



Kingdom of Saudi Arabia  
Ministry of Energy



# Circular Carbon Economy (CCE):

# Future Opportunities

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September 30, 2020

# G20 Energy Ministers Meeting

Communique

September 27 - 28, 2020



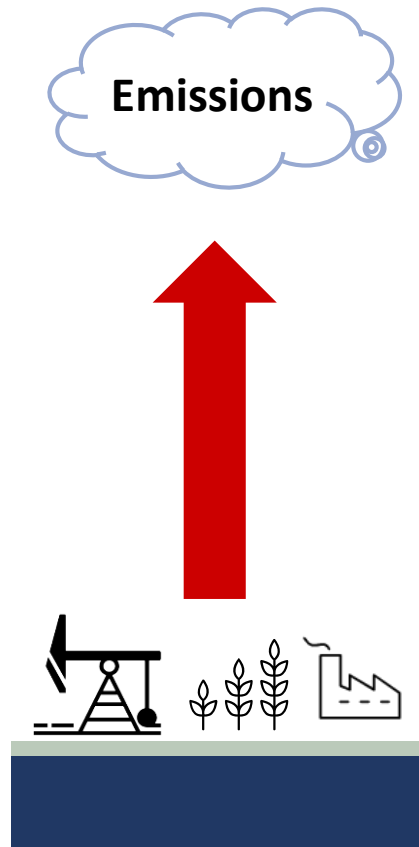
6. Building upon previous comments made by the G20 Energy Ministers in past Presidencies, we endorse the Circular Carbon Economy (CCE) Platform and its “4Rs” framework (Reduce, Reuse, Recycle and Remove) while acknowledging (Appendix I) and recognizing the key importance of reducing greenhouse gas emissions, taking into account system efficiency and national circumstances, including its specific resources endowment and its political, economic, environmental, social, and risk-informed development contexts, noting:
  - b. Reuse: Convert emissions into useful industrial feedstock by deploying Carbon Capture and Utilization (CCU), including Emissions to Value (E2V) and Carbon Recycling (CR). Noting the potential of CCU as an advanced and cleaner technology that can help mitigate the impacts of emissions by capturing and reusing them;
  - d. Remove: Remove emissions from the atmosphere as well as from heavy industries and facilities through Carbon Capture and Storage (natural and geological) and Direct Air Capture.

# Outline

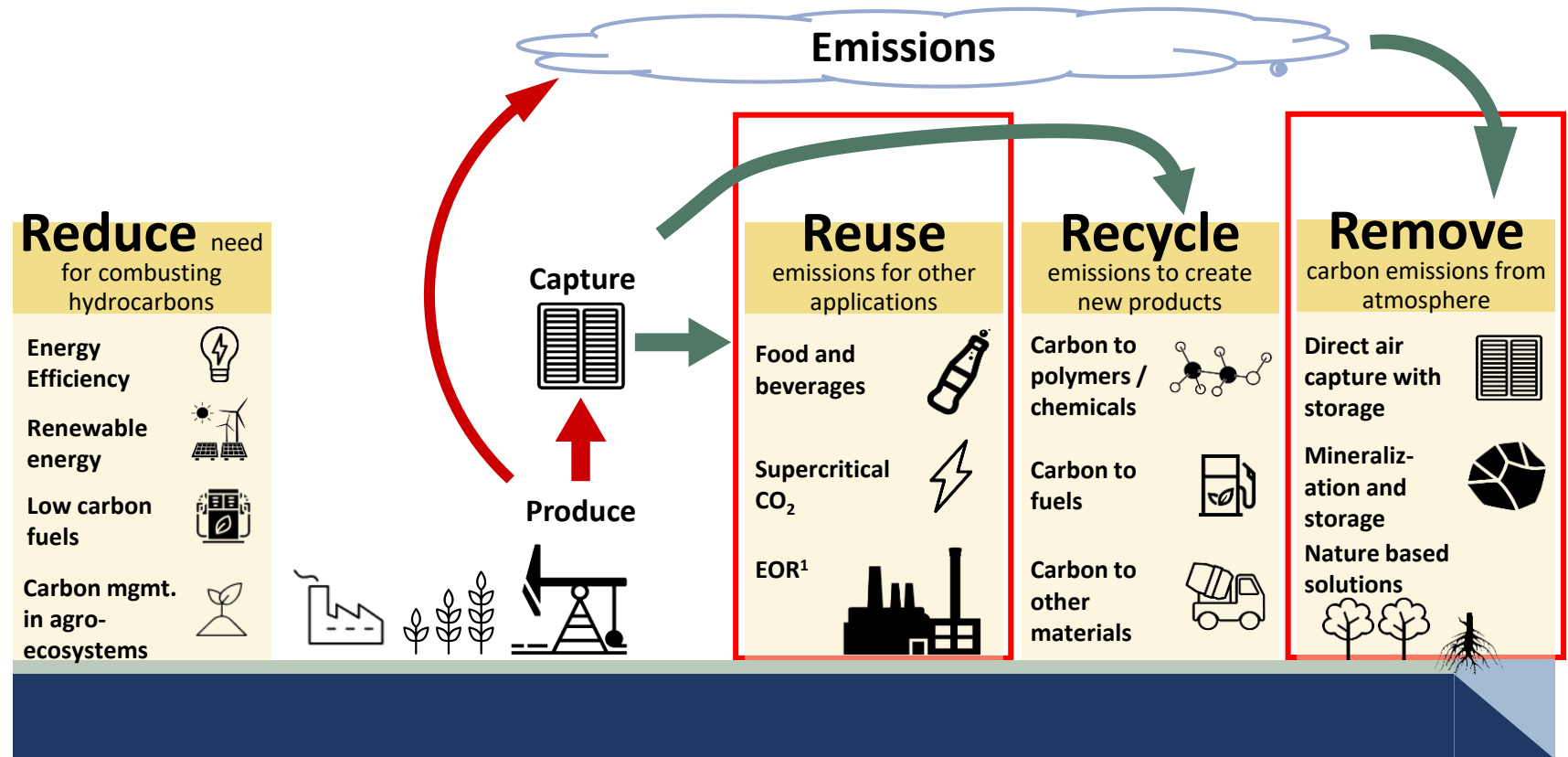
- Circular Carbon Economy (CCE)
- CCE Platform:
  - Approach
  - Opportunities
  - Accelerator
- CCE Application
- Concluding remarks

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

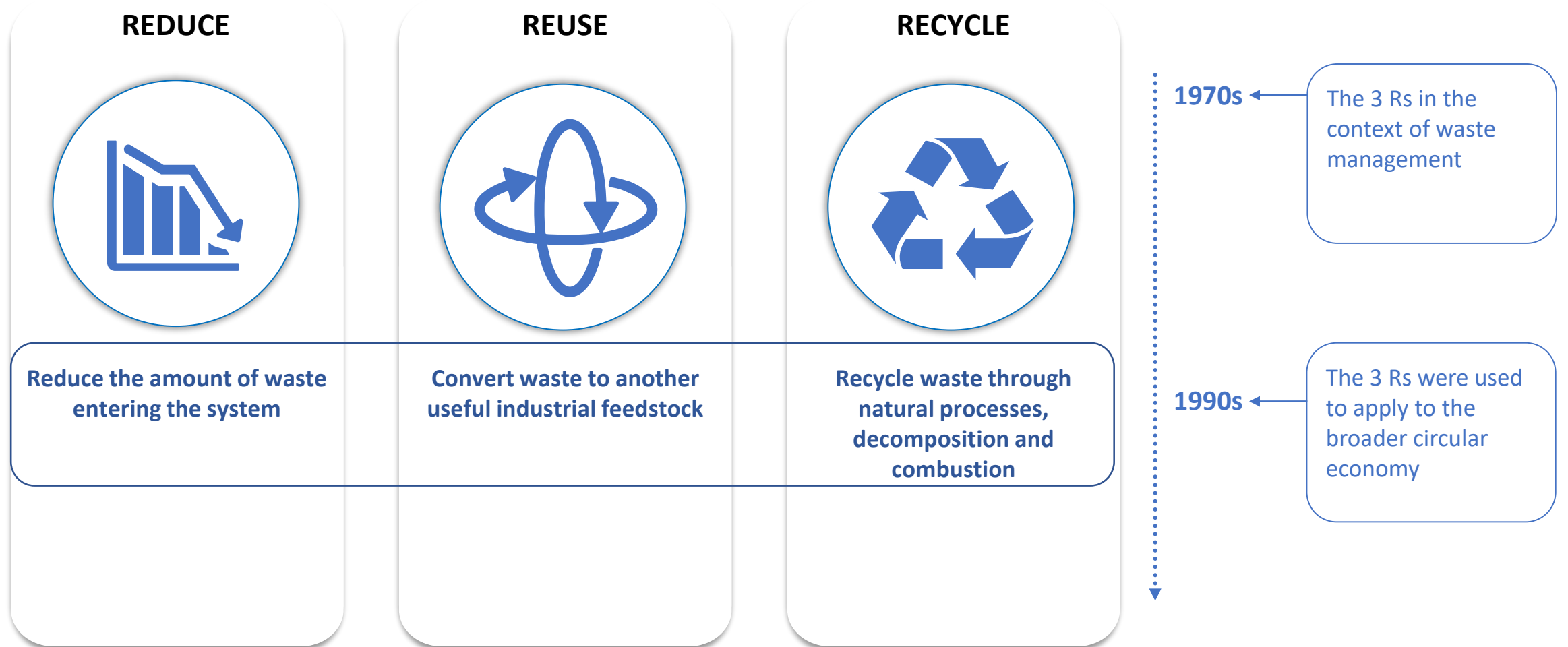
### Linear carbon economy



### Circular Carbon Economy (The 4 Rs)



# The 3 Rs of the Circular Economy

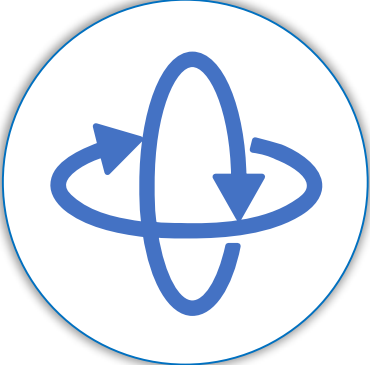


# The 4 Rs of the Circular Carbon Economy (CCE)

**REDUCE**



**REUSE**



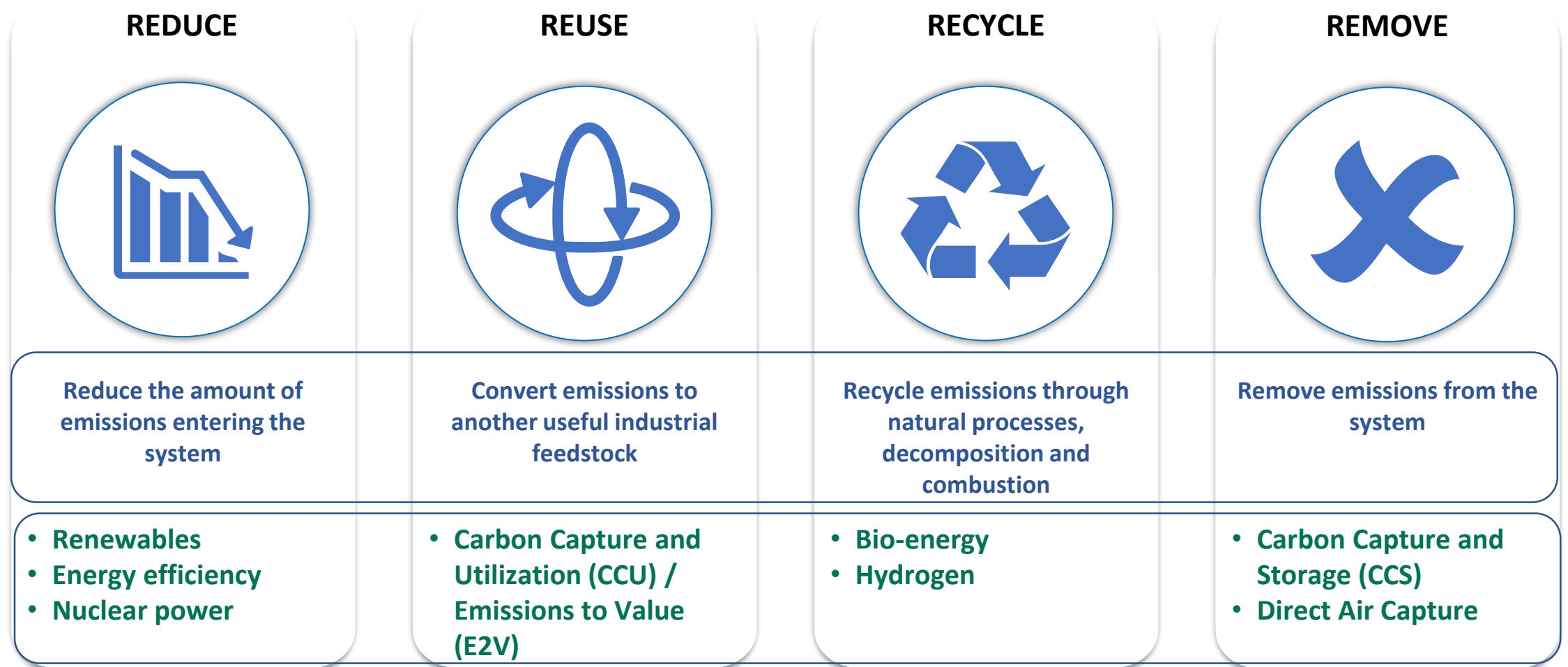
**RECYCLE**



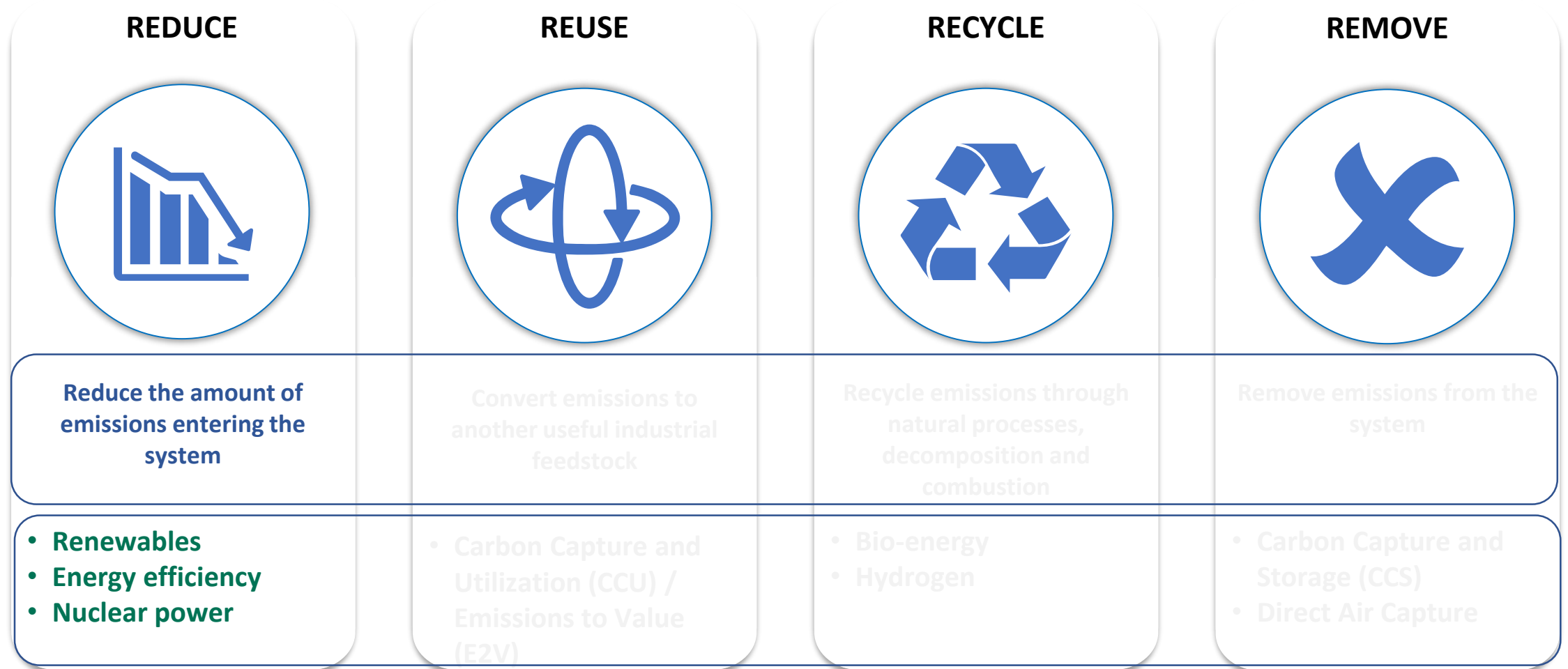
**REMOVE**



## The 4 Rs of the Circular Carbon Economy (CCE)

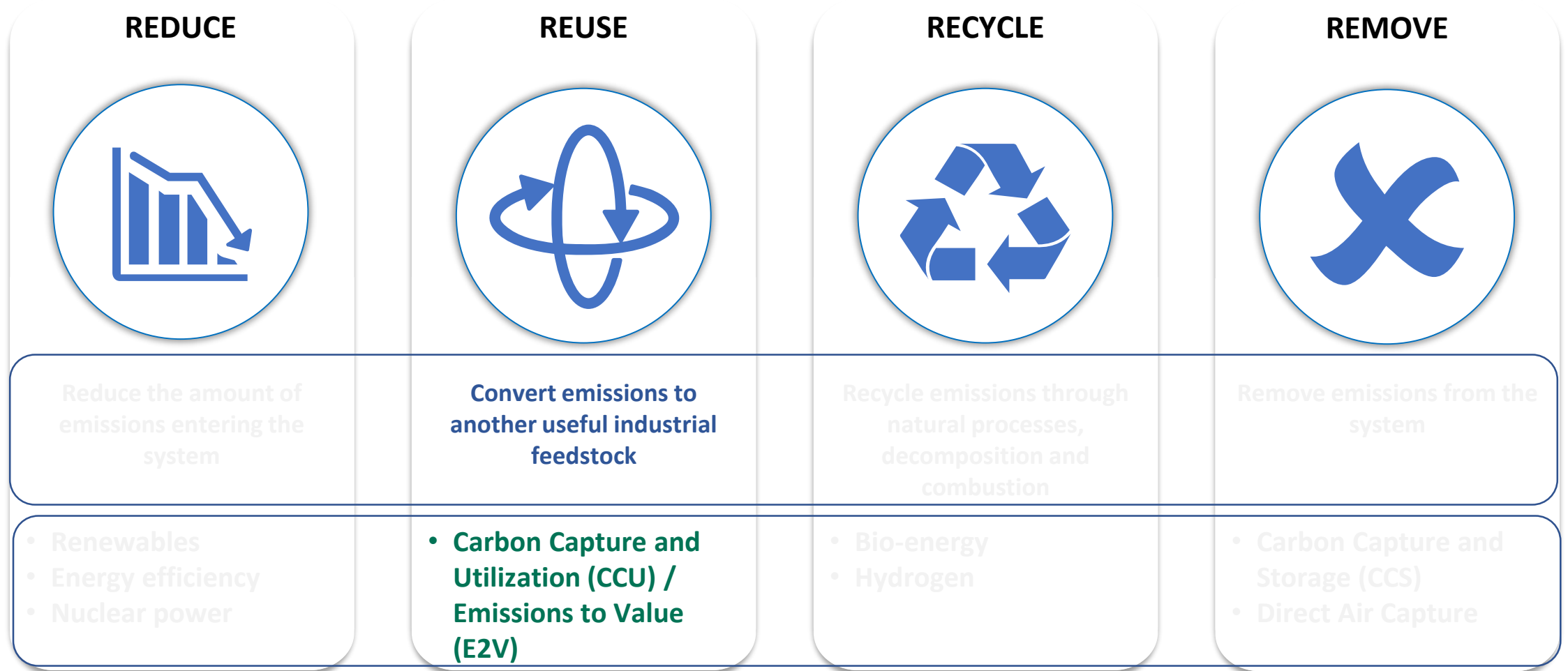


## The 4 Rs of the Circular Carbon Economy (CCE)

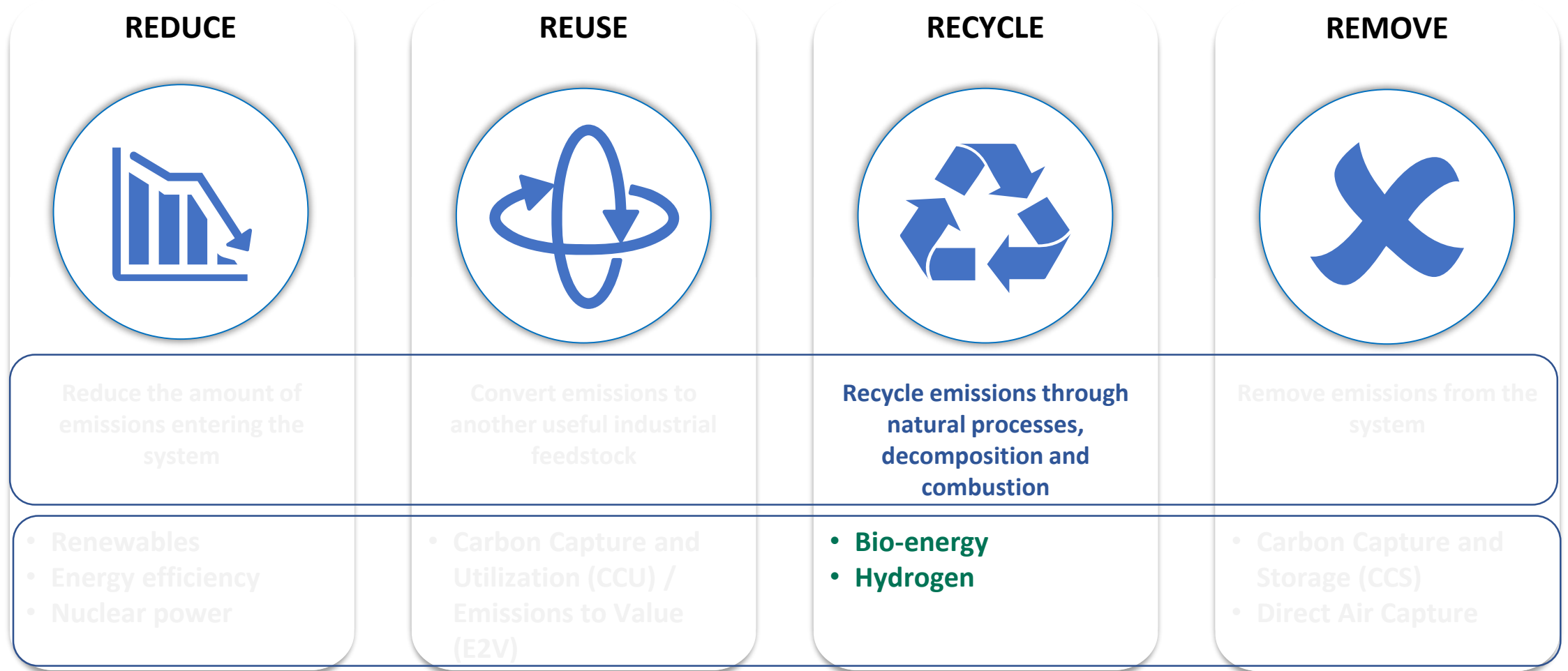




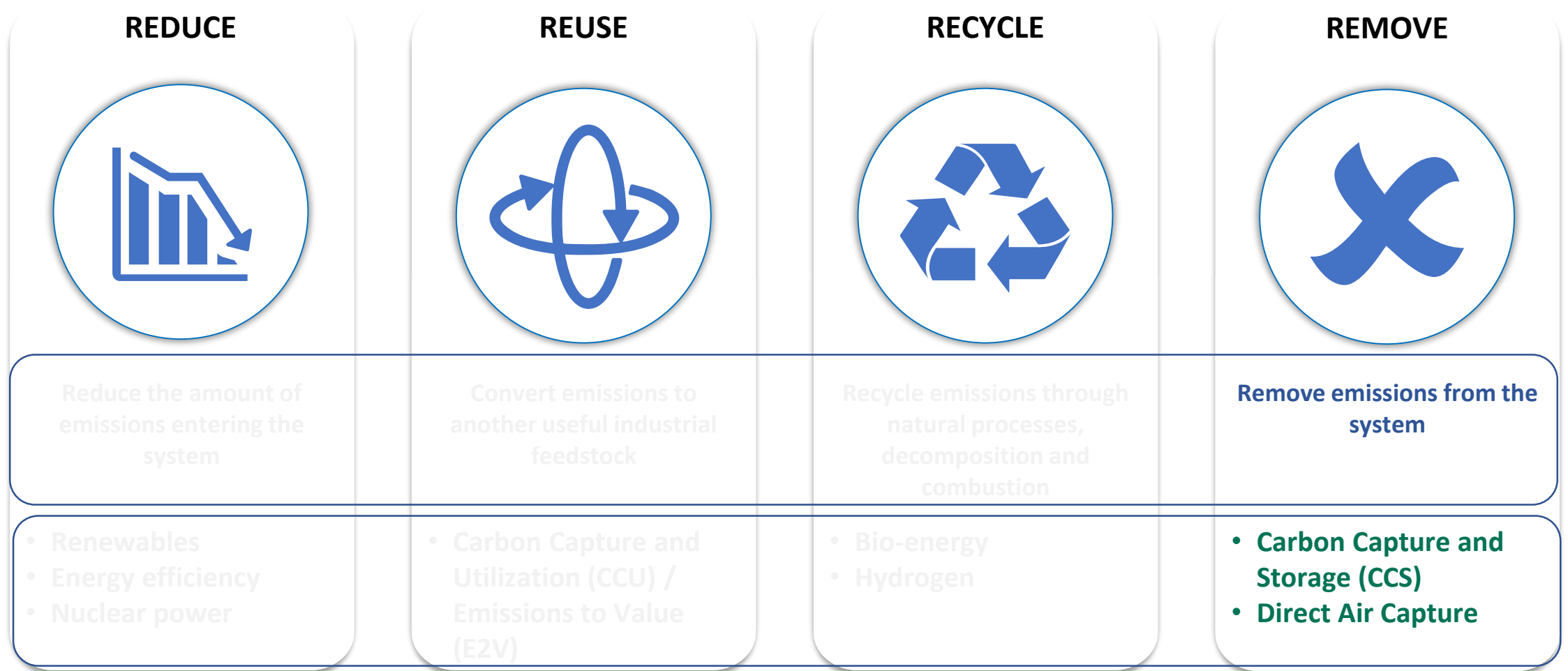
# The 4 Rs of the Circular Carbon Economy (CCE)



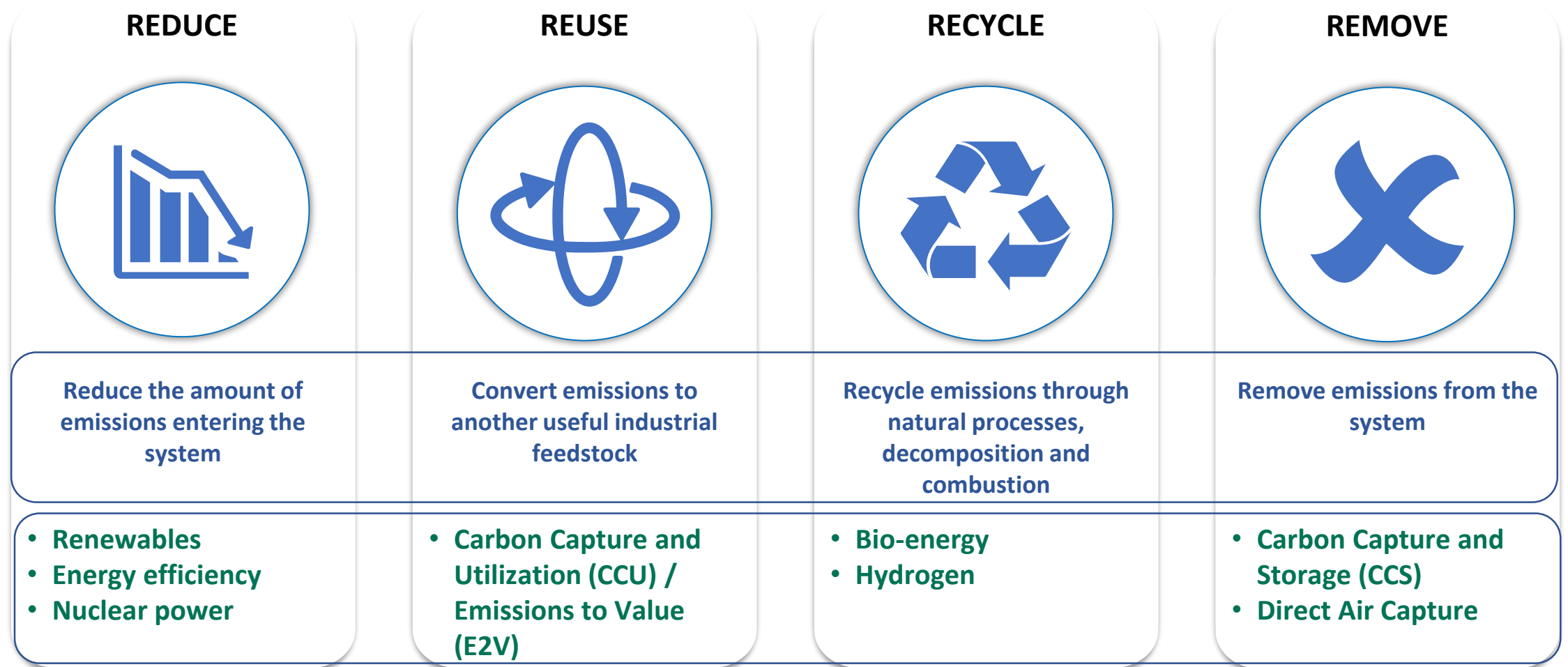
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# Outline

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# Circular Carbon Economy (CCE) Platform: Approach

The CCE is a holistic, integrated and inclusive approach based on the 4Rs strategies that contributes to sustainable development and economic growth which value all sources, sectors, and options

## Reduce

- Energy Efficiency (EE)
- Non-Biomass Renewables (RE)
- Nuclear (NU)

## Reuse

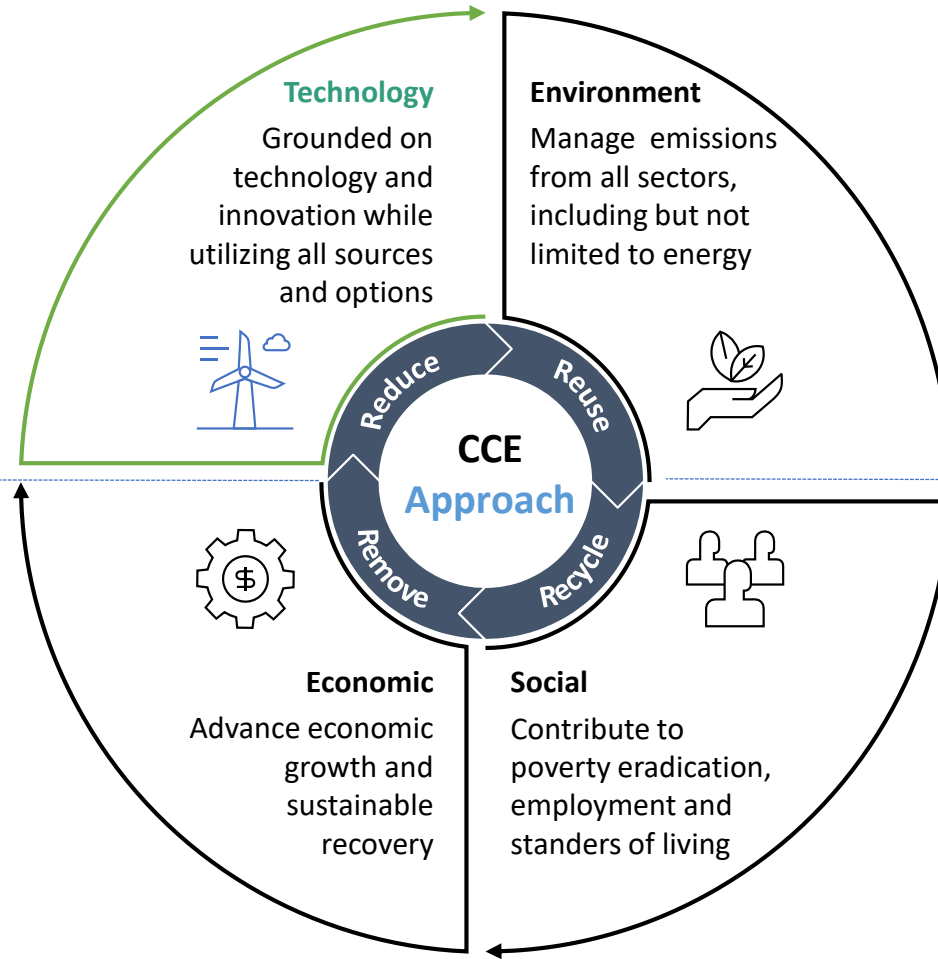
- Carbon Capture and Utilization (CCU)
- Emissions to Value (E2V)
- Carbon Recycling (CR)

## Remove:

- Direct Air Capture (DAC)
- Carbon Capture and Storage (CCS)

## Recycle:

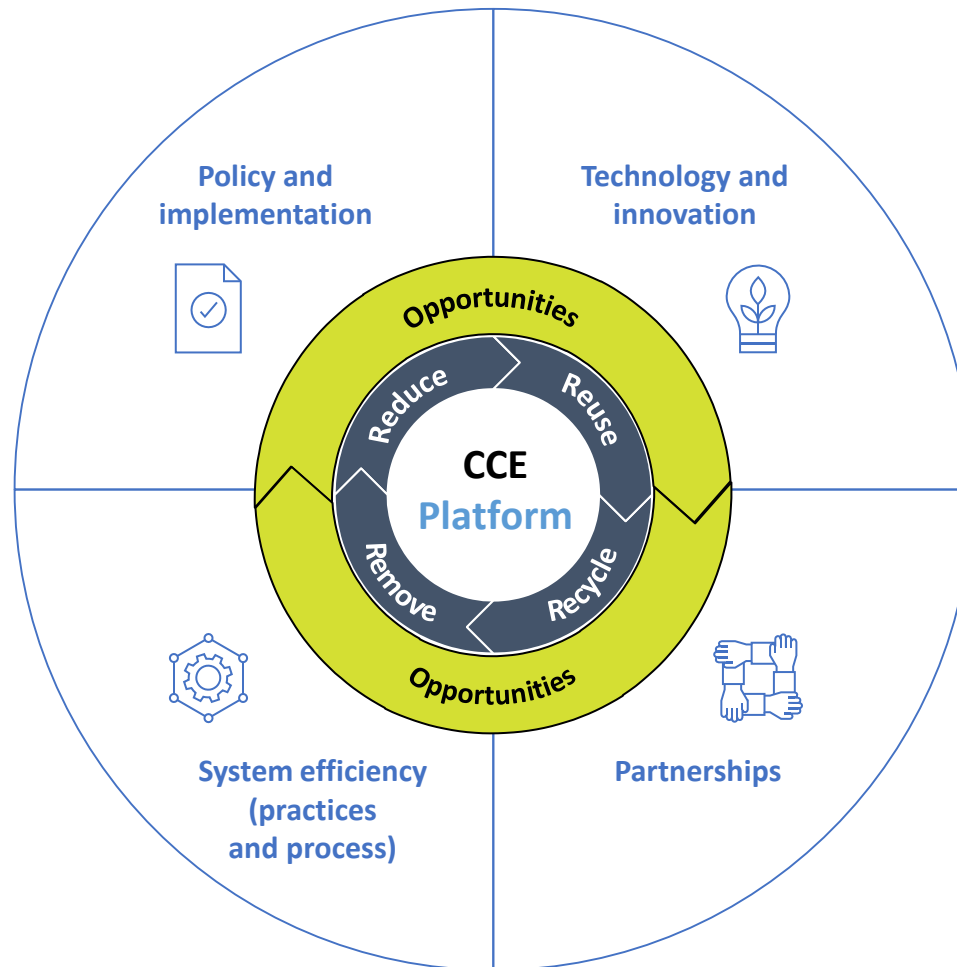
- Bioenergy (BI)
- Biomass and biofuels (BB)



**Cross-cutting: Hydrogen (HY)**

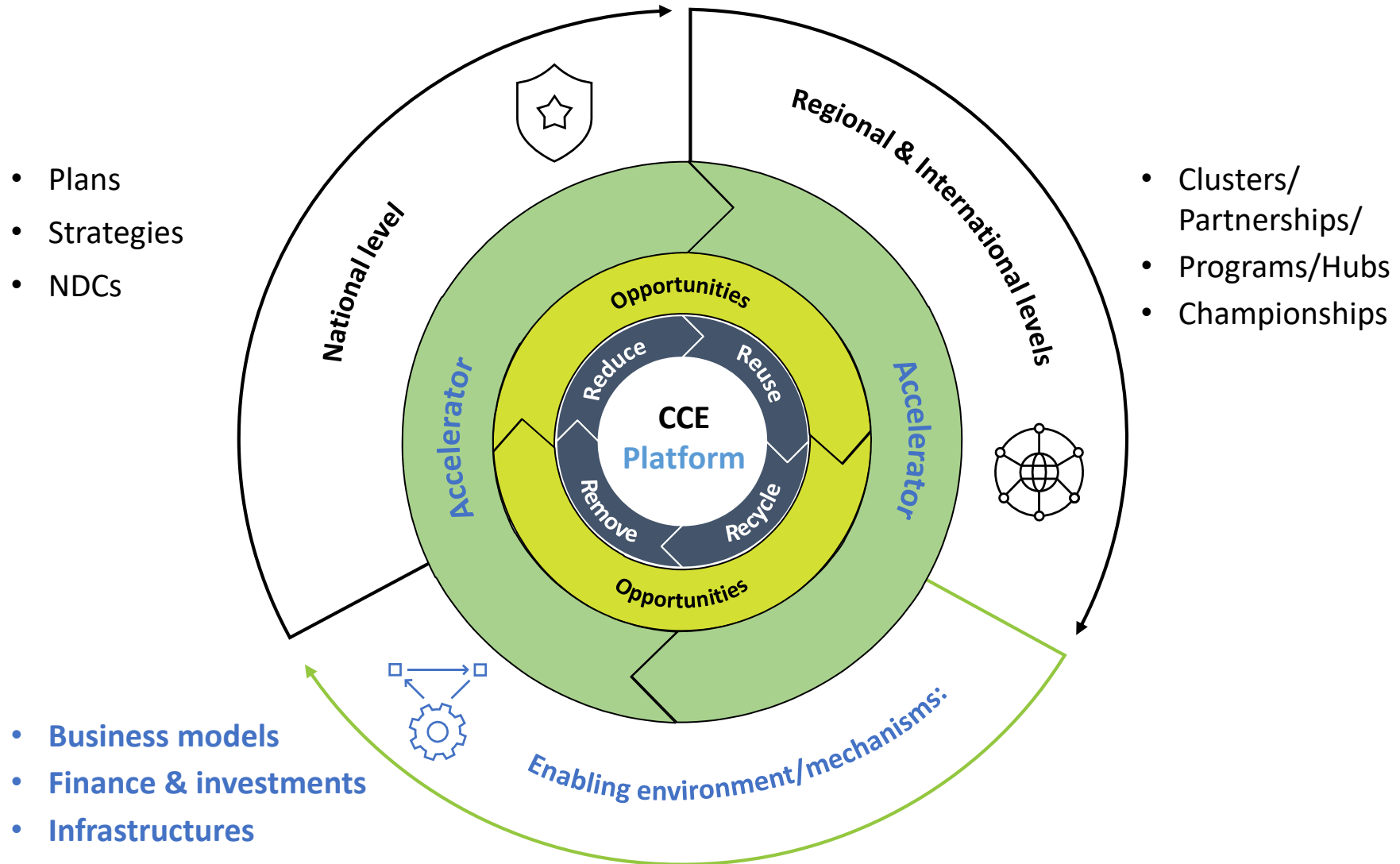
# Circular Carbon Economy (CCE) Platform: Opportunities

*Elements include: i) high-level impact opportunities*



# Circular Carbon Economy (CCE) Platform: Accelerator

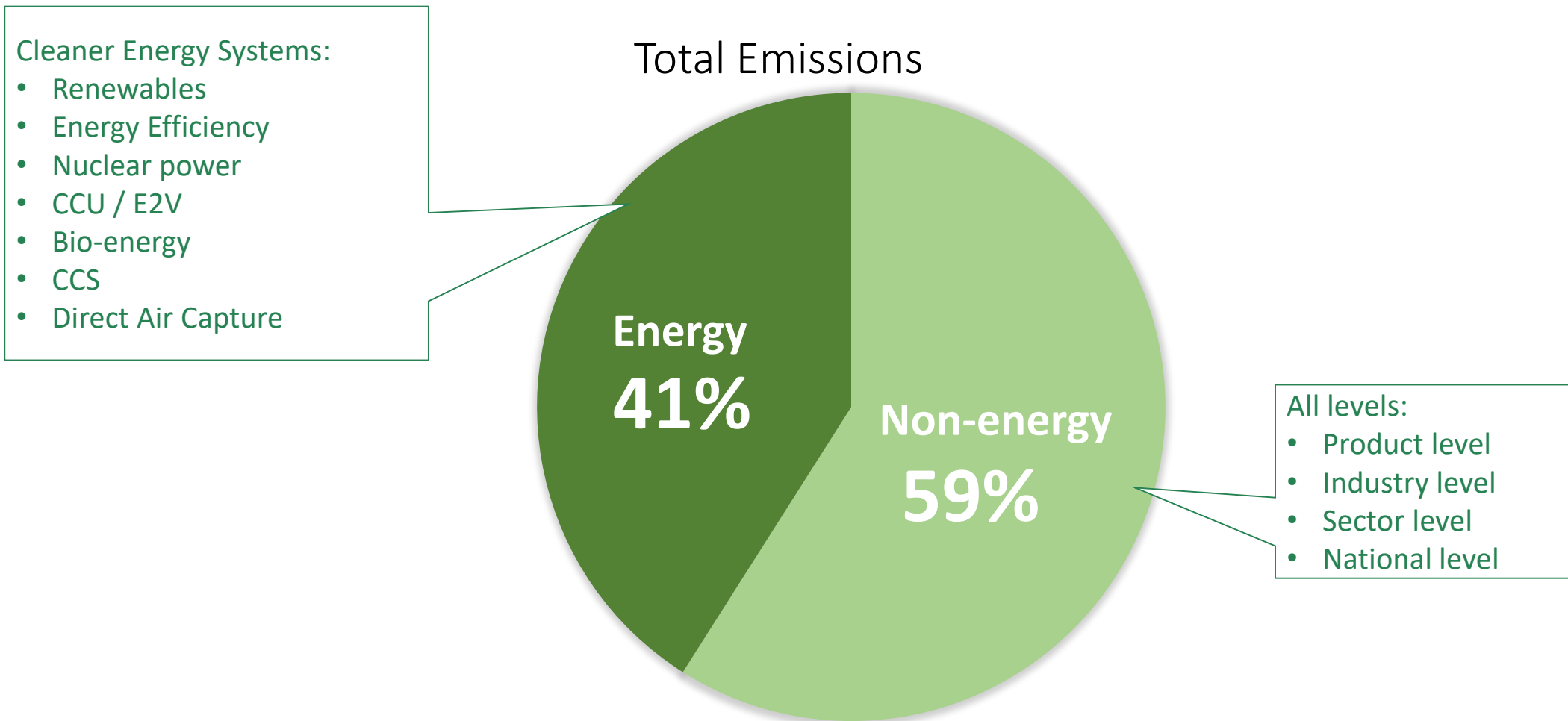
Elements include: i) high-level impact opportunities, and ii) the CCE Accelerator, which create the framing and potential vehicle to action the opportunities





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Non-energy sectors contributed to approximately two-third of global emissions, which can be addressed through the Circular Carbon Economy approach at various level

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# Application

## ➤ Energy



## ➤ Mobility

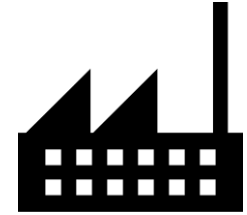


## ➤ Building



## ➤ Industry:

- Cement
- Petrochemical
- Steel



## ➤ Agriculture



## ➤ Livestock



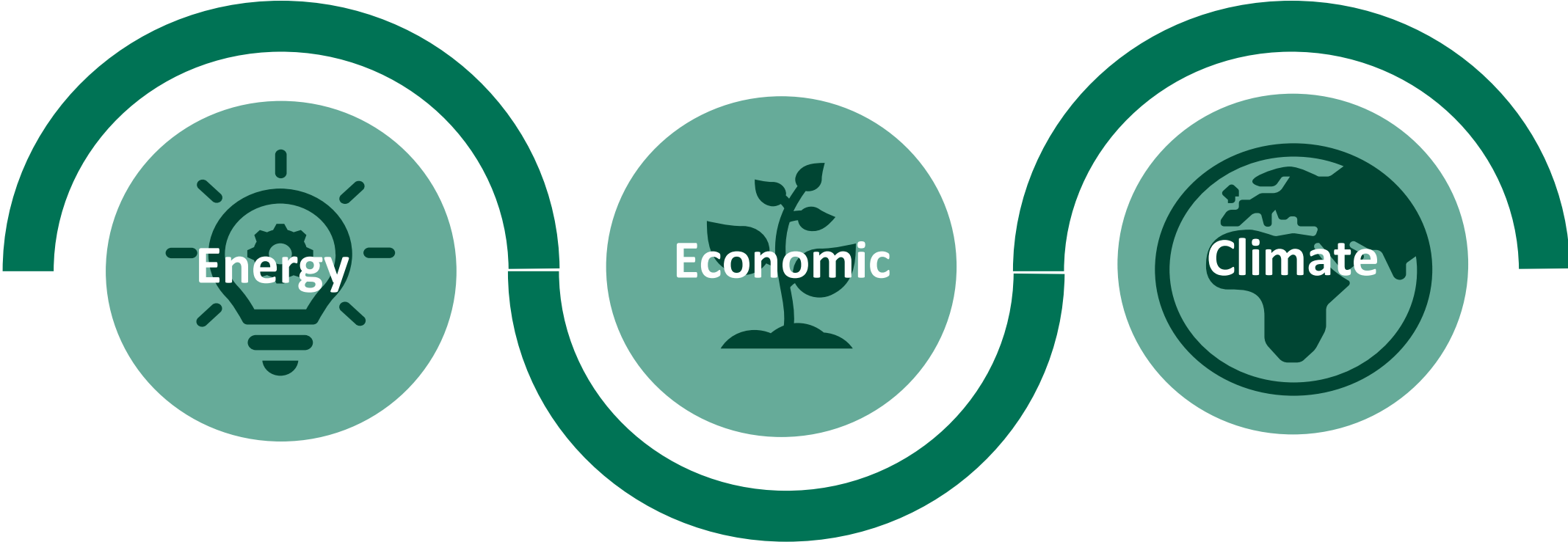
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## Concluding remarks

- CCE Approach contributes to Sustainable Development, including climate;
- Builds on the “Circular Economy”;
- Advance technology innovation;
- Transforms the emissions challenge to business opportunities;
- Values all options and technologies **(CCUS is critical for success)**;
- Covers all economic sectors
- Promotes integrated business models;
- Provide collaborative platform;
- Accounts for local and national context;
- Contributes to economic growth; and
- G20 has endorsed the CCE Platform as framework to advance sustainability.

# THE SYNERGY OF THE CIRCULAR CARBON ECONOMY APPROACH: For Economic Growth



**Thank you**