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Knowledge for All

Circular Economy in the GCC: Status, Challenges, and Opportunities



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Circular economy (CE) is recognized globally as a new model of economic development based on more efficient utilization of resources across the production and consumption value chain (Rizos et al., 2017). It is a zero-waste approach, meant to extend the lifespan and economic value of resources as well as support sustainable growth by redirecting used resources into new income streams (Acharya, Boyd, and Finch, 2018). Essentially, it is an economic model that is applicable across supply chains and sectors, and that maps out the process of product and service design, manufacturing, and consumption with an aim to minimize the environmental impact as well as open doors to underexplored markets (Acharya, Boyd, and Finch, 2018).

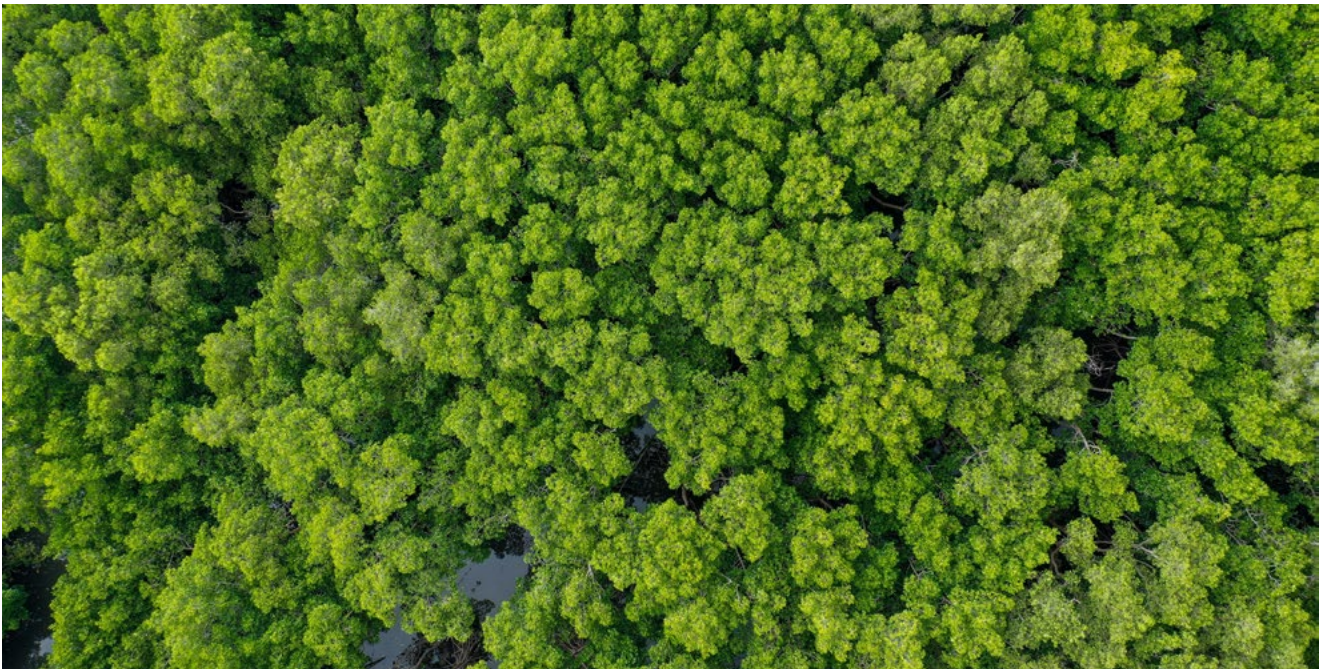
The transition towards the CE has the potential to change the market landscape either globally and/or locally. When implementing CE, consumption will decrease, products are refurbished or recycled, higher quality products are designed to be long-lasting, easy-to-repair, as well as offered to the market as a service rather than an item to be owned where applicable. Furthermore, the global market should have to accept policies that might encourage the import of materials, resources and products that comply with CE practices. Regions and countries will ultimately achieve a higher material self-efficiency with design for the environment (DfE) products as the number of materials recycled increases within their borders.

In addition, CE to a greater extent will promote

recycling within regional or national borders, whereby waste can be traded and recycled elsewhere, especially when certain recycling technologies are not available. Recyclable waste could be sent to countries with staffed facilities that employ high-quality recycling practices and uphold acceptable environmental standards.

Implementation of integrated approaches in infrastructure planning can steer the substantial economic and environmental benefits in terms of resource savings and waste reduction. Various programs and initiatives have been launched by various stakeholders worldwide either government, businesses, non-governmental organizations, etc. as listed below:

1. Slovenian city of Maribor's "Urban Soil for Food" project – Increase the city's food self-efficiency, promote CE, reduce carbon footprint, and re-connect citizens with nature.
2. Japan's "Regional Circulating and Ecological Spheres (R-CES)" Concept – Locally available resources are utilized in a sustainable manner, circulated locally, and exchanged with neighboring regions according to the region's unique features.
3. Germany's multi-stakeholder initiative, "PREVENT Waste Alliance" – Reduce waste pollution in low-and middle-income countries through development of functional waste management and CE approaches.



4. Indonesia’s “National Plastic Action Partnership (NPAP)” – Convene Indonesia’s leading stakeholders as well as influencers who can manipulate necessary influence to drive public-private actions to shape a new plastics economy at the national and local levels.

5. Costa Rica’s Plastic Process Engineering Company – Convert plastic waste into highly durable, excellent quality and usable plastic products for industrial, construction, architecture, and design application.

6. Netherlands’s The Recycle Studio (TRS) – Share knowledge on how to begin personal recycling workshops wherever a person may be in the world.

7. European Union’s Sustainable Products Initiative (SPI) – Key milestone to sustainable

resource use by mobilizing dedicated sector-specific legislation including complementary social considerations on product requirements (IGES, 2021).

THE CIRCULAR ECONOMY IN THE GCC REGION

Over the past decades, the Gulf Cooperation Council (GCC) region has experienced rapid economic development and population growth. While this has been an important transformation for the region, it has resulted in accelerating the depletion of its resources and generating unprecedented amounts of waste and emissions. The unintended side effect of this has been detrimental to the region’s environment and has presented new challenges within the economy and society at large, placing pressure on GCC



leaders to address the prevalent linear economic model, based on “take, make, and discard.”

The GCC population reached 58.86 million in 2022 (worldpopulationreview.com) with 84 percent of the population living in urban areas. Given the population density, current consumption patterns in the region are unsustainable both on the domestic and the business level. According to the Global Footprint Network, the average global ecological footprint is 1.7 global hectares which is approximately five times less than the lowest ecological footprint in some GCC countries (Global Footprint Network, 2016).

GCC countries have initiated an economic transition away from hydro-carbon-led economic growth to diversify their economy away from oil dependency and toward a more sustainable economic model that simultaneously addresses environmental challenges throughout the region. The transition to a circular economy has been driven also by an ambition to achieve greater efficiency, create new jobs, and attract green investment (PwC, 2021 [1]). GCC countries are in the ideal position to pioneer the rise of a circular economy as they are already global leaders in the energy, utilities and resources sector. As energy demands rise on a global scale, GCC countries are interested in continuing to answer the call, yet they are desperate to find ways to do so innovatively. The nature of the industry that fuels the GCC economically, is such that it contributes significantly to global emissions with Kuwait, Qatar, Bahrain, and Saudi Arabia ranking among the top 10 countries with the highest emissions levels in the world. Therefore,

a shift toward more environmentally responsible policies and practices not only ensures a brighter future for the citizens of these countries but also points toward the development of a more sustainable economic future as well. The GCC countries are at various stages of exploring the development of new circular sectors and activities such as waste management, maintenance, repair, remanufacturing as well as advanced recycling processes with the aim of encouraging green economies, resource efficiency, and renewable energy strategies across the region.

The GCC countries have made every effort to escalate the economic diversification process to proceed away from hydrocarbon dependent sectors. Potentially, circular economy will be able to support economic diversification as well as development of new industrial and service-led activities in the GCC countries, for instance by advanced recycling processes, production of bio-based products and product as service models. The CE can promote the sustainable use of the key resources of water and land as well as reduce the large footprints of consumption and production. Water overuse and scarcity along with the scarcity of arable land for agriculture have been major concerns in the GCC region resulting in outstanding priorities for sustainable agriculture, water use efficiency, and integrated water management (Brown et al., 2018). Water scarcity and increased water demands have been overcome by desalination plants, organized with governing by-laws and objectives in the water sector throughout the region (Moossa et al. 2022). Additionally, the GCC region also recorded high levels of energy intensity, emissions footprints,



and air pollution because of fuel burning and construction. The GCC countries have initiated programs to reduce excessive consumption of resources along with increased recycling (Beijani, et al., 2019) as they have realized the limits of the conventional linear economic model and its rapid resource depletion yielding unprecedented waste and emissions (Al-Alawi et al., 2020).

CONTRIBUTION OF THE CIRCULAR ECONOMY TO THE GCC'S CLEAN ENERGY TRANSITION AND GREEN ECONOMY



The transportation, construction, and industry sectors contribute 30 percent of GHG emissions worldwide (IPCC, 2014, p.745), so developing a green strategy there should be top priority for the GCC region. Whereas the production and use of these industry products and materials are damaging to the environment, the amount of waste that is produced by them is further troublesome. Material waste from products like cars, machines, and plastics do not decompose and take up significant portions of global landfills, continuing their damage long after their use is done. Companies in

these industries would benefit greatly from adopting a circular model of development and practice. This is indeed becoming more and more crucial as consumers are becoming more cognizant of the environmental footprint that they and the products they purchase leave behind. Brands that can be labeled as ‘green’ tend to be well received, and in a CE model, their products would be deemed more valuable. So, in addition to perhaps complying with environmental regulations toward climate change and environmental crises, companies who follow CE practices could see remarkable gains in their profits and brand reputation as well. (Karagualian et al, 2015).

The application of resource efficiency in the industrial sector following the CE model would mean recycling and remanufacturing as well as reusing or redirecting industrial waste to serve new purposes. Eventually this cycle could reduce the GHG emissions altogether, with a lesser number of raw materials needed for production (OECD, 2018, p. 3). One of the biggest contributors to environmental degradation has been the ever-growing masses of plastic waste in our oceans and landfills. The process of plastics disposal is particularly troublesome in achieving a CE due to the difficulty in recycling it, the effects of its disposal, and the longevity of its mechanical composition. As of now, plastic production, use and disposal has followed a linear economic model—whereby it is developed for single use and discarded in landfills. Only 5 percent of plastics that are labeled as “recyclable” are reprocessed into something else. There are



many different types of plastics that cannot be mixed, and they do not readily decompose. Furthermore, the process of recycling most plastics involves breaking them down, melting, and reforming, which weakens the material, making it less durable. The process can also not be repeated indefinitely, as the chemical composition of the plastic loses its integrity and eventually becomes useless. The process of incinerating plastic waste is both costly and gives off its own damaging environmental effects. In the CE model, the answer to plastic lies in the repurpose, reuse, or refill options. The need to reduce the amount of energy and natural resources used in the production and disposal of plastics is something that scientists are still working on, but the fact of the matter is that as plastic waste piles up, we face detrimental environmental consequences. Plastic recycling will require more complex technology, but it is vital to find a way to make plastic waste disposal more sustainable, requiring lower amounts of energy and natural resources (Zafar, 2020).

CASE STUDIES ON CIRCULAR ECONOMY IN THE GCC REGION

United Arab Emirates (UAE)

In 2010, the UAE launched a national plan called UAE National Agenda and Vision. It mapped out six focus areas including “sustainable environment and infrastructure” which prioritized air quality, water availability, clean energy, and green growth plans. Some of the National Agenda’s achievements are a better scarcity index (ratio of 2.16), air quality index (91.4 percent),



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and share of clean energy contribution (19.63 percent). Additionally, the National Committee on Sustainable Development Goals (SDGs) was set up in January 2017 to oversee the implementation and alignment of its own national goals and the 17 Global Goals put forth by the UN in 2015. UAE's National Committee on SDGs serves the main purpose of facilitating, monitoring, and reporting progress toward SDG targets.

In January 2012, the "UAE Green Growth Strategy," a long-term national initiative, was laid out emphasizing the country's need to build a greener economy, through sustainable development and developing green products and technologies that could make the UAE a world leader in green exports (Howarth et al., 2020). This initiative was followed in January 2015 by the UAE Green Agenda 2015-2030 in collaboration with the Global Green Growth Institute (GGGI) and focused on five strategic objectives: competitive knowledge-economy; social development and quality of life; sustainable environment and valued natural resources; clean energy and climate action; green life and sustainable use of resources.

Moreover, the Ministry of Climate Change & Environment (MoCCA) created the UAE National Sustainable Consumption and Production Plan (2019 – 2030) to spur the shift to a circular economy at the federal level. The primary goals of the plan are to achieve sustainable management and efficient use of natural resources by bolstering the shift to a CE, encouraging the private sector to initiate cleaner production, consumption, and disposal methods that can help to alleviate environmental stress and fulfill basic needs (UAE

National Sustainable Production & Consumption Plan [2019-2030] Framework).

The UAE government executed a high-level commitment to CE with the launching of the Circular Economy Council and introduced the UAE Circular Economy Policy in 2021. The council set numerous goals such as to coordinate federal and local strategies under the policy's requirements, boost the involvement of the private sector in projects and initiatives related to the CE, as well as foster collaboration between the public and private sectors. Amongst members of the council that is chaired by the Minister of Climate Change and Environment, Her Excellency Mariam bint Mohammed Almheiri, are the MoCCA, the Environment Agency - Abu Dhabi (EAD), Abu Dhabi Waste Management Center (Tadweer), Dubai Municipality, Municipality and Planning Department in Ajman, Emirates Nature – WWF, and the World Economic Forum (UAE's Circular Economy Council). The Circular Economy Policy initiative is expected to accomplish the UAE's vision of becoming a global pioneer of green development through priority sectors such as infrastructure, sustainable transportation, sustainable manufacturing, and sustainable food production and consumption. Additional benefits to the CE policy include generating economic gains for the country, stimulating economic growth, increasing competitiveness, and creating job opportunities.

Kingdom of Saudi Arabia (KSA)

The journey to a circular economy in Saudi Arabia started when the government announced its Vision 2030 in 2016 as a strategic framework for



the nation's future growth model. The Vision was intentionally drafted to reduce oil dependence, diversify the economy, enhance competitiveness, create jobs, attract tourism, and strengthen the private sector, as well as boost investment in the sectors that have the most growth potential such as renewable energy, waste management, green cities, etc. Vision 2030 sets 96 strategic objectives across 11 Vision Realization Programs that will support the transition to a CE including assuring the sustainability of vital resources, enhancing the efficiency of waste management, minimizing consumption, and utilizing treated and renewable water (EU-GCC Dialogue, 2020b).

The King Abdullah Petroleum Studies and Research Centre (KAPSARC) highlighted that the green growth options under the 2030 Vision emphasize the circular carbon economy (CCE) through the recycling of carbon-by-products as a reasonable (pragmatic) measure to address CO₂ emissions issues (Howarth et al., 2020; Williams, 2019). CCE can play an analytical, voluntary, and complementary role in helping countries to achieve international and domestic sustainability development goals, in conjunction with national economic development strategies. In other words, shifting toward an environmentally friendly economic model does not have to come at the expense of economic development. Furthermore, the CCE's '4Rs' in reference to 'reduce, reuse, recycle, and remove' can enable a holistic and complementary approach that countries can use to manage emissions as well as apply to other key areas, for example, material resource efficiency (G20 Climate Stewardship Working Group, 2020).

Another important strategy that promotes the advancement toward a circular economy in Saudi Arabia is the National Waste Management Strategy under the auspices of the Strategic Waste Management Master Plan that was introduced in 2021. This strategy outlined a strategic direction for solid waste management along with a recommendation on a series of interventions to revise the technical, financial, and environmental performance of waste operation, aligning it with good international practice. The strategy is also intended to improve the management of municipal solid waste (MSW), diverting much of it out of the Kingdom's brimming landfills, sorting and repurposing it via waste-to-energy plants. These measures would contribute significantly to the advancement toward a circular economy through recycling (42 percent), compost (35 percent), incineration (19 percent) and an 82 percent diversion rate from landfills by 2030, as well as create new business and job opportunities in waste management, green investment, environmental auditing and accreditation, sustainability consultancy etc. (Zafar, 2018 in Al-Alawi et al., 2020).

Qatar

Qatar made a significant commitment to take on climate change through an endorsement of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes (1995), UN Framework Convention on Climate Change (1996), the Paris Agreement (2016), and the National Climate Change Plan (September 2021). Additionally, Qatar engaged with regional and international partners to initiate platforms



for climate change cooperation, discussion, and action as a means to achieve a circular economy (Qatar’s Circular Economy Policy Paper).

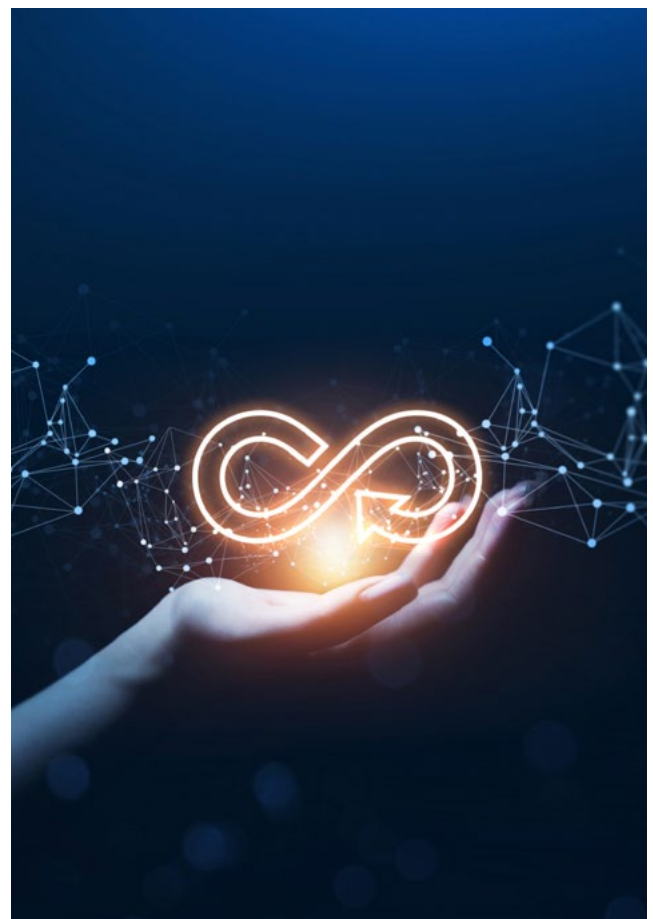
The Qatar National Vision 2030 (QNV2030) was designed to promote sustainable development in Qatar through economic growth, social and human development, and environmental management by 2030. Circular economy in Qatar has been driven by QNV2030 with an intention to harmonize economic development with environmental protection, the utmost ambition of the circular model. The elements of CE can be definitively outlined across all pillars of the vision, particularly in pillar three as well as pillar four (environmental development). Figure 1 highlights some of the ongoing sustainability projects with stewardship from QNV2030, reflecting the government’s commitment to promoting a circular economy and sustainability in Qatar. The ongoing sustainability programs are listed below:

- Qatar developed the first smart downtown district in the world, Msheireb Downtown Doha.
- Qatar National Bank issued the first green bond from Qatar, as well as the largest green bond issued by a financial institution in the MENA region in 2020.
- Qatar has the fifth highest number of LEED-certified buildings outside the USA, located in Lusail and Msheireb.
- Green transportation targets were set in place to transition 25 percent of its public transit bus fleet from gasoline to electric in 2022 and to 100 percent by 2030. Over 400 electric vehicle charging stations were put in

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place by 2022. Additionally, 10 percent of all vehicle sales are targeted to be in electric vehicles by 2030.

- District cooling technology accounts for 17 percent of total air conditioning demand in the nation.
- Hamad Port is the largest eco-friendly project in the MENA region, as well as one of largest green ports in the world.
- Qatar Energy’s sustainability project has a target to capture more than 7Mtpa of CO₂ in the country.

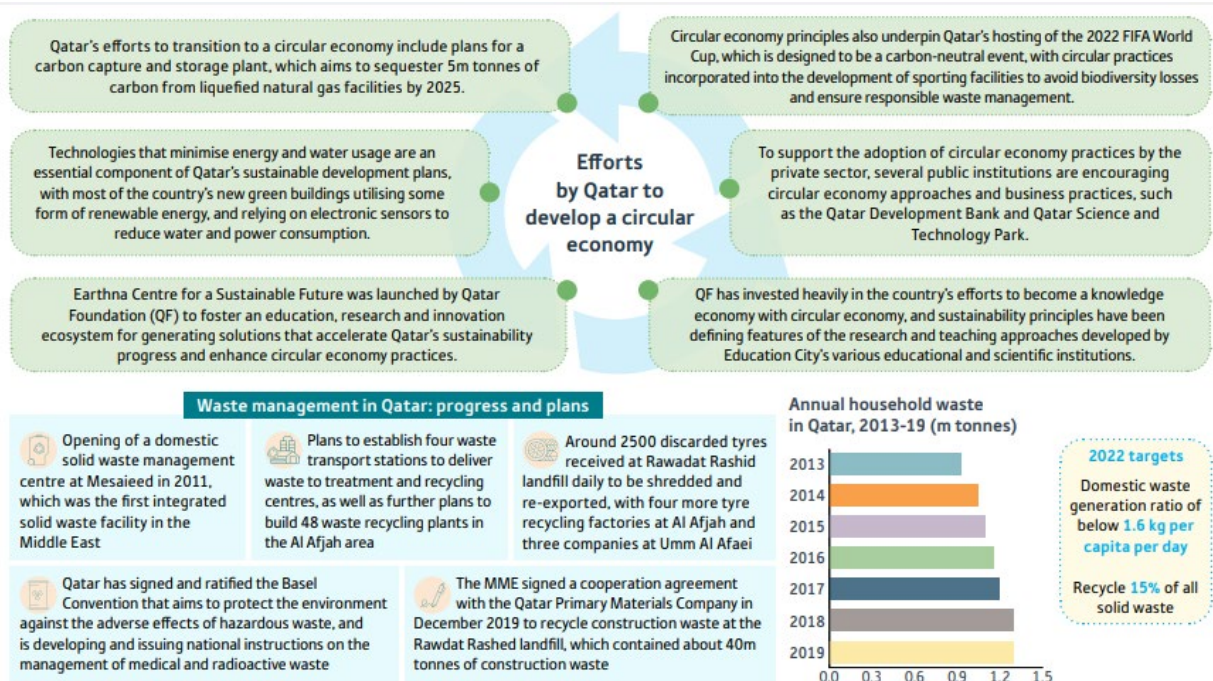
The green aspirations of QNV2030 were given extended support through the Second National Development Strategy (2018 – 2022). Aimed at sustainable consumption and production (SCP), most of the program’s goals were realized by the end of 2022. There was a reduction in the per capita consumption of water by 15 percent through the national program “Tarshid,” acceleration of recycled materials used in construction projects to 20 percent of total materials used (United Nations, 2018), and a reduction of the per capita electricity consumption rate by 8 percent, along with the expansion of the recycling rate of solid waste to 15 percent (Planning Statistics Authority Qatar, 2019). Additional outcomes of 2nd NDS are clean air and effective climate change responses – elimination of excess ozone levels through improved air quality management and halved gas flaring from 0.0230 to 0.007 billion cubic meters per million tons of energy produced; reduced waste, more recycling and more efficient use of recyclable products; establishment of a solid waste management plan which can increase the recycling rate of solid waste from 8 to 38 percent; domestic waste generation at 1.6 kilograms per capita per day; nature and natural heritage conserved, protected and sustainably managed; establishment of a comprehensive electronic biodiversity database and expansion of actively managed protected areas; more sustainable urbanization and a healthier living environment through the development of 3 shady green space corridors, as well as a system put in place to monitor their effect on health and air quality in urban areas; promotion of sustainable infrastructure by Qatar Foundation; and increase in the environmental awareness among Qataris and its residents (Qatar 2nd NDS, 2018 – 2022).

Qatar also launched Qatar’s National Vision 2030 as a strategic plan to develop Qatar into an advanced society capable of sustaining its development and providing a high standard of living for its people. This National Vision highlighted 5 major challenges that Qatar will face –

1. modernization and preservation of traditions
2. needs of the current generation and of future generations
3. management of economic growth, management of uncontrollable expansion
4. size and quality of the expatriate labor force and the selection of path of development
5. economic growth, social development, and environmental management (Qatar Government Communication Office, 2023).



Figure 1: Initiatives Taken by Qatar to Develop a Circular Economy



Source: Qatar's Sustainable Economic Transition, August 2022

Oman

Oman's initiative to promote circular economy and thus a sustainable economy, is well articulated in its Vision 2040 and Oman Energy Master Plan 2040. These documents strategize the Omanis' efforts to achieve a sustainable economy as well as to restructure their economic model. The aim of Oman Energy Master Plan 2040 is to address the domestic energy demand especially on natural gas resources, long-term strategy on renewable energies, promotion of energy efficiency and improvement in demand-side management on an individual as well as industrial level (Gulf Intelligence Consultancy, 2017). Additionally, both documents also promote a circular economy in line with the needs of its people and consistent with the domestic climate change adaptation strategy as well as United Nations – Sustainable Development Goals (UN-SDGs)(Al-Alawi, B. et al., 2020).

Oman's Vision 2040 was introduced to provide strategic guidance in creating a sustainable economic model. The Vision outlines ways for Oman to move away from the oil-based industry into other service sectors such as tourism (Azar, E., and Abdel Raouf, M., 2018). In addition to the Vision 2040, the government also initiated Oman's National Energy Strategy 2040 with the objective of driving various efforts to implement circular economy. It is the government's response to the national need for sustainability, coupled with its commitment to adhering to and complying with climate change action at the global level (El-Katiri et al., 2019).



Additionally, Oman Vision 2040 has 4 pillars – a society of creative individuals, a competitive economy, responsible state agencies and an environment with sustainable development. Under the pillar of an environment with sustainable components, the Omani government has specific objectives that it aims to achieve which are a green and circular economy that addresses national needs and moves consistently with global trends, an environment that ensures the balance between environmental, economic and social requirements in line with the sustainable development guidelines, sustainable use of and investment in natural resources as well as wealth to deliver high added value, renewable energy, diversified sources of energy and rationalized consumption to achieve energy security, etc. (Oman Vision 2040 – Implementation Follow-Up Unit).

Furthermore, Royal Decree no. 46/2009 accepted Bee'ah (Oman Environmental Services Holding Company) in 2009 as a legal entity responsible for managing solid waste in the country. The establishment of Bee'ah as the authority over proper waste management was aimed at producing more sustainable waste management practices as well as to govern the necessary infrastructure, waste collection points and promotion of public awareness about the importance of environmentally sustainable disposal practices throughout the Sultanate (Bee'ah, 2017). While Bee'ah manages the waste, the Al Amerat Landfill project focuses on the use of an environmentally friendly method to process the solid waste. As the population of Oman has grown rapidly, the country has produced increasing amounts of solid waste each year. To combat this, the government initiated

the Al Amerat sanitary landfill, which processes solid waste in a scientific and environmentally friendly way, with better engineered landfills, waste transfer stations, and waste treatment plants which will provide the blueprint for all future solid waste management projects across Oman (Zafar, S., 2018).

Bahrain

The Bahrain's Economic Vision 2030 which was launched in October 2008 by His Majesty King Hamad bin Isa Al Khalifa is a comprehensive economic vision for Bahrain with provisions of explicit direction for the continued development of the Bahraini economy as well as a shared objective of building a better life for every Bahraini. This vision concentrates on shaping the vision of the government, society and the economy based on 3 guiding principles – sustainability, fairness, and competitiveness – as well as addresses the Bahraini's Sustainable Development Goals (SDGs) 2030. As an example, under the sustainability guiding principle, the private sector should be able to drive Bahrain's economic growth independently and its economic prosperity should be built on a firm foundation (bahrain.bh, 2021). One of the public-private partnerships that is highlighted in this vision is Tabreed Bahrain that provides environmentally friendly district cooling solutions to support the regional energy sustainability strategy. Tabreed Bahrain provides district cooling services operated by a 22,800 RT plant using sea water and running a 14-kilometer chilled water distribution network across major developments including Bahrain Financial Harbor,



Bahrain World Trade Center, the Reef Island and Avenues Mall (tabreedbahrain.com).

Bahrain has significantly invested in the offshore financial sector to promote available financial services to non-residents. This helps in circumventing aspects of the non-resident's home country or jurisdiction in the country's strategy of strengthening their economic resilience in the GCC region. These efforts will promote shariah financing, conventional, and green financing options for potential green investments that will drive Bahrain's green economy in the future. The Supreme Council for Environment (SCE) of the Kingdom of Bahrain began collaborating with the Ministry of Industry, Commerce, and Tourism to develop policies and regulations that align with sustainable alternatives to current practices (UNEP, 2019).

Up until the 26th United Nations Climate Change Conference of the Parties (COP 26) in Glasgow, held from October 31 to November 13, 2021, Bahrain had addressed CO₂e emissions reductions implicitly within its existing energy targets that were set in 2017. The National Renewable Energy Action Plan (NREAP) 2017 sets a national renewable energy target of 5 percent renewable energy by 2025 and boosted to 10 percent by 2035 with a proposed renewable energy mix consisting of solar, wind and waste-to-energy technologies (SEA, 2021). From the carbon governance perspective, Bahrain has ambitiously set a national target of achieving carbon neutrality by 2060, with an interim goal of a 30% reduction in CO₂e emissions by 2035. Bahrain's commitment to achieving a clean environment and a more sustainable economy

are spearheaded by the programs and initiatives outlined in policies such as the NREAP and its Vision 2030. The goal is to shift gradually to green energy procurement, sustainable finance mechanisms, and environmentally oriented corporate social responsibility programs for companies throughout the Kingdom. This calls for cooperation from the Kingdom's industrial sectors such as transportation, construction, and power generation especially, but also with the public at large in adopting a more sustainable lifestyle (Alsabbagh, M. and Alnaser, W.E., 2022). In 2022, Bahrain doubled down on its commitment to environmental sustainability by issuing a ministerial order to prohibit the use of single-use plastic bags at supermarkets and malls and is moving aggressively toward the development of solar parks and wind energy plants to supplement the Kingdom's energy needs.

Kuwait

Kuwait created "Kuwait's Vision – The Year 2035" in 2020 with the main objective of developing a more sustainable economy for Kuwait (Azar, E., and Abdel Raouf, M., 2018) with one of its seven pillars dedicated to promoting a sustainable living environment for Kuwaiti society (El-Katiri et al., 2019). To stimulate the use of domestic renewable energy at an average 9 percent, Kuwait has increased the wind capacity generation through Shagaya Wind Plant (Beijani et al., 2019).

Furthermore, Kuwait implemented policies and regulations to trigger urban planning and design along with construction practices that adopt the circular economy principles. This has been done

through the review of existing urban development policies and regulations, implementation of urban regeneration policies for better assets optimization and improvement in urban planning accessibility, with an aim to minimize traffic volume as well as pollution. Finally, Kuwait has developed a downstream oil industrial city to accommodate a mix of energy-related industries to integrate upstream and downstream hydrocarbon activity (Callen et al., 2014).

Table 1 below highlights various visions and strategies introduced by GCC countries with stipulated objectives to promote the circular economy through sustainability.

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Table 1: GCC Initiatives Towards Sustainable Economy

Country	Vision and Strategies	Aims and Objectives
UAE	UAE Vision 2021 Green Economy Abu Dhabi Vision 2030	The policies and strategies have objectives toward various sustainable strategies on both economic and resource levels, to develop UAE’s resiliency and promotion of economic diversification.
Qatar	Qatar National Vision 2030	Qatar’s blueprint to enable them to achieve sustainable development by 2030 through economic, social, human and environmental development.
Oman	Oman’s Vision 2040	Oman’s vision to develop a sustainable economy less dependent on the oil sector.
Bahrain	The Economic Vision	A comprehensive approach to develop Bahrain in the right direction for the betterment of Bahrainis.
Saudi Arabia	Saudi Vision 2030	The Saudi vision has a strong target to progress into a more sustainable economy away from the current oil-based economy.
Kuwait	Kuwait’s Vision: The Year 2035	The Kuwait vision to promote and set up a sustainable economy in the country.

Source: Al-Alawi, B., Cavallari, G. et al, 2020



The various national policies established by some GCC nations to stimulate circularity in their four (4) main sectors: oil and gas, chemical, power and utilities and metal and mining are outlined in Table 2 below.

Table 2: National Policy to Promote Circularity in FOUR (4) Main Sectors in Selected GCC Countries

GCC Country	National Policy
Qatar	2018 - Qatar National Vision 2030 integrates the goals and objectives of the UN 2030 Agenda for Sustainable Development into sections of the National Development Strategy (2018-2022).
United Arab Emirates	<p>2010 - UAE Vision 2021 includes policies to support a transition towards a more circular economy.</p> <p>2015 - UAE’s National Sustainable Production & Consumption plan (2019-2030) sets out a framework for supporting the transition to a circular economy and identifies oil and gas as a priority sector.</p> <p>2017 - The UAE National Energy Plan 2050 sets out plans to cut CO2 emissions by 70% and increase renewable energy and nuclear capacity by 50% by 2050.</p> <p>2017 - The UAE’s Water Security Strategy 2036 aims to reduce potable water consumption by 20% and increase reuse of treated water to 95% by 2036.</p> <p>2019 - The Coalition of Innovation in Recycling towards a Closed Loop Economy (the Coalition Circle) signs a pledge with the Ministry of Climate Change and the Environment to develop a circular economy model in the UAE.</p> <p>2020 - Abu Dhabi’s Environment Agency publishes a Single Use Plastic Policy, which articulates a long-term ambition to transition towards circularity practices with the possibility for nationwide ban implementation.</p> <p>2021 - The Abu Dhabi Department of Energy launches its Policy for Energy Production from Waste to support Abu Dhabi’s transition towards a more sustainable economy and highlight the circular economy’s role.</p>
Saudi Arabia	2020 - Saudi Arabia launches the concept of a circular carbon economy during its presidency of the G20.
Oman	2021 - Oman Environmental Service Holding Company will regulate 11 waste streams to support the transition to a circular economy.

Source: (1), (2), and (3) PwC, 2021.

In addition to the government’s visions, strategies, and national policies there are numerous initiatives explicitly aimed at the transition to a circular economy, such as renewable resources, maximizing the product life cycle, by-product recovery, and waste management that have been practiced by both government-linked and private companies. Table 3 highlights the potential of these initiatives to advocate circularity in four main sectors in the GCC region.

Table 3: Circular Economy Initiatives and Their Potential to Promote Circularity in FOUR Main Sectors in GCC Countries

Circular Economy Initiatives	Oil & Gas (Potential) ¹	Chemicals (Potential) ¹	Power & Utilities (Potential) ²	Metals & Mining (Potential) ³
Prioritize Renewable Inputs	Resource Efficiency (Very High) Circular Sourcing (High)	Sustainable Design (Very High) Circular Sourcing (High) Resource Efficiency (High)	Circular Sourcing (Very High) Resource Efficiency (Very High) Sustainable Design (High)	Circular Sourcing (High) Resource Efficiency (High)
Maximize Product Use		Usage Optimization/Maintenance (Very High) Product-as-a-Service (High) Reuse/Redistribution (High)	Usage Optimization/Maintenance (Very High)	Usage Optimization/Maintenance (High) Reuse/Redistribution (High)
Recover By-Products and Waste Management	Industrial Symbiosis (Very High) Recycling from Manufacturing Refurbishing/Remanufacture (High)	Recycling from Consumption (Very High) Refurbishing/Remanufacture (High) Industrial Symbiosis (High) Recycling from Manufacturing (High)	Industrial Symbiosis (High) Recycling from Manufacturing Recycling from Consumption (High) Refurbishing/Remanufacture (Medium)	Refurbishing/Remanufacture (High) Industrial Symbiosis (High) Recycling from Manufacturing Recycling from Consumption (High)
Case Study	Aramco Abu Dhabi National Oil Company (ADNOC)	SABIC ADNOC Borouge (Joint Venture between ADNOC and Borealis)	Dubai Electricity & Water Authority (DEWA) Mohammed bin Rashid Al Maktoum Solar Park, Dubai	Emirates Global Aluminium (EGA) Emirates Steel Arkan

Source: (1), (2) and (3) PwC, 2021.

EXPERIENCE OF OTHER COUNTRIES IN NORTH AFRICA ON CIRCULAR ECONOMY

Egypt

Circular economy has been underpinned indirectly in various Egyptian national policies, for instance,



Sustainable Development Strategy 2030 (SDS2030), the Sustainable and Green Growth Strategy, National Action Plan for Sustainable Consumption and Production (SCP) as well as the National Solid Waste Management Program (NSWMP). In addition, the CE activities are indirectly endorsed under the sustainable development theme as specified under numerous articles such as Article 27 – Economic System, Article 41 – Housing, Article 46 – Environment and Article 79 – Food of the Egyptian Constitution of 2014 (Maamoun, N., 2021).

The various national strategies, plans, initiatives and programs help lay the foundation for practical implication of CE conducive activities for Egyptian companies. They have been seen in practice in organizations like Tagaddod for the refinement of cooking oil (tagaddod.com), Bariq for recycling (<http://bariq-eg.com>), Switch-MED (capacity building and training programs on resource savings), Better Cotton Initiative (cotton agriculture process and sustainable fashion designs), IMKAN Go & IMKAN Grow (support for 20 innovative startups and seven micro- and small enterprises (MSEs) which is funded by Japan and jointly implemented with Egypt's Ministry of Trade and Industry as well as IEE UNIDO (implementation of ISO 50001 compliant energy management system). The integration of CE in Egyptian national policies, strategies, and initiatives has the potential to reap endless economic, environmental, and social benefits.

Jordan

The circular economy initiative in Jordan is well-

documented in the Sustainable Consumption and Production National Action Plan (SDG12.1). This document has been developed through nationally owned multi-stakeholder processes, rooted in Jordan's focus on 'green' economic growth as well as circular economy. The document also outlines the logistics of the plan, namely, agriculture and food transport, as well as waste management through selected projects and initiatives (SwitchMed in Jordan, 2020).

Another vital document that lays out the agenda for a circular economy and sustainability in Jordan is Vision 2025. This document stresses the need for reconciliation between government revenues and expenditures, management of the sustainable use of limited natural resources such as water and energy, along with issues of food security and import dependency in accomplishing long-term sustainability goals (Jordan's Ministry of Environment, 2016).

Moreover, Jordan's Sustainable Consumption and Production Strategy and National Action Plan (SCP – NAP 2016 – 2025) is positioned on a shared national vision promoted through direct involvement between stakeholders and partners which transcribes into strategic as well as operational objectives for selected consumption and production to achieve circular economy agenda goals. Amongst the stakeholders and partners that team up to implement objectives for the circular economy in Jordan are various organizations such as the Ministry of Finance, the Ministry of Environment, the Chamber of Industries, small and medium enterprises (SMEs), civil society, and green financing institutions, as well as international development agencies. These

stakeholders and partners are instrumentally committed to developing the policy, governance, and legal framework necessary for this initiative to succeed. The primary focus is on innovation networks and knowledge platforms for the promotion of best environmental practices and technologies, in addition to the education and support of sustainability in three key areas – agriculture and food industry, transportation, and the waste management sector (Jordan’s Ministry of Environment, 2016).

Lebanon

Lebanon is party to several multi-lateral environmental treaties, protocols and conventions. Much of their national and sectoral legislation, policies, and laws have also incorporated various degrees of sustainability principles. For example, the Environment Protection Law (444/2002) directed at the protection of environmental resources and air quality control, along with numerous application decrees such as decree 847/2012 on the environmental compliance of industrial establishments, decree 8633/2012 on the Fundamentals of Environmental Impact Assessment (EIA) and decree 167/2017 on economic incentives for environmental protection. All of these regulations reiterate the commitment to sustainable consumption and production (SCP) through cleaner production techniques, opening up the bio-diversity conversation, prevention of natural resource degradation, environmental monitoring (such as pollution sources and abatement systems), along with establishing landfill standards and promoting recycling (Lebanon Voluntary National Review, 2018).

Furthermore, the Ministry of Environment and Industry developed Lebanon’s Action Plan for Sustainable Consumption and Production for the Industrial Sector in 2015 in association with SwitchMed. This action plan intended to adopt the best available techniques, initiated SCP approaches in policy and institutional frameworks, exerted life cycle thinking as well as highlighted major economic and social challenges. In addition, the Ministry of Industry’s Integrated Vision for the Industrial Sector (2025), Executive Strategy (2016 – 2020), and Operational Plan (2017 – 2018) have integrated the principles of sustainability into their texts. The Executive Strategy has several operational objectives including the promotion of green industry to foster good environmental management, along with the SCP principles in the industrial sector (Lebanon Voluntary National Review, 2018).

Tunisia

Tunisia initiated various plans to promote circular economy through the Sustainable Consumption and Production (SCP) approach. Among them are the 10-year framework action plan for the agri-food sector, the 10-year framework action plan for the tourism sector, and the coordination mechanism for the Sustainable Consumption and Production – National Action Plan (SCP-NAP) implementation. The main purposes of these frameworks are to encourage sustainable practices, along with effective business models in the agri-food and eco-tourism sectors.

Furthermore, pilot projects were conducted aimed at demonstrating the necessary measures



in relation to the energy, water, waste, and eco-labelling applications for medium-sized tourist sites in the Southern Mediterranean region. Additional pilot projects focused on commercial models and developments to bolster green and socially responsible business models for Tunisian eco-tourism. Through becoming internationally certified based on ecotourism standards, and the development of an online platform to nurture fair-trade products, Tunisia has been able to support socially and environmentally responsible local producers.

SCP-NAP is one of the national efforts to promote sustainable tourism as well as to create new job opportunities. Moreover, it is also one of the mechanisms that incorporate circular economy criteria such as waste streams in the Tunisian oil industry sector. Finally, the Central Bank of Tunisia has been a member of the IFC/World Bank's Sustainable Banking Network to stimulate banking, as well as the sustainable finance sector.

In Tunisia, various agencies and relevant stakeholders have worked together to meet goals toward the circular economy agenda. Among them are the Ministry of Environment and Sustainable Development, Tunisia Ecotourism, ABCO (canned fish producer), Maklada Industries (wires & cables producer), NOEL (kid's shoe producer), SAIPH (pharmaceutical laboratory), El Mensej (social company) and United Nations Industrial Development Organization (UNIDO). Various national partners in Tunisia, Egypt, Lebanon, and Morocco have been assisted by UNIDO's experts to master the national Life Cycle Assessment (LCA) database to promote awareness of the framework for a Single Market for Green Products

“

The European Commission (EC) endorsed a new Circular Economy Action Plan in March 2020 for the period 2020 – 2024 with 35 actions along the entire lifecycle of products

”



initiative. In addition, this framework will be a driver for encouraging the implementation of greener standards for national manufacturing businesses to compete in the EU market (Switch Med, 2018).

Table 4 below features various SCP national action plans by Egypt, Jordan, Lebanon, and Tunisia to promote circular economy development in their countries.

Table 4: National Priorities as Expressed in the SCP National Action Plans in the Selected North African Countries

MENA Country	SCP National Action Plans	Demonstration of Pilot Projects on Circular Economy
Egypt	Policy instruments for its SCP program Integrated community development Sustainable agriculture Sustainable water management Sustainable and renewable energy applications Solid waste management	Reducing plastic bag consumption A sustainable public procurement assessment
Jordan	Agriculture and food industry Transport sector Waste management sector	Improving solid waste management Training in solid waste management
Lebanon	Adopt best available techniques to promote SCP in the industrial sector Introduce SCP approaches related to the industrial sector in the policy and institutional frameworks Educate and raise awareness among consumers in relation to SCP in the industrial sector	Composting winery waste
Tunisia	10-year framework action plan for the agri-food sector 10-year framework action plan for the tourism sector Coordination mechanism for SCP-NAP implementation	Sustainable practices in eco-tourism Reinforcing the eco-tourism business model Recovering olive oil byproducts and waste Replacing lead in industrial paint

Source: Switch Med, 2018 – Switching to the Circular Economy in the Mediterranean

Furthermore, Table 5 shows the dimensions covering efficient and sustainable resource use, natural capital protection, green economic opportunities, and social inclusion that contribute to the overall green growth index scores in 10 GCC and North African countries. Efficient and Sustainable Resource Use (ESRU) means using the Earth’s limited resources in a sustainable manner while minimizing impacts on the environment. It allows us to create more with less and to deliver greater value with less input. The indicators for natural capital protection (NCP) consist of biodiversity and ecosystem protection, environmental quality, GHG emissions reduction, and cultural and social value. Green Economic



Opportunities (GEO) are defined as low carbon, resource efficient, and socially inclusive, and where employment growth and income are driven by public and private investment. Investment into sustainable economic activities, infrastructure, and assets allow reduced carbon emissions and pollution, enhanced energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services. The indicators for social inclusion (SI) consist of social equality, social protection, gender balance, and access to basic services and resources. Most of these countries scored low in NCP and GEO, with index scores ranging between 23.41 to 61.75 and 11.79 to 46.16 respectively. However, most countries scored moderately well for SI and ESRU. It is crucial for these countries to refocus on greener infrastructure, sustainable resources, and resource efficiency to improve their overall green growth index scores.

Table 6 illustrates Circular Carbon Economy (CCE) Index Scores and Values for GCC and parts of North Africa for the Year 2022 from two perspectives – enablers score and performance score. The Enablers Score looks at policies and regulation; technology, knowledge and innovation; finance and investment; business environment and system resilience. The Performance Score looks at energy efficiency; renewable energy; electrification; nuclear energy; fuel switching; natural sinks; carbon capture, utilization and storage as well as hydrogen. Overall, almost all countries scored quite low in all fields, both in their enabler score as well as their performance scores, with the UAE performing better (Rank 17) as compared to the rest. These indicators can be used for the listed countries to benchmark with the others as well as to draft reliable policies and strategies to achieve better circular economy performance moving forward.

Table 5: Green Growth Dimension Sub-Indices and Green Growth Index

Country	Efficient & Sustainable Resource Use (ESRU)	Natural Capital Protection (NCP)	Green Economic Opportunities (GEO)	Social Inclusion (SI)	Green Growth Index Scores
Qatar	47.94	36.00	12.66	55.69	33.22
UAE	38.89	46.62	---	66.78	---
Saudi Arabia	31.10	35.75	30.75	65.27	38.65
Bahrain	30.24	23.41	---	---	---
Oman	32.37	41.63	29.10	---	---
Kuwait	45.45	43.88	11.79	57.28	34.07
Egypt	24.87	54.85	39.72	61.17	42.66
Jordan	33.92	47.37	13.04	67.16	34.44
Lebanon	44.09	56.10	24.49	51.56	42.04
Tunisia	28.27	61.76	46.16	75.42	49.65

Source: GGGI Technical Report No. 16 – Green Growth Index 2020: Measuring Performance in Achieving SDG Targets



Table 6: Circular Carbon Economy (CCE) Index Scores and Values for GCC and North Africa for the Year 2022

ENABLER & PERFORMANCE INDICATOR SCORE	Qatar (Rank) (Value)	UAE (Rank) (Value)	Saudi Arabia (Rank) (Value)	Oman (Rank) (Value)	Kuwait (Rank) (Value)	Bahrain (Rank) (Value)	Egypt (Rank) (Value)	Jordan (Rank) (Value)	Lebanon (Rank) (Value)	Tunisia (Rank) (Value)
Policies & Regulation	20.59 (59)	48.65 (27)	40.95 (36)	16.37 (64)	17.47 (61)	26.90 (52)	30.50 (45)	32.01 (42)	31.07 (44)	34.67 (40)
Technology, Knowledge & Innovation	33.18 (19)	29.30 (21)	23.28 (26)	22.81 (28)	18.45 (34)	15.19 (43)	17.53 (35)	17.27 (36)	14.97 (44)	18.98 (33)
Finance & Investment	19.70 (34)	50.02 (16)	14.84 (44)	23.30 (30)	13.25 (49)	24.36 (29)	12.34 (50)	15.37 (43)	23.14 (31)	9.15 (55)
Business Environment	59.72 (25)	70.54 (12)	62.84 (18)	55.83 (34)	54.67 (36)	58.98 (27)	48.15 (49)	53.62 (40)	45.01 (53)	49.35 (47)
System Resilience	83.79 (5)	67.01 (24)	71.49 (13)	68.93 (20)	80.01 (9)	66.19 (25)	59.45 (34)	65.03 (27)	37.74 (52)	60.31 (33)
ENABLERS SCORE (RANK)	43.40 (27)	53.10 (17)	42.68 (29)	37.45 (35)	36.77 (37)	38.32 (34)	33.60 (45)	36.66 (38)	30.39 (51)	34.49 (44)
Energy Efficiency	26.91 (57) (0.1816)	68.77 (35) (0.104)	49.30 (50) (0.1401)	24.33 (58) (0.1864)	21.09 (60) (0.1924)	0.00 (63) (0.2348)	86.35 (17) (0.0714)	80.69 (24) (0.0819)	68.02 (39) (0.1054)	74.16 (29) (0.094)
Renewable Energy	0.00 (63) (0.00)	2.12 (54) (0.749)	0.03 (62) (0.0173)	0.00 (63) (0.0013)	0.22 (60) (0.0822)	0.31 (58) (0.114)	4.78 (47) (1.6814)	22.84 (19) (8.0111)	5.99 (44) (2.104)	6.02 (43) (2.1147)
Electrification	44.60 (37) (18.8623)	49.61 (28) (20.7429)	44.76 (36) (18.9241)	27.64 (53) (12.5011)	79.04 (3) (31.7823)	99.39 (2) (39.413)	57.21 (16) (23.5932)	73.01 (6) (29.5195)	74.61 (5) (30.1207)	43.60 (38) (18.4876)
Nuclear Energy	0.00 (21) (0.00)	0.0039 (20) (0.0007)	0.00 (21) (0.00)	0.00 (21) (0.00)	0.00 (21) (0.00)	0.00 (21) (0.00)	0.00 (21) (0.00)	0.00 (21) (0.00)	0.00 (21) (0.00)	0.00 (21) (0.00)
Fuel Switching	33.33 (41) (33.3333)	36.03 (29) (36.0349)	57.104 (11) (57.1043)	32.407 (43) (32.4068)	67.427 (7) (67.4266)	33.385 (38) (33.3848)	49.998 (16) (49.9978)	82.147 (3) (82.1473)	8.512 (64) (8.5117)	41.95 (23) (41.9496)
Natural Sinks	50.109 (5) (75.1641)	68.98 (3) (100.00)	66.894 (3) (99.9997)	31.183 (34) (46.774)	19.538 (58) (29.047)	67.123 (2) (100.00)	36.767 (27) (55.1291)	42.676 (17) (63.1716)	24.907 (50) (26.4404)	22.17 (53) (29.7383)
Carbon Capture, Utilization & Storage	52.36 (7) (0.0088)	29.30 (8) (0.0049)	4.75 (14) (0.0008)	0.00 (29) (0.00)	2.95 (18) (0.0005)	0.00 (29) (0.00)	0.00 (29) (0.00)	0.00 (29) (0.00)	0.00 (29) (0.00)	0.00 (29) (0.00)
Hydrogen	0.00 (24) (0.00)	0.08 (22) (0.0019)	53.84 (8) (1.2281)	0.00 (24) (0.00)	0.00 (24) (0.00)	0.00 (24) (0.00)	3.40 (16) (0.0775)	0.00 (24) (0.00)	0.00 (24) (0.00)	0.00 (24) (0.00)
PERFORMANCE SCORE (RANK)	25.91 (34)	31.86 (23)	34.59 (18)	14.44 (61)	23.78 (43)	25.02 (38)	29.81 (26)	37.67 (14)	22.75 (50)	23.49 (46)
TOTAL CCE INDEX SCORE (RANK)	34.66 (31)	42.48 (17)	38.63 (22)	25.95 (50)	30.38 (41)	31.67 (39)	31.70 (38)	37.17 (25)	26.57 (49)	28.99 (44)

Source: Circular Carbon Economy (CCE) Index 2022 (kapsarc.org)





Finally, Table 7 has mapped out various environmental, social, and governance (ESG) initiatives adopted by numerous GCC and North African countries to facilitate their ambitions to promote the implementation of the circular economy model either through climate change and net zero commitments, sustainable finance, social laws or policies, and governance aspects.

Table 7: Notable Environmental, Social, and Governance (ESG) Related Laws, Regulations, Sovereign Deals, and Policy Announcements in GCC and Selected North African Countries in 2021

Country	Climate Change and Net Zero Commitments	Sustainable Finance	Social Laws/Policies	Governance
Qatar	Qatar aims to reduce greenhouse gas emissions by 25% by 2030	Qatar Stock Exchange Issued ESG index to identify the top 20 securities that demonstrate the best ESG profile		Qatar Stock Exchange (QSE) ESG Guidance issued in 2017 QSE is likely to introduce mandatory ESG disclosure requirements
UAE	Net Zero 2050 Strategic Initiative US \$168bn funding commitment to renewable energy including Masdar City \$15bn pledge Hosting COP 28 in 2023 ADNOC Zero-Flaring objective AI Reyadah Abu Dhabi Carbon Capture Company	Abu Dhabi Sustainability Week and related sub-events on Sustainable Finance and Energy Including awarding of Zayed Sustainability Prizes worth \$3m. Government Sustainable Finance Framework 2021-2031 Notable private sector transactions from Emirates, Etihad Airlines, AI Futtaim DIFC Regulator DFSA ESG Hub announced in Q4 2021 TBD Mubadala ESG Unit The DFSA launched the Task Force on Sustainable Finance to support best regulatory practices in sustainable finance standards in the DIFC	Human Rights Institute / Law Federal Personal Data Privacy Law ADGM Data Protection Regulations update New Labour Law enhancing working conditions	CB UAE ethical guidelines for FI's use of enabling technology and updated outsourcing regulations SCA requirement for ESG reporting for publicly listed companies SCA requirement of at least 1 female board member for publicly listed companies Public Officials Accountability Law The Race Towards ESG Integration in the UAE public webinar targeted at the private sector, hosted by the DIFC Academy on 31 August 2021
Saudi Arabia	Net Zero 2060 Target National Renewable Energy Program to meet 50% of its domestic energy needs from renewable sources by 2030 Circular Carbon Economy Framework and 4Rs Green Initiative to plant 10 billion trees in KSA and across the ME region to mitigate emissions. Environmental Law regulations issued July 2021 Waste Management Law issued August 2021	Red Sea tourism project secures \$3.76bn in green financing Government funding announcement for green hydrogen energy plants Growing Sustainability – ESG, stock exchanges and Tadawul's role Limit the impact of external factors and adopt rules for fiscal sustainability. Tadawul's ESG disclosure guidelines	Data Protection Law issued September 2021	Public Investment Fund (PIF) announcement of ESG Framework and Green Bond Issuance

Bahrain	Net Zero 2060 Target	Sustainable Energy Authority tender announcement for 2 solar plant projects pursuant to government pledge to cover 5% of electricity demand with renewables by 2025. Bahrain Bourse (BHB) 7 December 2021 webinar titled “Evolving Bahrain’s ESG Landscape & Sustainable Financing.”	Developments with regard to children’s rights Amending labor law to close the gender pay gap.	Bahrain Bourse (BHB) – publication on Sustainable Finance titled “Evolving ESG Landscape & Capital Markets.” BHB joined the UN Sustainable Stock Exchanges (SSE) initiative to promote sustainable and transparent capital.
Oman	Updates to its climate action plan in July to include a 7% reduction in emissions by 2030.	Green hydrogen plant project Muscat Stock Exchange (MSX) announced the institution of a new section under the name of “ESG and D&I.” Central Bank of Morocco member of IFC/World Bank’s Sustainable Banking Network	New Labour Law enhancing working conditions and annual leaves	
Kuwait	New Kuwait 2035 Vision calls for the creation of sustainable living	One of the world’s biggest wealth funds targets sustainable finance- Kuwait Investment Authority has applied the ESG standard set by an independent globally recognized ESG benchmark provider.		Boursa Kuwait launched its new ESG guide to raise awareness and drive the embrace of Corporate Sustainability in the Kuwaiti capital market. The guide aims to introduce the ESG universe to companies listed on the stock exchange and highlight the benefits of ESG disclosure and best practices.
Egypt	Hosting UN COP 27 on Climate Change in November 2022 Update to its sustainable development / climate change strategy Government funding commitments for green energy including more solar plants and hydrogen projects (including transmission to African countries)	Central Bank circular to FI’s relating to a consultation about sustainable finance guidelines / ESG guidelines in July 2021 Sovereign Green Bond issuance Increase SME financing from 20% to 25% Egypt Central Bank member of IFC/World Bank’s Sustainable Banking Network	Launching the “Closing the Gender Gap Accelerator” action plan in 2021	The development of new mechanisms for youth participation in decision-making and the formulation of public policies Establishing a National Anti-Corruption Academy to enhance the performance of the existing anti-corruption system



Jordan	National Energy Strategy 2020- 2030, aims to reduce the carbon emissions by 10 % by 2030 and expand renewable energy’s share from 11 % in 2020 to 14 % in 2030 which is supported by the Renewable Energy and Energy Efficiency Law 2012 Climate Change integrated into Jordan National Green Growth Plan 2017-2025			Secured ranking of 5 th MENA country on SDG Index Report 2021
Tunisia		Central Bank of Tunisia member of IFC/World Bank’s Sustainable Banking Network		

Source: ESG Developments in the MENA and GCC Region: Look Back 2021 and Look Ahead 2022

CHALLENGES FOR TRANSITIONING TO A CIRCULAR ECONOMY IN THE GCC REGION

Generally, all GCC countries carry a significant ecological footprint and are subject to domestic environmental challenges like water scarcity, pollution and biodiversity, yet they also bear witness to wider challenges like climate change and resource depletion. Their national governments play a vital role in reinforcing green and circular business regulations, along with facilitating the transition to a circular economy by enforcing policies and regulations, implementing fiscal incentives, expediting access to financing, strengthening capacity-building, and knowledge dissemination along with research and development (R&D).

The most immediate challenges that can significantly limit green businesses and circular economy in most of the sectors in the GCC region are:

- I. Establishment of viable business cases that justify the proposed CE program for the evaluation in the start-up phase or as public subsidies with the hope to secure credit or funding to promote circular projects.
- II. Obstructive regulations which do not support eco-innovative developments as well as disrupt innovative business models, and inadequately promote the adoption of circular strategies by companies.
- III. Insufficient knowledge and skills in support services to transform production processes and promote circular economy strategies.
- IV. Conservative financial sector especially when it comes to risky investments in circular economy projects.
- V. Insufficient collaboration in supply chains and between market actors in waste management, lack

of information transfer on products and waste streams along with incoordination to accomplish the circular economy objectives.

VI. Lack of demand for green and circular products and services in addition to limited market opportunities for green as well as circular products and services.

Furthermore, there are general institutional and political obstacles which are more complex to address such as inadequate enforcement of environmental regulations because of unclear legal frameworks, improper monitoring systems as well as insufficient financial capacity; institutional weaknesses that can potentially avert initiatives' coordination over different ministries, policies and sectors; corruption as well as clientelism through lack of transparency in the award of the public contract; bureaucracy and unclear regulations to acquire formal authorizations along with environmental permits. To sum up, economic development, short-term profits, and investments in non-sustainable sectors are prioritized over environmental protection, and thus circular economy (COP21 Decision IG.24/13, 2021).

OPPORTUNITIES FOR CIRCULAR ECONOMY IN THE GCC REGION

There is currently ample opportunity for a circular economy in the GCC region, especially when it comes to the construction sector, as the region is rapidly developing and refurbishing its infrastructure. This period of vast construction presents an opportunity to future-proof the designs of the buildings as the planning is happening. Contractors and builders can optimize the future

use of buildings by planning and developing partnerships between owners and operators, enabling them to enhance the performance and value of the property with new, sustainable materials and equipping them with technology that can support sustainable operations for years to come (Poplewell, Marino, and Boyd, 2020). In addition to development, the circular economy can also inspire the development of policies and strategies in relation to the mobility and transportation sectors (Ellen MacArthur Foundation (EMF), 2019) as well as various business models in real estate such as adaptable assets, relocatable buildings, flexible spaces, performance procurement, and residual value (Acharya, Boyd, and Finch, 2020).

With regard to the energy sector, there is immense opportunity for supporting sustainable development. There is significant potential to use carbon capture and storage (CCS) in energy-intensive industries in the GCC countries such as cement production, iron and steel, and petrochemicals. For example, Qatar has taken substantial steps toward the establishment of a national CCS framework through the launch of the largest carbon recovery and sequestration facility in the region (Meltzer, Hultman, and Langley, 2014, p. 24).

The SWOT Analysis Map in Figure 1 below sums up the potential for the development of a circular economy in various economies in the GCC region. SWOT Analysis is a method to identify and analyze internal strengths and weaknesses and external opportunities and threats on the readiness to foster the development of a circular economy and its possible impacts in the GCC region.



Figure 2: SWOT Analysis on the Potentiality of the Development of Circular Economy in Various Countries in the GCC Region

<p style="text-align: center;"><u>STRENGTHS (S)</u></p> <ul style="list-style-type: none"> - Optimization approach for better and more efficient use of materials especially in the building and construction sector. - Supportive policies, regulations, and strategies have been drafted and implemented to stimulate the mobility concept and sustainable transportation. - Focus on smart as well as a synergistic specialization on strategic sectors that are important for circular economy development. 	<p style="text-align: center;"><u>WEAKNESSES (W)</u></p> <ul style="list-style-type: none"> - Insufficient knowledge and skills to promote a circular economy across businesses and industries. - Inadequate enforcement of environmental regulations due to the unclear legal framework, improper monitoring system, and unsatisfactory financial capacity.
<p style="text-align: center;"><u>OPPORTUNITIES (O)</u></p> <ul style="list-style-type: none"> - Significant potential to utilize carbon capture and storage (CCS) in energy-intensive industries. - Potential collaboration or cooperation with other regions, for example, the European Union (EU) through transferable best practices and lessons learned in the circular economy. - Good facilitation by national governments to reinforce green as well as circular businesses through fiscal incentives, capacity-building programs, etc. 	<p style="text-align: center;"><u>THREATS (T)</u></p> <ul style="list-style-type: none"> - Limited market opportunities for green products or services to stimulate the development of green businesses as well as a circular economy. - Lack of demand for green products and services to promote green businesses and a circular economy. - Poor participation amongst the supply chain along with market actors or stakeholders especially in the waste management sector. - Possible effect of a circular economy model on the labor market, which can incur high transition costs.

Source: Author’s own compilation

POTENTIAL COLLABORATION INITIATIVES WITH OTHER REGIONS

The European Union Green Deal was set as a transformational change blueprint to transform the EU into a fair and prosperous society with a modernized, competitive, and resource-efficient economy by tackling the climate change and environmental degradation problem. The Green Deal aims to achieve zero net emissions of greenhouse gases by 2050, and to stimulate economic growth that is inclusive and independent of resource use.

Additionally, the Green Deal is a roadmap to prepare the EU’s economy sustainably by turning climate and environmental challenges into opportunities across all policy areas. The European Green Deal aims to boost the efficient use of resources by moving to a clean, circular economy and offsetting climate change, reverting biodiversity loss, and diminishing pollution. It outlines investments needed and financing tools available and explains how to ensure a just and inclusive transition. The European Green Deal covers all sectors of the economy, notably transport, energy, agriculture, and industries

such as construction, steel, cement, ICT, textiles, and chemicals.

The European Commission (EC) endorsed a new Circular Economy Action Plan in March 2020 for the period 2020 – 2024 with 35 actions along the entire life cycle of products (Fujiwara, N, Rizos, V., and Ferrer J. N., 2017). In addition, another circular economy package, namely EU Action Plan for the Circular Economy (CEAP) II, has been adopted with the intention of boosting global competitiveness, fostering sustainable economic growth, and generating new jobs. It consists of two EU Action Plans for the Circular Economy (2015 and 2020), with measures covering the full life cycle of products: from production and consumption to waste management and the market for secondary raw materials. Building on the work done on the circular economy since 2015, the CEAP II focuses on resource-intensive sectors where the potential for circularity is high. Aiming to keep resources in economic cycles, if possible, the plan addresses key product value chains: electronics and ICT, batteries and vehicles, packaging, plastics, textiles, and food.

This plan's objective is to initiate a coherent product policy framework for the development of more sustainable and circular value chains which integrate the various actions under six key pillars. The six key pillars are:

a) Sustainable Product Policy Framework – Action on the eco-design front to improve product durability, reusability, upgradability, and reparability, as well as increase the amount of recycled content and material in

newly developed products.

- b) Key Product Value Chains – Several legislative and other initiatives are foreseen for electronics and ICT, batteries and vehicles, packaging, plastics, textiles, construction and buildings, food, water, nutrients, and other product groups according to their environmental footprint and level of circularity conduciveness.
- c) Less Waste, More Value – The introduction of specific waste reduction targets and incentives for more complex streams such as digitalization and product-as-service business models.
- d) Making Circularity Work for People, Regions, and Cities – Measures to support skills and job creation.
- e) Cross-cutting Actions – Development of metrics for measuring the impact of circularity on climate change mitigation and adaptation.
- f) Leading Efforts at the Global Level – Recognizes the importance of global value chains and the need for global cooperation. This pillar also updated and enhanced the “Monitoring Framework for the Circular Economy” which was originally introduced in 2018 (European Commission, 2020b).

The EU Green Deal can be a good model for GCC countries to adopt in promoting a circular economy through the following strategies:

- a) Setting up an ambitious and reliable target to achieve a circular economy
- b) Rethinking an affordable and clean energy program



- c) Building an energy and resource efficiency roadmap to accomplish the circular economy model
- d) Creating more environmentally friendly ecosystems to govern sustainable biodiversity, pollution, and smart approaches in critical sectors such as building and construction, oil and gas, infrastructure, etc.

RECOMMENDATIONS FOR FOSTERING CIRCULAR ECONOMY DEVELOPMENT IN THE GCC REGION

The promotion of a circular economy in the GCC region can be supported through inclusive efforts as well as the programs below:

- Smart partnership with regional organizations to collaborate inclusively on various issues that can promote better environmental performance through circular economy practice and prepare transformative programs and policies along with cutting-edge analytics altogether with technical assistance such as climate finance for better management of shared natural resources, resilience as well as capacity building (The World Bank Group, 2021).
- Dynamic cooperation with financial institutions to stimulate multi-actor partnerships between government, businesses, and consumer groups along with the financial sector's stakeholders such as development banks and national financial institutions to support national climate and development priorities.
- Intensification of partnerships with various national and international organizations, such as national ministries, cities, local public institutions, businesses, and relevant non-governmental organizations, with the aim of better collaboration on climate-related action plans. Knowledge partnership with academia, think tanks, civil society, and youth networks to establish a platform for knowledge sharing, as well as the exchange of ideas to create, support, and raise awareness for the circular economy efforts.
- Food systems, water security, and resilient natural capital by promoting climate-smart agri-food systems that can minimize the impact of growing food insecurity with high import dependency; strengthening climate-sensitive and climate-smart water resource management; and creating resilient natural capital by integrating climate considerations into natural capital management policies.
- Reduce GHG emissions and improve air quality by prioritizing energy transition and low carbon mobility policies; design diversification strategies that aim at long-term emissions reductions and prioritize higher shares of renewable energy in the energy mix (The World Bank Group, 2021).
- Develop climate-smart cities and resilient coastal economies as future engines of economic growth for the MENA region. Climate-smart spatial planning as well as vital investments can realize carbon neutrality goals and create resilient cities that offer improved quality of living for residents. Climate-smart urban planning and development will also stimulate economic growth by providing and ensuring job opportunities for generations to come, ensure climate-smart public services

in critical areas of public services such as water, sanitation, and waste management, and develop resilient coastal economies through integration between coastal management and climate adaptive coastal economies.

- Sustainable finance for climate action by greening the financial institution systems along with the instruments through which they collaborate with national and private sector institutions, addressing transition risks to the economy for better policy formulation to accomplish resilient financial institutions and governance; and unleashing green financing for climate-smart investments with the support of national budgets and expenditures as well as private capital allocation for green investments.

CONCLUSION

In summary, transitioning to a circular economy in the GCC and MENA regions will greatly benefit the economy as well as help in achieving current commitments in terms of climate change. Measures taken to decouple economic progress from the wasteful use of natural resources can actually promote prosperity, cut emissions in half, and contribute toward the global goal of reducing the temperature by 1.5 degrees Celsius by 2030. Following blueprints laid out by regional neighbors like the European Union, the MENA/GCC policymakers have an advantage in that they can adopt similar policies and then adapt those policies to suit their economic interests. It can't be understated that achieving environmental sustainability does not have to come at the expense

of economic gains, and in fact can contribute to stimulating economic growth by providing job opportunities, increasing the value and quality of products and goods, and providing long-term security.

Recent statistics indicate a CE would increase GCC countries' gross domestic product (GDP) by USD approx. 100 billion, generate between 200,000 and 300,000 jobs, significantly improve people's quality of life and create attractive growth opportunities for the private sector. Based on international best practices, concrete, cement, and plastic could potentially be collected at 95%, metals at 97%, and bio-waste at 90% in the GCC region although the ultimate ambition for recycling rates for concrete and cement have been set at 95%, plastic at 75%, metal at 95%, and bio-waste at 80%. Additionally, GCC projected waste collection and recycling volumes are targeted at approximately 280 million and 320 million tons respectively by 2040. The joint WBCSD-BCG study indicates a 91% collection and 87% recycling and composting rate across all waste streams – plastic, concrete and cement, metal, and bio-waste with a potential investment of USD60 billion to 85 billion by 2040 (GPCA, 2022). In summary, the transition to a CE undertakes economic gains through job creation, economic growth, diversification, self-sufficiency, and independence from external regulatory pressures. Therefore, the GCC can contribute to a global economy that will use the earth's materials responsibly and preserve its resources for future generations at both government as well as organizational levels.



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