Circular Carbon Economy National Program

January 2021

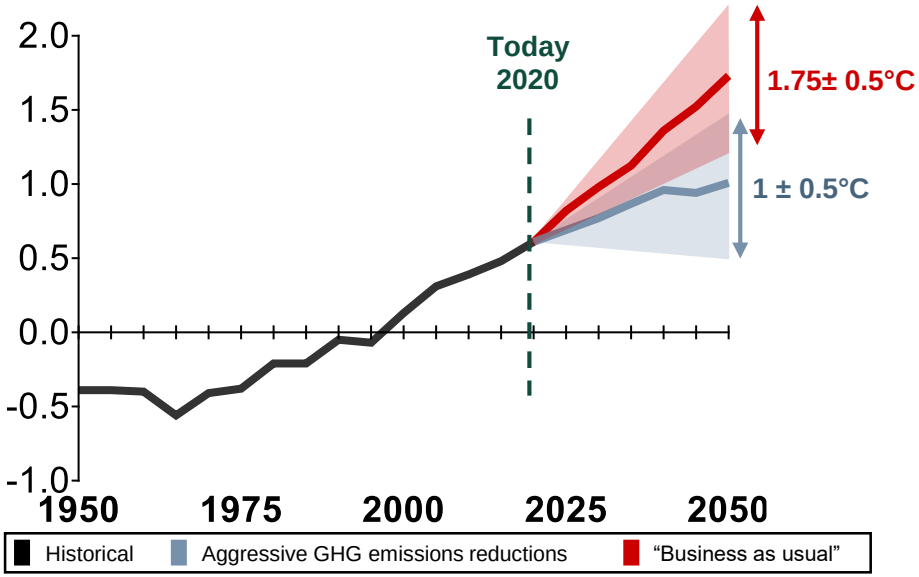
Climate change has become a key area of focus globally as a result of rising temperatures

Temperatures have risen ~1°C since mid-20th century

Scientific community has declared **major threats if aggressive emission reductions are not taken**

Global leaders have pledged to **limit global temperature rise this century well below 2°C** above pre-industrial levels

Global average surface temperature change (°C)[1]



Note: [1] Global average surface temperature change measured relative to average temperature between 1850-1900
Source: IPCC Report, AR5

Furthermore, a narrow focus on only reducing fossil fuels will result in several significant socio-economic consequences

Inefficient utilization of existing infrastructure

- Inadequate utilization of **infrastructure investments already committed** e.g.:
  - Ports
  - Pipelines
  - Power plants
- Significant **cost and time in switching to new energy sources**
  - E.g. Fully renewable grid to cost United States $4.5 trillion over next 10 years

Reduced energy access and reliability

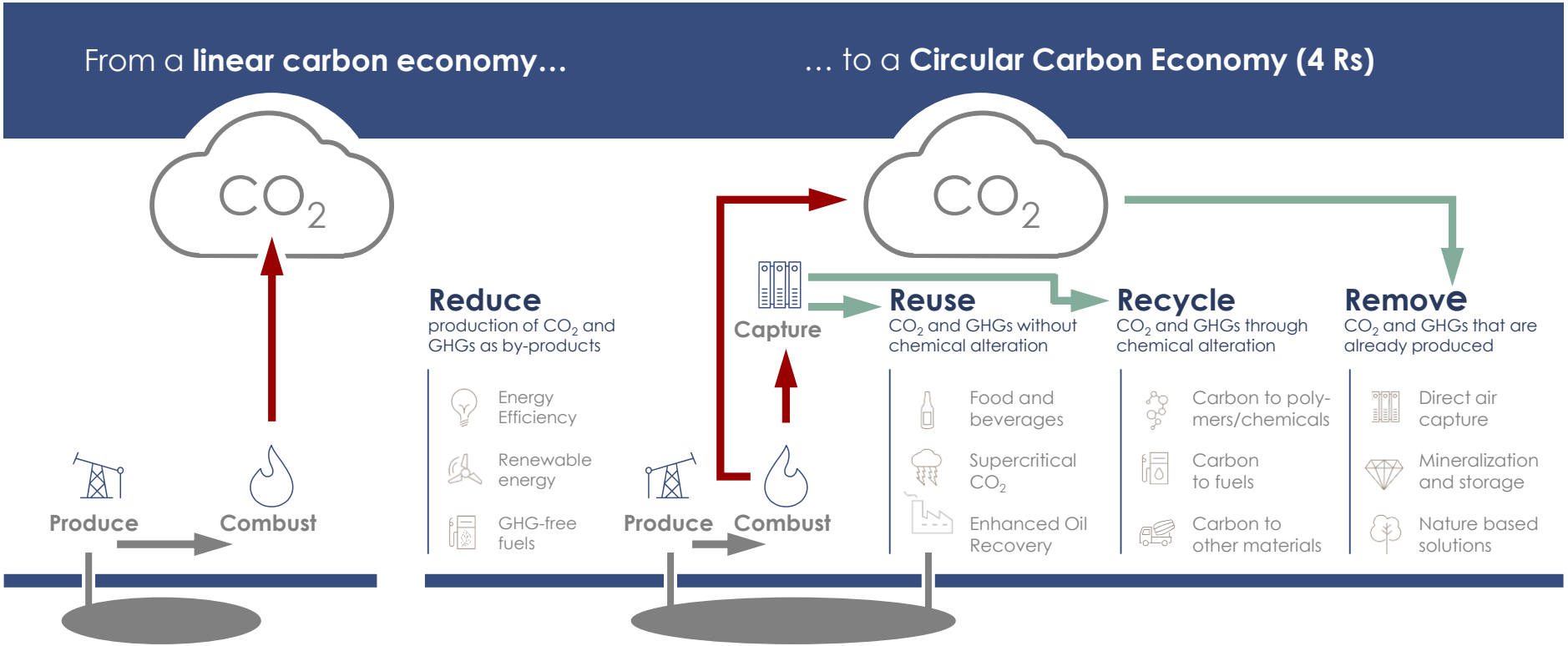
- **Increase in overall energy costs** since renewable energy and low carbon fuel sources are not always commercially viable
- **Deterioration of energy reliability** as a result of depending heavily on renewable sources
  - E.g. California blackouts (summer 2020)
- **Major impact on developing countries** that require affordable and reliable energy access

No practical solutions for hard to abate sectors

- Few cost efficient **emissions reduction solutions** for energy-intensive **hard to abate sectors** e.g.:
  - Aviation
  - Shipping
  - Cement
  - Aluminum

Source: Lit. search

KSA promotes CCE, a holistic approach, that utilizes all available levers to address emissions while generating value (i.e. GDP, employment)



Note: [1] EOR: Enhanced Oil Recovery

Accordingly, the Circular Carbon Economy National Program will deploy a comprehensive framework to drive global support and adoption

CCE National Program Strategy

Reduce | **Reuse** | **Recycle** | **Remove**

	Energy Efficiency	Renewable Energy	Low Carbon Fuels	Carbon Usage	Carbon Capture	Carbon Sinks
Oil & Gas	Combined Cycle Gas Turbine	Solar PV	Hydrogen	Polymers	Direct air capture	Forestry
Utilities	HVAC	Wind	Nuclear	Methanol	Carbon capture at stack	Mangroves
Manufacturing	Efficiency standards	Biogas		Enhanced Oil Recovery	Mobile carbon capture	
Transportation						
Agriculture						

Program Enablers

- Engagement & communication
- Financial
- Policy/ Legal
- Infrastructure
- Human capital
- Technical information

The CCE National Program has three strategic objectives: (i) Climate protection, (ii) Socio-economic impact, and (iii) Global leadership

i Climate protection

- **Cost-efficiently abating CO_2 emissions** as a result of deploying CCE applications
- Ensure **all possible levers** available **for CO_2 abatement are utilized**

ii Socio-economic impact

- **Capture value from waste CO_2** released in the atmosphere
- **Promote new industries** based on CCE technology that will **contribute to GDP upliftment and employment generation**

iii Global leadership

- **Accelerate global adoption of the CCE program** via intl. advocacy and communication
- **Reinforce KSA "soft power" and leadership** on climate change globally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