Event title: Climate Policy Perspectives and Energy Transition in Middle East and North Africa (MENA) Region

Climate Mitigation Policies & the Needs of the Energy Sector – Case Study: KSA and the Circular Carbon Economy

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Emissions management is a key priority for the world, and current solutions face many shortcomings

Current solutions are not adequate to meet the scale of the challenge

- **Scientific community** has declared major threats if **aggressive emission reductions** are not taken.
- Current **mature solutions** (e.g. renewables and energy efficiency) alone are **not sufficient** to achieve net-zero emissions.
- Over dependence on renewable energy **threatens system reliability** and access to low-cost energy.
- No practical solutions for hard-to-abate sectors such as aviation, shipping, cement, etc.
- Inefficient utilization of existing infrastructure leading to stranded investments.
- **Compatibility** with local needs and requirements.

**Global average surface temperature change (°C)**

- **Temperatures** have risen ~1°C since mid-20th century.
- **2011-2020**: 1.75±0.5°C
- **2050 projected**: 2.0°C

**Notes:**
- Historical
- Aggressive GHG emissions reductions
- "Business as usual"
KSA has adopted Circular Carbon Economy (CCE) framework, a holistic approach that utilizes all available levers to manage CO₂ emissions.

From a linear carbon economy...

... to a Circular Carbon Economy (4 Rs)

**Reduce**
- Production of CO₂ and GHGs as by-products
  - Energy Efficiency
  - Renewable energy
  - Low carbon fuels

**Reuse**
- CO₂ and GHGs without chemical alteration
  - Enhanced Oil recovery
  - Supercritical CO₂
  - Food and beverages

**Recycle**
- CO₂ and GHGs through chemical alteration
  - Carbon to polymers/chemicals
  - Carbon to fuels
  - Carbon to other materials

**Remove**
- CO₂ and GHGs that are already emitted
  - Direct air capture
  - Stationary carbon capture
  - Nature-based solutions
G20 Leaders during the Riyadh Summit endorsed the “Circular Carbon Economy” 4 Rs platform to reduce emissions

32. We endorse the Circular Carbon Economy (CCE) Platform, with its 4Rs framework (Reduce, Reuse, Recycle and Remove), recognizing the key importance and ambition of reducing emissions, taking into account system efficiency and national circumstances. The CCE is a voluntary, holistic, integrated, inclusive, pragmatic, and complementary approach to promote economic growth while enhancing environmental stewardship through managing emissions in all sectors including, but not limited to, energy, industry, mobility, and food. We acknowledge, in this context, the various voluntary opportunities and their acceleration highlighted by the CCE Guide. We acknowledge the Presidency Reports of the Climate Stewardship Working Group that can be utilized as a toolbox in addressing sustainability including climate change in the context of national circumstances. We also acknowledge the importance of fostering synergies between adaptation and mitigation, including through nature-based solutions and ecosystem-based approaches.

7. We acknowledge the work led by the King Abdullah Petroleum Studies and Research Center and the valuable contributions from the various international organizations (International Energy Agency, the International Renewable Energy Agency, the Nuclear Energy Agency, the Organisation for Economic Co-operation and Development, and the Global CCS Institute), which spelled out the various opportunities offered by the CCE approach and its 4Rs as indicated in the “CCE Guide” that could be considered in accordance with national circumstances.
Circular Carbon Economy National Program (CCE-NP) will deploy a comprehensive approach to drive adoption across key emission sectors.
57 technology groups were scanned & evaluated to identify viable emissions reduction technologies across 10+ high emitting sectors

Identified ~57 technology groups across the 4R levers, and assessed their strategic value for KSA

Prioritized technologies for deep dive analysis based on abatement potential, cost, and TRLs

5 technologies prioritized for deep dives:
- Hydrogen
- Stationary CCS
- Direct air capture
- Carbon cured concrete and cement aggregates
- Synthetic fuels
The Circular Carbon Economy National Program has 3 strategic objectives

**Climate protection**
- Cost-efficiently abating CO₂ emissions as a result of deploying CCE applications
- Ensure all possible levers available for CO₂ abatement are utilized

**Socio-economic impact**
- Capture value from waste CO₂ released in the atmosphere
- Promote new industries technologies that will contribute to GDP upliftment and employment generation
- Avoid significant costs of premature switching to new energy sources
- Sustain affordable and reliable energy access

**Global leadership**
- Accelerate global adoption of the CCE program and promote inclusive and sustainable climate action
- Reinforce KSA leadership on climate change globally
The Context Now: Key Milestones for Climate Action in Saudi Arabia

The flagship launch of the Saudi Green Initiative and Middle East Green Initiative in October 2021

Updated NDC with emissions reduction target of reducing 278 million tons of CO2 emissions using clean hydrocarbon technology and large-scale afforestation

The Kingdom of Saudi Arabia aims to reach Net-Zero by 2060, through the Circular Carbon Economy Approach

The COP26, the conclusion of the Paris Rulebook, and the start of the implementation period
In October 2021, the Kingdom announced the Saudi Green Initiative and Middle East Green Initiative, with over 60 Sub-Initiatives

### Saudi Green Initiative

- **Renewables to produce 50%** of Saudi Arabia’s electricity by 2030.
- Being the world’s leading producer and exporter of **blue and green hydrogen**—capturing over 27 million tons of CO2—by 2030.
- Using **captured carbon** to produce chemicals and synthetic fuels.
- **Launch of the Riyadh Sustainability Strategy.**
- **Plant 10 billion trees in Saudi Arabia.**
- Joining Global Methane Pledge seeking to reduce global methane emissions by 30% and locally diverting 94% of rubbish now going to landfill.

### Middle East Green Initiative

- **Plant a total of 50 billion** across the Middle East.
- Launching a **Regional Initiative for Clean Fuel Solutions for cooking** to more than 750 million people worldwide, and a **Regional Investment Fund for Circular Carbon Economy (CCE)** technology solutions. SAR 39B to be invested in both, with Saudi Arabia contributing approx. 15%.
- **Collaborate to accelerate implementation of Circular Carbon Economy (CCE) framework regionally.**
- **Launch feasibility study on regional carbon capture, storage, and utilization hub.**
- **Cleaning plastic from oceans** in partnership with the Alliance to End Plastic Waste.
Thank You!