity for driving of revenues and costs reduction.	Ijarah Murabahah Blended Murabahah Mudarabah, Diminishing Musharakah Venture Waqf

Source: ING (2015); Khan (2019b) and Kahf and Ibrahim (2019)

Table: 2 The growth dimension of circular business models

Model	Explanation	Some Islamic financing and investment tools
Circular Innovation Model	The business model focuses on the development phase of a business. Products are designed to last longer and be easy to maintain, repair, upgrade, refurbish, remanufacture, or recycle.	Diminishing Musharakah Musharakah with Qard Musharakah with Murabahah Venture Waqf Perpetual Mudarabah
Circular Use Model	Optimal use of a product is the value proposition of this business model. It makes it possible to retain ownership of the product (e.g., by servicing a product rather than selling it) and/or take responsibility for the product throughout its useful life (e.g., through maintenance services, or add-ons to extend the life of a product).	Ijarah Diminishing Musharakah, Musharakah with Qard Musharakah with Murabahah Blended Murabahah Perpetual Mudarabah, Venture Waqf
Circular Output Models	Businesses using this business model drives value from the after-use product. This is done through transformation of product residual into another value added product or use resources in order to add value, reduce costs, or reduce waste. The development of reverse logistics is essential for this model.	Ijarah Diminishing Musharakah, Musharakah with Qard Musharakah with Murabahah Perpetual Mudarabah, Venture Waqf Istithnar Salam with parallel salam

Source: Finance Working Group (2016); Khan (2019b) and Kahf and Ibrahim (2020)

Blended finance is a non-bank financing tool that can also be used to promote circular businesses. Public capital is not enough and also pure commercial capital will not be channelled to finance sustainable development projects and hence blended finance. According to Convergence, "blended finance is the use of catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development."[4] There has been about $140 billion in capital

[4] Converegence is a global network for blended finance. They compile and monitor blended finance data deal flow accerelate private sector investment in developing countries. Visit https://www.convergence.finance/blended-finance

deployed through blended finance vehicle towards sustainable development in developing countries to-date (Converence, 2019). Applying blended finance in Islamic finance structure involves blending Islamic institutions of compassion with the motive of earning Halal profits by undertaking responsible business that serves the society. This provides an opportunity to utilize Islamic social finance to promote responsible businesses or projects that target the improvement of human wellbeing and development, service to society, and preservation of the ecological environment and balance (Khan, 2019b, p 1).

Aligning Islamic finance practice to support circular economic growth

Circular economic growth is even more critical in the case of OIC member countries looking at the unique challenges faced by the bloc when it comes to the environment.

OIC countries' environmental performance, as measured by Yale University's Environmental Performance Index (EPI), tells that OIC scored 59.4 compared to 65.4 for Non-OIC developing countries and 85.4 for developed countries, which indicate poor performance for OIC counties. On the issue of GHG, OIC countries' GHG growth continues to increase at 4.4% during 2000-2013 even though there is a declining trend for the developed world (OIC Environmental Report, 2017, pp 5-6).

Brook et al. (2006) report that Qatar is characterized by high temperatures, low rainfall, strong winds, and low soil nutrients. This means that recovery of the terrestrial ecosystems from interference is prolonged. The country is seen as one of the most hostile and delicate environments on earth (Richer,2009). The environmental fragility has been worsened by the rapid industrialization and high population growth that has occurred in Qatar in the past few decades. (Luomi, 2012). Figure 3 shows that while the average carbon footprint in the world is 1.6 ghp, some OIC member countries such as Saudi Arabia, Turkey, and Malaysia have their ecological footprints above the world average.

In contrast, Nigeria, Pakistan, and Morocco have theirs below the world' average. Although Saudi Arabia also produces much energy, its carbon

footprint stood at 5.11, owing to its relatively high population. Qatar is ranked highest of close to 15 ghp on the ecological footprint (which captures carbon footprint, fishing ground, cropland, forestry, grazing land and built-up). Qatar's score is is more than twice the score of 6.23 ghp of Saudi Arabia and far higher of the world average of 2.75 ghp. Qatar has taken steps to tackle the high carbon emissions through reducing flaring by registering Qatar Petroleum to take part in the first United Nations Clean Development Mechanism (CDM) project under the Kyoto protocol in the Gulf region (CDM, 2007).

The high ecological footprint can be seen to dwindle the biocapacity of all OIC member countries under study. In figure 4, it is seen that while the average world biocapacity is around 1.75ghp, most of the OIC countries under this study biocapacity are significantly below the world with Qatar at 1ghp and Saudi Arabia at 0.4ghp. Saudi Arabia, with the lowest rank biocapacity scores, means that its capacity to generate an on-going supply of renewable resources biologically and to absorb its spillover wastes is alarming and is heading for unsustainability where the area's ecological footprint will exceed its biocapacity. According to the Global Footprint Network, ecological reserve is the difference between biocapacity and ecological footprint. An ecological deficit is seen when the footprint of a population surpasses the biocapacity of the area available to the population. From the data analyzed as summarized in figures 5, 6 and 7, it can be seen that biocapacity of Saudi Arabia and Qatar is declining for the past recent decades(see figure 5). The sharpest decline happened in the case of Qatar. According to the Global Footprint Network report for 2019, the world is running at an ecological deficit(see figure 7). Also, ecological reserve in Qatar vanished after 1981 as ecological footprint increased as a result of increased resource consumption(see figure 7). This trend is followed by a decreasing biocapacity, leading to a yawning ecological deficit over the years. A similar situation is observed in Saudi Arabia and Morocco (see figure 7). Malaysia, Turkey, and Nigeria, just like the other countries, are also in biocapacity deficit but have relatively better biocapacity compared to Qatar and Saudi Arabia. Malaysia biocapacity, even though the country is in deficit after 1995, its deficit is not extensive compared to the other countries within the OIC bloc. This means that if the trend continues, countries within the OIC will increasingly depend on other nations to meet their economic and social needs as domestic resources cannot support them, and this raises huge sustainability concerns and the need to

maximize resource use by adopting measures including circular businesses towards a zero-waste economy. There is an urgent need to balance the natural resource use with the local environment and ecosystem limits to ensure prosperity for the people and the environment for near and far into the future.

Figure:3 Ecological footprint of some OIC countries

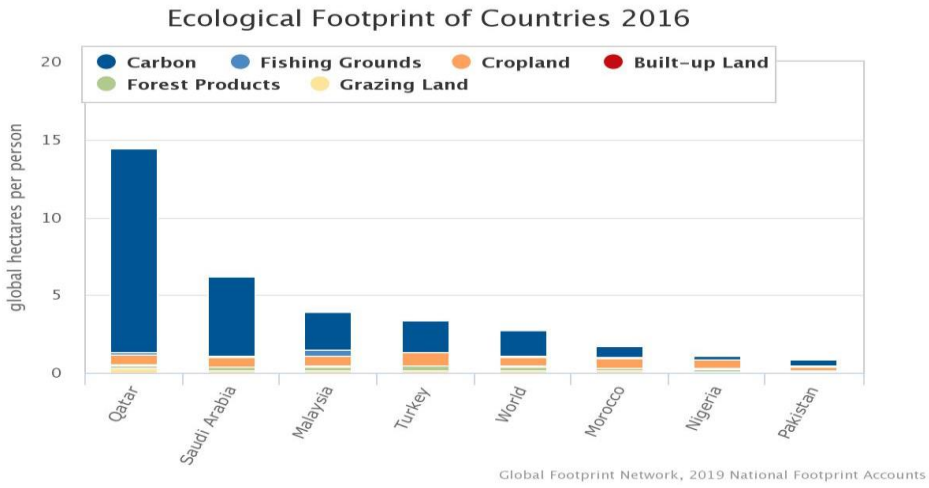


Figure:4 Biocapacity of OIC countries

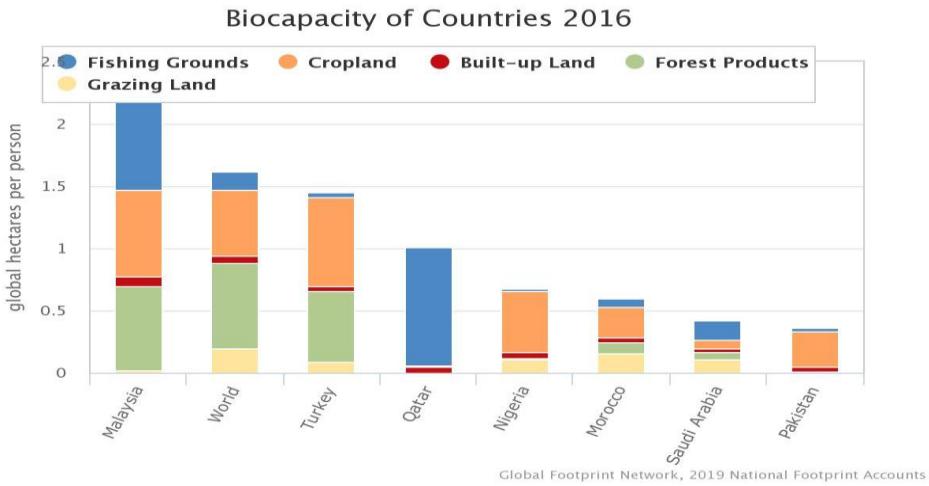


Figure:5 Biocapacity of some OIC countries

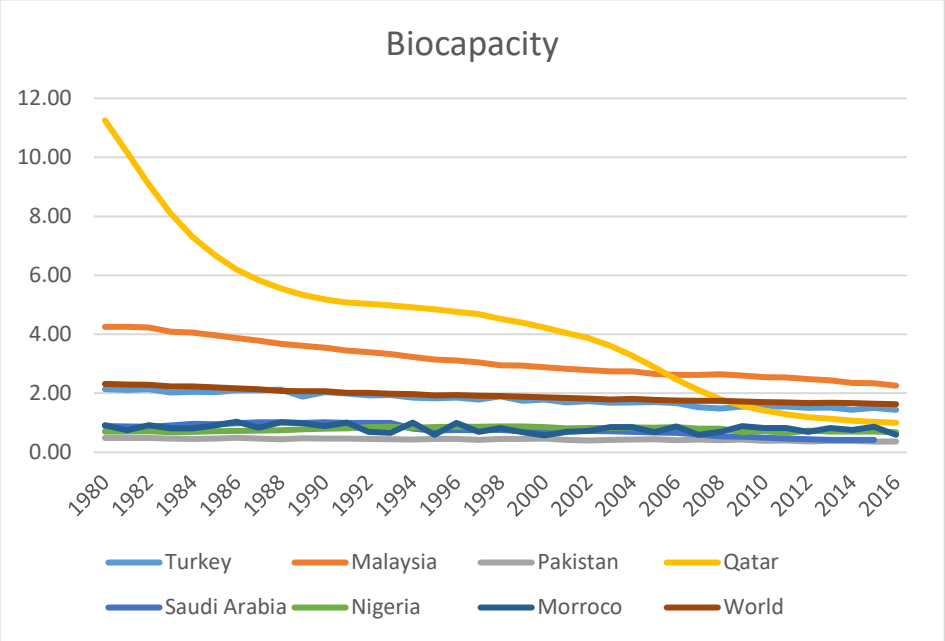


Figure:6 Ecological footprint

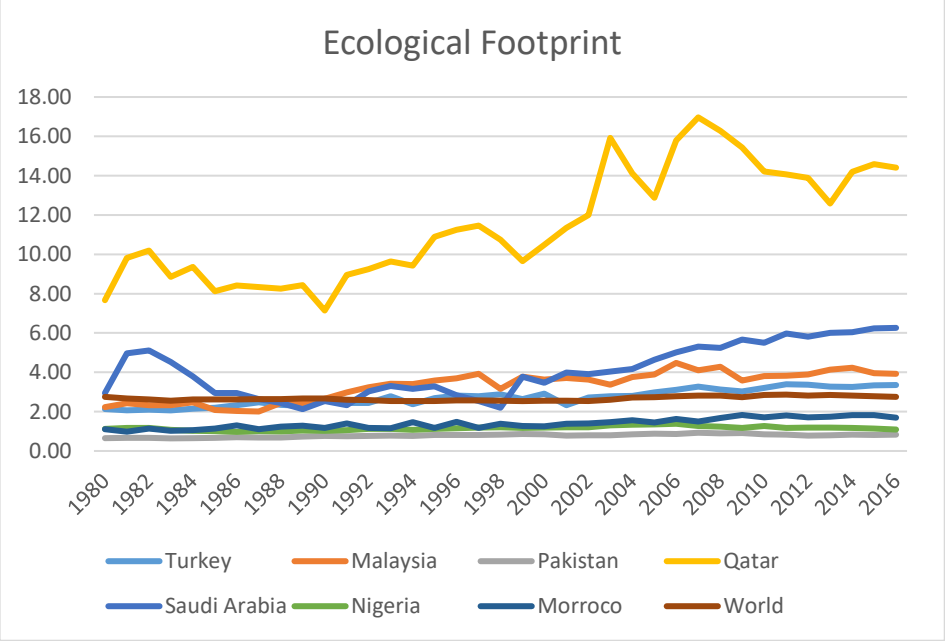
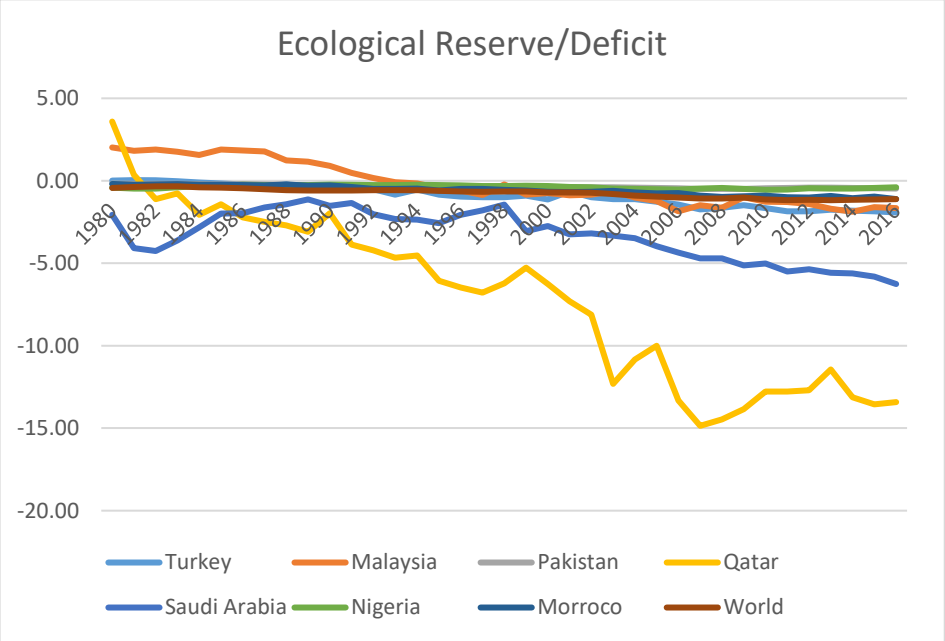


Figure:7 Ecological Reserve/Deficit



Circular businesses need attention by policymakers within the scope of impacting positively on environmental sustainability within OIC member countries and the world at large by ensuring that economic growth can be decoupled from resource use. This can be achieved within the scope of "impactful business" which is geared at making the dual purpose of economic diversification and promoting human wellbeing.[5] .Islamic finance instruments such as blended Islamic finance, green sukuk, and the charitable sectors to attract both public and private investments in the circular business sector.Some scholars proposed Maqasid al-Sharia as a criterion for measuring business impact. In this regard, Islamic Value Accounting by Mohammed Obaidullah in 2005 is worth mentioning. In more recent research, Obaidullah (2018) asserts that many of the SDGs align with Maqāṣid al-Sharī'ah (MaS), which means that Islamic finance based on the MaS would ultimately work towards the realization of the

[5] Apart from Global Impact Investing Network(GIIN), various other global organizations have come out with principles and criteria for measuring the impact of businesses around the world, including UN Global Compact, SDGs, ESG, 3Ps, and so on

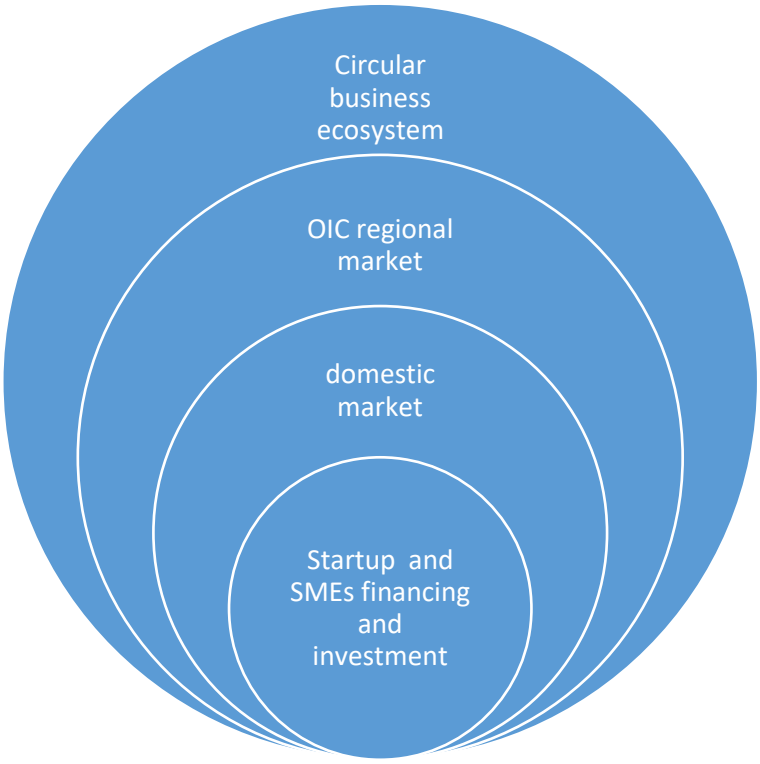
SDGs. Hence Islamic finance practitioners should naturally be concerned with its impact on society.

It is estimated that circular economic growth can benefit Europe by €1.8 trillion by 2030, twice the benefit of the existing development path, and CO2 emission reduction by 48% by 20130(Shulze, 2016). This shows the vast potential that underlies circular economic growth pursuits. Achieving circular economic growth will require building partnerships with a global mindset. To accomplish this will require promoting start-ups and SMEs in these countries with a regional and global mindset. Various circular businesses within the various models can be developed as business propositions. It is essential to recognize that attracting entrepreneurs into this sector will be more impactful if it is looked at as a regional opportunity to unleash the potential of Muslim youth. This will require a massive amount of financing at the initial stages to develop the market. In this regard, there needs to be a strategy to finance and attract investments in this sector. Public financing alone will not be sufficient and needs private funding. This allows multilateral development partners such as IDB, ADB, World Bank and AfDB to stimulate circular economic development. Other domestic development mandated institutions with international focus such Qatar Development Bank(QDB), Kuwait Fund, and so on can be brought onboard. Institutions that are involved in promoting and financing startups in the member countries can also work with domestic charities as part of the ecosystem. The charitable sector is not left out as Waqf, and Sadaqah can be used to provide incubation, financing and accelerator programs for startups with a circular business focus. These stakeholders will help in catalyzing the market take-off by working with their mandates to develop both the national and indirect regional market development, respectively.

There has to be a strategy to attract and develop a secular economy ecosystem in OIC member countries, and figure 8 presents the ecosystem matrix. The circular business ecosystem which has domestic and international dimensions, which both are converging towards building startups and SMEs sector. Innovative Startups and SMEs will originate circular businesses at both local and international arenas. Investors must fund this business as an impactful business; government-backed institutions can play a role by providing incentives and financial subsidies.

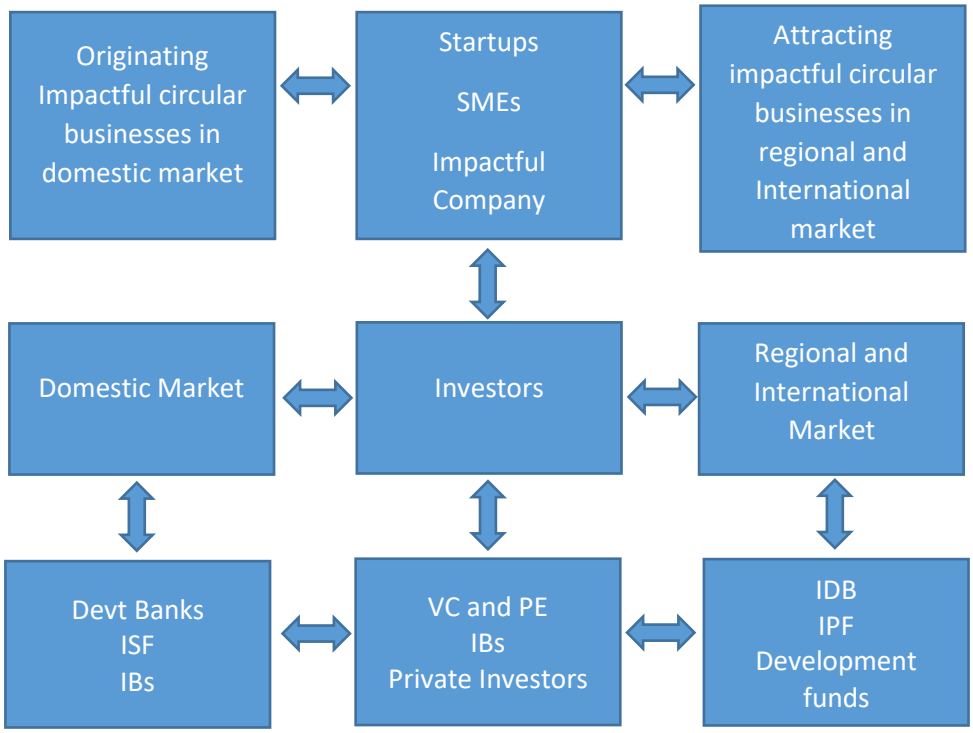
Once the impactful business criteria are developed with a focus on economic growth through CE, then the various stakeholders will be involved. This includes Islamic finance institutions, government development banks(DB), IDB, Shariah-compliant private investors including Venture Capitalist(VC), Private Equity(PE), students/innovators, Islamic social funds(ISF) and so on. The various stakeholders in the industry are presented in figure 9.

Figure:8 Circular business ecosystem



Source: Authors'

Figure:9 Structure and Stakeholder in the Circular Business Ecosystem



Source: Authors'

To illustrate how this can work practically, a country like Qatar can implement this within the above circular business ecosystem and stakeholder network as follows. Qatar development bank[6] can play the role of providing some financial guarantees for investors by working with Qatar Charity in this regard. Third-party guarantees will help attract funding from Islamic banks such that the compassionate Islamic finance contracts will be used to help build businesses and grow SMEs that are pursuing circular business missions. They can also provide subsidy for the cost of funds through a blended Murabahah arrangement with banks who may want to advance financing to start-ups and SMEs. There can be various innovative financing arrangements such as Qard with profit such

[6] QDB is a government mandated bank that provides financing and incubation support to start-ups and SMEs within Qatar with the aim to supporting Qatar's economic diversification agenda. They promote and empower Qatari entrepreneurs and innovators twards realizing the diversification of the Qatari economy

that the SMEs share of profit with the Islamic bank or any bank in case profit is declared but pays only the principal when there is no profit. This may be controversial to some Shariah scholars, but it will also be an opportunity for Islamic banks to blend compassion with profitability. Supporting market development will require a mentorship, business advisory, and general incubation services. These can be provided through Qatar Incubation Center, Qatar Science and Technology Park and the like with partnership with Qatar Development Bank, At the international level, Qatar has to be attractive for attracting top-notch talents and startups to start businesses, including circular businesses. Likewise, the domestic companies that can build their business competencies will be ready to go global. There is a potential to develop circular businesses in the international market, especially waste management. Qatar entrepreneurs can even export waste to other countries or launch a waste exchange where waste is traded. What Qatar Fund for Development can do is to have an interest in catalyzing private investments into developed and developing countries by funding joint feasibility and scientific inquiry in collaboration with Qatar-based researchers and innovators.

Conclusion

If the linear economic paradigm persists as the standard of business practices with its attendant consumption patterns, there will be a negative impact on material availability, material price volatility, and environmental destruction. Tackling these challenges requires a new economic paradigm of the CE, and owing to its religious and ethical axioms, Islamic finance has a role to play in the transition towards the CE. The study explores ways Islamic finance can support circular businesses with a focus on OIC member countries. The study concludes that Islamic finance can use equity-like and risk-sharing financing modes to support circular businesses motivated by the holistic objective of Maqasid. There is also the need for financial regulatory authorities and Islamic financial institutions to consider risks associated with climate change and linear economic activities in terms of asset valuation and pricing. Blended finance in Islamic finance is a valuable tool that can be used to foster investments and attract funding for circular businesses. The nature of circular economic growth is that it is perceived risky by investors, and only commercial capital cannot achieve the required impact and hence the need to blend commercial capital, charitable capital, and public capital. The circular business financing ecosystem can be built within OIC

member countries through combining the profitable and charitable sectors within the context of impacting the economy and driving CE growth. This will mean that domestic development banks ISF, IBs, and IDB can work together to attract the needed funding for circular businesses in OIC member countries and also attracting entrepreneurial talents to startup businesses to support CE transition. The paper recommends the following for policymakers and relevant stakeholders:

1. To develop a comprehensive CE policy masterplan to serve as a complete reference for CE policy and strategy in OIC member countries

2. To embark on public awareness on the environmental constraints faced by OIC member countries and the need for a change of attitudes towards ecological preservation.

3. To engage with Islamic finance practitioners, academics, and regulators to develop a roadmap for financing the circular businesses and the roles they can play.

4. To make the CE an essential public policy target in achieving the SDGs in OIC member countries.

5. To dedicate funding for research into the CE for both academic and industrial studies.

References

Aassouli, D., Asutay, M., Mohieldin, M., & Nwokike, T. C. (2018). Green Sukuk, Energy Poverty, and Climate Change: A Roadmap for Sub-Saharan Africa. World Bank

Abdullah, M. (2018),. Waqf, Sustainable Development Goals (SDGs) and maqasid al-shariah. *International Journal of Social Economics*, 45(1), 158-172.

Abdulwahab Al-Sadoun, A. (2019). From Waste to Value: The GCC Chemical Industry's Contribution to CE accessed on 14/03/19 at https://gpca.org.ae/2019/03/05/from-waste-to-value-the-gcc-chemical-industrys-contribution-to-circular-economy/

Ahmed, H., Mohieldin, M., Verbeek, J., & Aboulmagd, F. (2015),. On the sustainable development goals and the role of Islamic finance. The World Bank.

Alam, N., Duygun, M., & Ariss, R. T. (2016),. Green Sukuk: An Innovation in Islamic Capital Markets. *In Energy and Finance* (pp. 167-185). Springer, Cham.

Aliyu, S., Hassan, M. K., Mohd Yusof, R., & Naiimi, N. (2017). Islamic banking sustainability: A review of literature and directions for future research. *Emerging Markets Finance and Trade*, 53(2), 440-470.

Andersen, M.S., (2007),. An introductory note on the environmental economics of the CE. *Sustain. Sci.* 2, 133–140

Bandar Hajjar(2019),. It is time to position Islamic finance as sustainability leader. Accessed on November 23, 2019 available at https://www.ft.com/content/8190401b-8ee0-42a1-89d5-945b7b3fe256

Basile I., J. Dutra, J. (2019), "Blended Finance Funds and Facilities: 2018 Survey Results". OECD Development Co-operation Working Papers, No 59, OECD Publishing, Paris.

Bernardo, G., Campiglio, E., (2014),. A simple model of income, aggregate demand and the process of 600 credit creation by private banks. *Empirica* 41, 381-405.

Bernardo, G.,and & Campiglio, E. (2014). A simple model of income, aggregate demand and the process of credit creation by private banks. *Empirica,* 41(3), 381-405.

BinMahfouz, S., & Hassan, M. K. (2013). Sustainable and socially responsible investing. *Humanomics.* 29 (3), 164-186

Campiglio, Emanuele (2015), Beyond carbon pricing: the role of banking and monetary policy hkjhhin financing the transition to a low-carbon economy. *Ecological Economics*, 121,. Pp. 220-230.

CE for the SDGs: From Concept to Practice General Assembly and Ecosoc Joint Meeting Draft Concept and Programme for the joint meeting of the Economic and Financial (Second Committee) of the 73 UN General Assembly and the UN Economic and Social Council

Chichester. Kirchherr, J., Reike, D., & Hekkert, M. (2017),. Conceptualizing the CE: An analysis of 114 definitions. *Resources, Conservation and Recycling, 127*, 221-232.

Commoner, B., (1971)., The closing circle: Nature, man, and technology. Random House, New York.

Convergence Global Network for Blended Finance(2019). Blended Finance. Visited on November 24, 2019. Available at https://www.convergence.finance/blended-finance#market-size

Dajian Zhu, D(nd),"China's Policies and Instruments for Developing the CE," accessed September 2, 2019, http://europesworld.org/2014/06/15/ chinas-policies-and-instruments-for-developing-the-circular-economy/#. VHOqhVfF_i-

Darwish, M. A., and& Mohtar, R. (2013). Qatar water challenges. *Desalination and Water Treatment,* 51(1-3), 75-86.

Dusuki, A. W. (2008), Understanding the objectives of Islamic banking: a survey of stakeholders' perspectives. *International Journal of Islamic and Middle Eastern Finance and Management.* 1(2), 132-148

Ellen MacArthur Foundation(2013),. Towards the CE vol.2. Isle of Wight.

El-Sayed Selim, M. (2004), Environmental Security in the Arab World. Meeting of the International Studies Association, 17-20 March 2004, Montreal, Canada.

European Commission(nd), "Action for a Resource Efficient Europe," accessed September 2, 20193, http://ec.europa.eu/environment/ resource_efficiency/documents/action_for_a_ resource_efficient_europe_170613.pdf.

European Commission, "The Roadmap to a Resource Efficient Europe," http:// ec.europa.eu/environment/resource_efficiency/about/roadmap/ index_en.htm.

European Commission, 2015b. Closing the loop - An EU action plan for the Circular Economy (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions No. COM(2015) 614/2). European Commission, Brussels.

Finance Working Group. (2016)., Money Makes the World Go Round-and Will It Help Make the Economy Circular as Well?

Frosch, R. A. and Gallopoulos, N. E. (1989), 'Strategies for Manufacturing', *Scientific American*, vol. 261(, no. 3), pp. 144–152.

Geissdoerfer, M., Savaget, P., Bocken, N. M., and& Hultink, E. J. (2017),. The CE–A new sustainability paradigm?. *Journal of cleaner production*, *143*, 757-768.

Geng, Y., Doberstein, B., (2008),. Developing the CE in China: Challenges and opportunities for achieving "leapfrog development." *Int. J. Sustain. Dev*. World Ecol. 15, 231–239.

Ghisellini, P., Cialani, C., Ulgiati, S., (2016)., A review on CE: the expected transition to a balanced interplay of environmental and economic systems. *J. Clean. Prod*. 114, 11–32.

Global Footprint Network National Footprint Accounts (2019), Country Overshoot days. http://data.footprintnetwork.org/#/

Global Footprint Network. National Footprint Accounts 2018 edition. <https://data.footprintnetwork.org/> (2018)

Global Impact Investing Network.(2019). About Impact investing. accessed on August 10, 2019, https://thegiin.org/impact-investing/

Graedel, T.E., Allenby, B.R,., (1995)., Industrial ecology. Prentice-Hall, Englewood Cliffs, N.J.

Graedel, T.E., Allenby, B.R., 1(995). Industrial ecology. Prentice-Hall, Englewood Cliffs, N.J.

Hassan, A. B. U. L. (2005)., Islamic economics and the environment: Material flow analysis in society-nature interrelationships. *Journal of King Abdulaziz University: Islamic Economics*, 18(1).

House of Commons Environmental Audit Committee, "Growing a CE: Ending the Throwaway Society," accessed September 2, 2019, http://www.publications.parliament.uk/pa/cm201415/cmselect/cmenvaud/214/214.pdf. https://www.ing.nl/media/ING_EZB_Financing-the-Circular-Economy_tcm162-84762.pdf

World Government Summit accessed on January 3 2020. https://www.worldgovernmentsummit.org/docs/default-source/default-document-library/putting-gcc-cities_v4.pdf?sfvrsn=79f7614d_0

ING Bank(2015). Rethinking finance in a circular economy. ING Economic Department

Ingo Fender Mike McMorrow. (2019.), Green bonds: the reserve management perspective. *BIS Quarterly Review, September 2019*

Kahf, M. and Ibrahim, AJ(2019),. Instruments for investment protection in structuring Islamic venture capital. *Journal of Islamic Accounting and Business Research. Emerald*(forthcoming)

Khan, T. (2019),. Venture waqf in a circular economy. *ISRA International Journal of Islamic Finance*. 11 (2), 187-205

Khan, T.(2019), Reforming Islamic Finance for Achieving Sustainable Development Goals *JKAU: Islamic Econ.*, Vol. 32 (No. 1), pp: 3-21

Kirchherr, J., Reike, D., & Hekkert, M. (2017),. Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221-232.

Konac, H. (2004). Environmental issues and sustainable development in OIC Countries. *Journal of Economic Cooperation,* 25(4), 1-60.

Krogstrup, S., & Oman, W. (2019),. Macroeconomic and Financial Policies for Climate Change Mitigation: A Review of the Literature (No. 19/185). International Monetary Fund.

Lacy, P., & Rutqvist, J. (2016). Waste to wealth: The CE advantage. Springer.

Luomi, M. (2012). Qatar's Natural Sustainability: Plans, Perceptions, and Pitfalls. *CIRS Occasional Papers*.

Lyle, J.T., (1994.), Regenerative design for sustainable development. John Wiley & Sons, New York; Chichester.
MacArthur, E., Zumwinkel, K., & Stuchtey, M. R. (2015),. Growth within: a circular economy vision for a competitive Europe. Ellen MacArthur Foundation.

Malaysia Securities Commission (2016),. Green Sukuk https://www.sc.com.my/news/media-releases-and-announcements/malaysias-first-green-sukuk-under-scs-sustainable-responsible-investment-sukuk-framework

Malaysia's roadmap towards zero single-use plastics (2018). 2030https://www.mestecc.gov.my/web/wp-content/uploads/2019/03/Malaysia-Roadmap-Towards-Zero-Single-Use-Plastics-2018-20302.pdf

Mannan, M., Alhaj, M., Mabrouk, A. N., & Al-Ghamdi, S. G. (2019),. Examining the life-cycle environmental impacts of desalination: A case study in the State of Qatar. *Desalination*, *452*, 238-246.

McDonough, W., Braungart, M., (2002)., Cradle to cradle: Remaking the way we make things, 1st ed. North Point Press, New York.

Moghul, U. F., & Safar-Aly, S. H. (2014),. Green Sukuk: The Introduction of Islam's Environmental Ethics to Contemporary Islamic Finance. *Geo. Int'l Envtl. L., Rev.*, *27*, 1.

New Climate Economy (2014), Infrastructure investment needs of a low-carbon scenario

Obaidulalh, M. (2016),. Climate Change Financing: Role of Islamic Finance. In Marrakech Climate Change Conference (COP22) organized by UNFCCC in November.

Obaidullah, M. (2018). Managing Climate Change: Role of Islamic Finance. *Islamic Economic Studies*, *26*(1), 31-62.

Paul Sanderson, P.(nd),"Government Rejects MPs' Recommendations on CE," Resource Efficient Business, accessed September 2, 2019, http://www.rebnews.com/news/resource_efficiency/government_rejects_mpsr_recommendations_ circular_economy.html#.VFinGJIamZs. twitter.

Pauli, G.A., (2010),. The blue economy: 10 years, 100 innovations, 100 million jobs. Paradigm Publications, Taos, NM

Richer, R. (2009),. Conservation in Qatar: impacts of increasing industrialization. *CIRS Occasional Paper*, (2).

Sadik, A.K, (2013), Agriculture, Water and Food Security in GCC Countries. Sixth Zayed Seminar 8 - 9 May 2013 Arabian Gulf University, Manama

Schularick, M., and Taylor, A.M., (2012),. Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and 715 Financial Crises, 1870-2008. *American Economic Review* 102, 1029-1061.

Schulze, G. (2016),. Growth Within: A CE Vision For A Competitive Europe.
Securities Commission Malaysia and World Bank(2019), Islamic green finance dDevelopment, ecosystem aAnd prospects

Spencer, T., Stevenson, J., 2013. EU low-carbon investment and new financial sector regulation: what impacts and what policy response? IDDRI, Paris.

Stahel, W., Reday, G., (1976)., The potential for substituting manpower for energy, Report to the Commission of the European Communities

Stahel, W.R., (2010)., The performance economy, 2nd ed. Palgrave Macmillan, Basingstoke, New York.

Su, B., Heshmati, A., Geng, Y., Yu, X., (2013). A review of the CE in China: moving from rhetoric to implementation. *J. Clean. Prod*. 42, 215–227

Webster, K., (2015),. The CE: A Wealth of Flows. Ellen MacArthur Foundation, Isle of Wight

Working Group Finance(2016),. Money makes the world go round https://www.ellenmacarthurfoundation.org/assets/downloads/ce100/FinanCE.pdf

World Government Summit(2019). Accessed on November 1 2019 at https://www.worldgovernmentsummit.org/docs/default-source/default-document-library/putting-gcc-cities_v4.pdf?sfvrsn=79f7614d_0

WWF. (2018)., Living Planet Report - 2018: Aiming Higher. Grooten, M. and Almond, R.E.A.(Eds). Gland, Switzerland.