

COVEXIT POLICY BRIEF



The Circular Economy Post COVID-19



What Policies Are Needed To Enable Dubai's
Circular Economy?

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Introduction

The COVID-19 pandemic has had severe impacts on human wellbeing and the economy. However, the environmental impacts have been mixed. Positive impacts include reduced emissions, better air quality and less pollution, while negative impacts were observed in terms of increased waste and reduced recycling¹. Policies focused on renewable energy, waste management and pollution reduction are emerging in green recovery packages and aim to advance green and circular economy efforts globally. These are reflected in economic stimulus packages such as the Next Generation EU Recovery plan and the South Korean Green New Deal. These responses come at a crucial time as global consumption of materials such as biomass, fossil fuels, metals and minerals is expected to double in the next forty years², while annual waste generation is projected to increase by 70% by 2050³. This increase is already driving environmental challenges in the Gulf Cooperation Council (GCC) countries. Carbon footprint per capita of the GCC countries is among the largest in the world, and the region is predicted to be “extremely highly stressed” in terms of water by 2040. However, there is a unique opportunity to capitalize on the environmental gains from the COVID-19 pandemic to advance sustainability and resilience.

The United Arab Emirates (UAE) has set ambitious targets to become one of the most sustainable countries globally. These targets include achieving a 75% rate of municipal solid waste recovery by 2021, generating 44% of energy supply from renewable resources by 2050 and to rank within the top 10 countries in the Environmental Performance Index. Dubai has also set aspiring targets such as becoming the city with the least carbon footprint in the world by 2050, to generate 75% of electricity from renewable resources by 2050 and to achieve zero waste to landfill by 2032.

¹ [Rume, T., & Islam, S. \(2020\). Environmental effects of COVID-19 pandemic and potential strategies of sustainability. Heliyon, 6\(9\), e04965.](#)

² [Global Material Resources Outlook to 2060. OECD \(2018\)](#)

³ [What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. World Bank \(2018\)](#)

Despite progressing on several of these targets, the UAE has one of the highest consumption rates globally. The global footprint networks estimates that in order to meet the UAE's material demand, the country needs 5.6 Earths⁴. In other words, the UAE uses more than the Earth can provide. Therefore, the UAE and Dubai are yet to take major strides to achieve their targets and ensure a sustainable future.

This Policy Brief explores these environmental challenges and opportunities post-COVID and aims to address the following key question:

- **What policies are needed to enable Dubai's circular economy?**

Environmental Challenges

Waste is a growing challenge globally as the world generates 2.01 billion tons of Municipal Solid Waste (MSW) annually, with at least 33% of that not managed in an environmentally safe manner. Despite of the efforts made by the concerned authorities in the UAE, waste remains a major challenge as the country has one of the highest waste generation rates, with 1.6 kg/capita/day of waste generated compared to a 0.74 kg/capita/day global average⁵. World Bank projections estimate almost a 60% increase in municipal solid waste in the UAE by 2050. Dubai plays an important role in the waste challenge as over half of the country's waste in 2018 was generated in Dubai, of which, over 94% went to landfills⁶.

Some of the waste streams in the UAE that represent both a challenge and opportunity are food waste, e-waste and plastic waste. The UAE **food waste** is equivalent to each person throwing away 2.7kg of food per day. This translates to more than AED 13 billion per year across the UAE and AED 282 million across Dubai of lost value⁷. However, research shows that reusing organic and

⁴ [Global Footprint Calculator.](#)

⁵ [What a waste: A Global Snapshot of Solid Waste Management to 2050. World Bank \(2018\)](#)

⁶ FCSA Collected Waste Statistics 2018

⁷ [UAE Food Bank](#)

food waste as compost and biochar, can contribute to significant water and fertiliser savings⁸. **E-Waste** is yet another waste stream which when disposed of, contains both hazardous and valuable materials. Electrical and electronic equipment have become indispensable in modern societies and is enhancing living standards. However, the increased use driven by the digital transformation is pushing its waste streams to unprecedented levels. In 2019, the total e-waste generated by the UAE was 162,000 tons (over a 20% increase from 2016), or 15kg per capita compared to 7.3 kg per capita global average⁹. Demand for **plastic products** has been increasing worldwide due to its low prices and useful properties. The increasing consumption of plastics is reflected in plastic waste generation. If not safely disposed of, could release harmful chemicals into the surrounding soil and water sources, and harm birds, fish and other marine organisms. Therefore, many countries have taken steps to reduce or eliminate plastics – around 170 nations have pledged to "significantly reduce" use of plastics by 2030. The average person in the UAE consumed almost 105 kg of plastic per year in 2016¹⁰. Bee'ah estimates that the UAE discards 3 billion plastic water bottles, 11 billion plastic bags, and 290 million aluminum cans annually.

In addition to the waste challenge, the UAE has one of the highest per capita greenhouse gas emissions globally and ranks 63rd globally in terms of air quality. The reasons behind the high emission levels include the energy intense industries and the dependence on fossil fuels for energy generation. Industries in the UAE remain the highest energy consumer using almost 60% of energy produced in the country. Also, the carbon intensity of industry energy consumption remains high at 57.2 gCO₂/MJ compared to 51.8 gCO₂/MJ global average¹¹. **Energy generation** across the country also remains dependent on natural gas and oil contributing to high emission levels. Transport is also a large consumer of energy in the UAE and shows higher consumption rates when compared to global averages. This is attributed to the dependence on **personal car transport**. For example, in Dubai, 63% of people in Dubai use their personal cars to commute to work.

⁸ [Global food trends 2030 Report](#)

⁹ [The Global E-waste monitor 2020 Report](#)

¹⁰ [GCC Plastic Industry Indicators 2016 Report](#)

¹¹ [IEA United Arab Emirates Statistics 2018](#)

Consumption is one additional challenge that contributes to environmental degradation in the UAE as residents and industries consume large amounts of resources and materials water, energy, and consumer products. The UAE scored 44% in achieving Sustainable Development Goal 12 which focuses on sustainable consumption and production targets¹². This is attributed to business growth focused on more people buying more products – a model that is no longer compatible with a safe and sustainable future. Embedding circular economy policies within the UAE and Dubai’s economic recovery plans offer an opportunity to advance environmental sustainability whilst fostering wellbeing and prosperity. It could also play a significant role in reviving the economy by creating jobs, generating new revenue streams and attracting investments.

¹² [ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS IN THE UAE](#)

Circular Economy

The circular economy is commonly described as a restorative and regenerative model that seeks to keep products, materials and resources at their highest value and utility at all times so they can be retained in a closed loop for as long as possible, thereby creating new value¹³. The energy powering this system should come from renewable sources such as solar and wind energy. Non-toxic natural material that cannot be reused eventually returns to nature by being composted. Processed, non-toxic materials, such as glass, steel and plastics, are retained in the system and generate further value beyond the time when they would have been discarded to landfill in the current linear system. Therefore, it is clear that the circular economy goes beyond simple efficiency gains and encompasses the underlying consumption and production patterns of society. As such, it requires holistic life cycle systems thinking.

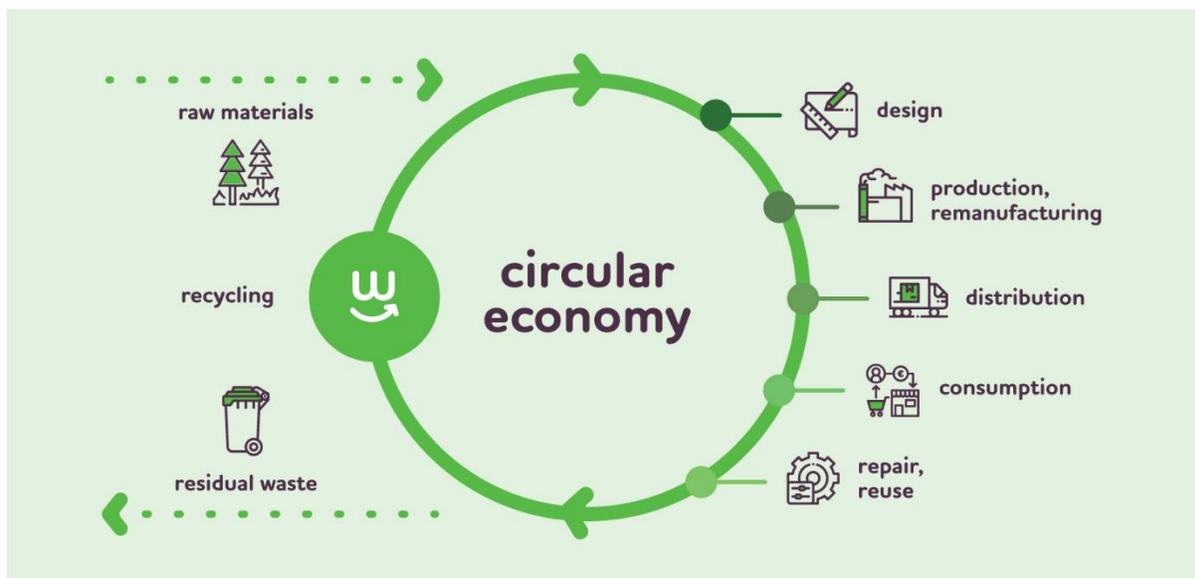


Figure 1: Circular Economy.

¹³ Ellen MacArthur Foundation

Research shows that half of all greenhouse gas emissions and more than 90% of biodiversity loss and water stress come from resource extraction and processing. The transition to a more circular economy can minimize such negative environmental impacts, create new value from waste streams, and focuses on manufacturing products and packaging with a view to how they will be used, repurposed or recycled.

Focusing on the circular economy not only contributes to a healthier environment but also offers economic opportunities for frontrunners. This is noticed in the increased demand for clean technology, electric cars and organic products. These are coupled with growing needs for new business models that fit a circular economy. Among other things, more pension and investment funds are 'greening' their portfolios. This is a logical choice, as businesses that are less dependent on scarce, expensive raw materials have a competitive advantage and more opportunities to thrive.

Policy Recommendations

HOW CAN DUBAI ACCELERATE THE TRANSITION TO A CIRCULAR ECONOMY?

Ensure a sustainable and innovative integrated waste management system

In order to achieve landfill diversion targets in Dubai, existing waste systems need be enhanced not only by sorting and recycling, but also by reducing waste and improving product designs to adequately account for end-of-life aspects.

Focusing on food waste, there is a need to strengthen collaboration between all actors of the food supply chain to minimize food waste and extract value from discarded food through:

- Setting an action plan and target for full food circularity.
- Stimulating food waste prevention and reduction initiatives through a law that requires following the hierarchy of prevention.
- Generating opportunities for reusing organic/food waste streams into compost and biochar and encourage local food production using urban agriculture.

Within the paradigm of a circular economy, the mine of e-waste should be considered an important source of secondary raw materials. Due to issues relating to primary mining, market price fluctuations, material scarcity, availability, and access to resources, it has become necessary to improve the mining of secondary resources and reduce the pressure on virgin materials.

By recycling e-waste, Dubai Government could extract value from waste streams and mitigate its material demand in a secure and sustainable way. Developing a legal environment for e-waste recycling is crucial and could be fostered through:

- Establishing a clear legal framework specifically for e-waste collection and recycling.
- Creating a competitive recycling environment:
- Creating favourable investment conditions for experienced recyclers to bring the required technical expertise to the country.

Several countries have managed to curb its plastic waste through a combination of different measure including: financial instruments, informative instruments and set targets. **Dubai Government could utilize a mix of these instruments to promote plastic alternatives and advance to post single use-plastic era through:**

- Introducing a gradual phase out plan of single use plastics and incentives to switch to reusable packaging and biodegradable bags.
- Introducing a law that requires anyone selling plastic products or packaging to provide information about the impacts of plastic bags on the environment and how consumers can reduce their consumption.

Ensure that industrial systems are regenerative by design

Industrial production has experienced significant growth in the UAE, and contributed 46.2% of the GDP in 2019¹⁴. As the UAE strives for economic diversification and due to the impacts of the COVID-19 pandemic on tourism, aviation and real estate, industrial production is expected to play a crucial role economic in the foreseeable future. The Dubai Industrial Strategy validates the importance of the sector as an economic growth engine.

In order to navigate current developments such as growing demand for carbon-friendly products, tightening of carbon emission regulations globally and growing investor and public interest in sustainability, there is a need to:

- Facilitate industry wide decarbonisation by developing roadmaps for industries in Dubai and adjust regulation and incentives to adopt renewable energy and energy efficient technologies accordingly
- Enable the creation of an industrial symbiosis park in Dubai

¹⁴ [World Bank Statistics](#)

The main principle behind industrial symbiosis is that residue from one company becomes the resource for another, benefiting both the environment and the economy. Industries should take advantage of opportunities offered by industrial symbiosis in order to help close the material loop, reduce energy use and reduce emissions. Engaging in such a model and building such local partnerships means: sharing and reusing resources; an opportunity for saving money; a chance to minimise waste.

The Danish model of Kalundborg Symbiosis is an example of the creation of the world’s first industrial symbiosis through a circular approach to production. An analysis done based on 2015 data that compares two scenarios: production with and without symbiosis showed that connecting the enterprises saved more than 24 million EUR on the bottom line annually, while the socio-economic benefit amounts to more than 14 million EUR.

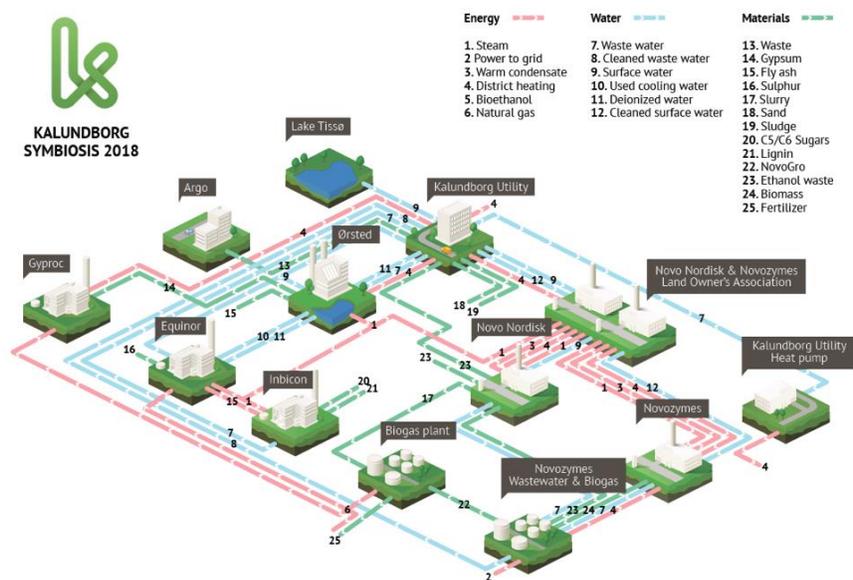


Figure 2: The Kalundborg network of industrial symbiosis.

Promote renewable energy, resource efficiency and circular mobility

In most parts of the world, including the Middle East, renewables are now the lowest-cost source of new power generation. However, according to the IEA, the UAE has adopted some of the world’s best solar power schemes which offers the “cheapest...electricity in history” with the technology

cheaper than coal and gas in most major countries. This is due to the fact that the UAE is in a particularly advantageous position to embrace solar energy since its high levels of Global Horizontal Irradiation (GHI) and Direct Normal Irradiation (DNI), measures related to sunlight which signify suitability for solar power. This has led the UAE to become a front runner in the adoption of renewables within the region. It has achieved a growth rate of 69% in renewable energy capacity between 2014-2018. Dubai has also managed to generate 9% of its electricity in 2019 from renewables, surpassing its target of 7%.

Furthering renewable energy adoption and energy efficiency measures could aid the UAE and Dubai transition from fossil fuels to clean energy which will improve energy security, generate savings and promote wellbeing. **In order to capitalize on the progress done in Dubai, the government should further encourage adoption of clean energy through:**

- Expanding rooftop PVs installations and allowing peer to peer energy trading.
- Supporting strategic opportunities for technological innovation such as clean hydrogen technologies, batteries for energy storage and carbon capture and storage technologies through increased investments in R&D and expansion of infrastructure.
- Increasing incentives for building efficiency improvements and smart energy management solutions by commissioning efficiency retrofits of public assets such as schools, offices and healthcare facilities.

Dubai remains heavily dependent on car transport which consumes high energy, increases pollution and impacts wellbeing. A transition to electric mobility offers the benefit of reducing energy use and emissions in addition to integrating the transport and electricity sector like never before by playing a role in energy storage as renewable energy generation increases. Dubai has stated a target of having 10% of all vehicles being electric or hybrid by 2030. Since many vehicles spend most of their time stationary, these vehicles could be connected to the grid and serve as battery storage for the electricity sector. Therefore, electric vehicles could not only solve mobility challenges but also

its battery capacity could contribute to the flexibility the electricity system will require in the future.

In the interest of adopting electric mobility solution, it is necessary to:

- Expand Electric Vehicle charging infrastructure, open opportunities for private investors and mandate recharging stations in all new construction projects and buildings.
- Issue incentive schemes for EVs and tighter emission regulations standards on personal and commercial vehicles.

Road space reallocation to building bike lanes and expanded walkways could create jobs in construction in the immediate to near term. Additional jobs would be created through bicycle sales, repair and tourism. Cities are also facilitating cycle use through incentives to repair existing bicycles and to purchase new ones. Payback periods for consumer purchase are typically less than six months for bicycles and up to two years for e-bikes. Active travel also provides a range of health and societal benefits. Replacing the use of private vehicles with walking, cycling or public transport use brings air quality and noise reduction benefits and reduces congestion: this is particularly beneficial in Dubai which has high air pollution levels. Several cities are looking at improving infrastructure to promote walking and cycling, with the aim of creating job opportunities while improving air quality and health and wellbeing of citizens: investment in public transport and in charging infrastructure for electric vehicles and electric buses offers a complementary way to achieve those objectives.

Therefore, it is crucial for Dubai to:

- Invest in public transport, including the electrification of city bus systems
- Adopt urban designs favourable for cyclists and pedestrians and reallocate space to bike lanes and expanded walkways within current developed areas

Ensure that the healthier, more sustainable and safer choice is the most accessible for consumers

Sustainable consumption offers both an opportunity to reduce environmental impact while generating revenue. Consuming less and better would reduce the city's carbon emissions, reduce

waste to landfill and encourages the development of circular products and services and so creates opportunities for companies to supply these products. This also stimulates the demand for labour and skills for the circular economy. **To encourage sustainable consumption in Dubai, there is a need to:**

- Initiate a Circular Public Procurement program
- Develop a circularity certificate (ecolabel) that promotes products with low environmental impact and high circularity potential

Circular procurement is focused on ensuring that the products procured for an organisation are produced in accordance with the principles of the circular economy and will be further processed after use. Such products are, for example, are designed for durability, reparability and recycling and can at the end of their life cycle be broken down into components, materials or raw materials, which can then be used again in the production chain. An increased amount of "circular" purchases by public authorities would not only help to develop awareness among managers, workers, and public opinion but would also increase demand for greener and local products and help them penetrate the market, which in turn could also reduce the price of such products.

Ecolabelling on the other hand, is a method of environmental performance certification and labelling that is practiced globally. Ecolabels are generally regarded as a win, win, win situation as producers and buyers benefit while conserving the environment. Ecolabels are also known to enhance consumer confidence as they guarantee that products comply with the environmental quality requirements beyond what the Law establishes. Therefore, ecolabels are considered as drivers for circular economy, material efficiency and continuous environmental improvements.



FOR MORE INFORMATION:

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