



WASTE

CIRCULAR ECONOMY
Why Should Energy Markets Care?

BY MAZIN ALBAHKALI
President & CEO, GE Power Services, Saudi Arabia & Bahrain

\$138 billion

in savings is one driver of energy stakeholders' appetite for a

'circular economy'. The multi-billion benefit of this economic model equates to nearly 1% of the GCC's cumulative GDP between 2020 and 2030, as detailed by the World Government Summit and Strategy&'s Ideation Center. Another big incentive is Gulf countries' commitment to the Paris Agreement, the world's most comprehensive climate-related agreement.

But these are just two factors in a regional effort that resembles an octopus. There are many 'legs' – from economic growth, government will and public buy-in – that must all move in harmony to achieve progress (see: *What is a Circular Economy?*). This is a very tall order and good stewardship – a healthy mix of both private and public – of finite resources is critical amid an ever energy-hungry world.

The kingdom is playing an active role as per the aims of Saudi Vision 2030. Saudi Aramco is supporting a research program on the Sustainability of Bio-based Materials in a circular economy at the Aachen-Maastricht Institute for Biobased Materials (AMIBM) in The Netherlands

and the kingdom's petrochemical giant SABIC has signed a memorandum of understanding (MoU) with chemical recycling experts to supply recycled plastics waste for production facilities in Europe.

Through this, the company has developed plans for a commercial refining plant for recycled low-quality, mixed plastics waste in The Netherlands. And as part of its sustainability initiative, Ma'aden commits to facilitating responsible and innovative product design, use, re-use, recycling and disposal of products. The company has embedded circular economy principles into its operations and has developed measurable key performance indicators (KPIs) to monitor progress.

The growth of a circular economy is a fine line to tread. Existing energy capacity – from production, storage, downstream, transport and so on – must lower its carbon footprint rather than pulling back on operations. Cutting capacity now would be perilous; BP Outlook expects the Middle East alone to have a 55% rise in energy consumption by 2040 and Saudi Arabia's population to climb by 37% to 45 million by 2050. Such pressure points do not point to reducing capacity but increasing it – just much more intelligently.



1st

In one of the most comprehensive oil field carbon intensity (CI) studies ever published, a global team led by Stanford University has calculated the CI of 8,966 of the world's active oil fields across 90 countries. This represents 98% of the world's 2015 global crude oil and condensate production. How did Saudi Arabia fare? Very well; the kingdom ranks the lowest in CI of any major producer to extract, process, and transport its crude oil to the refinery gate.

#2

Saudi Arabia ranked second overall in the aforementioned CI study; Denmark, which produces near 150,000 b/d, took first global position.

62%

The Circularity Gap Report 2019 calculates that 62% of GHG emissions (excluding those from land use and forestry) are released during the extraction, processing and manufacturing of goods to serve society's needs. Just 38% are emitted in the delivery and use of products and services. Stakeholders now have a clear focus where to direct their efforts.

What is a Circular Economy?

A circular economy means changing processes and mindsets to enable companies and countries to do more with less. It seeks to replace today's linear 'take-make-dispose' approach to resources and aims for materials, including energy, to be re-used and recycled through the value chain. The result? It gives companies and countries more gold stars for what is an increasingly strict environmental check list, it creates a sustainable job and manufacturing market and has the potential to narrow the global wealth divide in the long-term. Also, on the long list of benefits are cost effectiveness and optimization of supply chains.

The purpose of the circular economy is to protect the environment while maintaining a market driven economy. There are two main channels to achieving this. One is letting the market dynamic work through incentive mechanisms, as seen with subsidy reforms and the rise of renewables. The other is regulatory changes, such as reducing high public and industrial

consumption of energy to products, like household utilities.

Under this umbrella, there are a range of application options: waste-to-energy, fuel conversion, recycling materials from energy production plants, utilization of the energy industry and other industries' excess energy. Another popular method to spur a circular economy is improving existing technologies, like efficiency for internal combustion engines (ICE), carbon capture and storage (CCS) for hydrocarbons in the power sector and renewables in enhanced oil recovery (EOR). Plus, capturing the billions of cubic meters of natural gas flared at oil production sites worldwide to use onsite, or reuse in operations, would be a major leap towards a circular energy economy. This would be especially meaningful in Saudi Arabia and the wider Gulf, the global epicenter of hydrocarbon production. Progress will also give the energy markets some much-needed career kudos for the more environmentally aware millennial generation; good news amid a global talent shortage.

