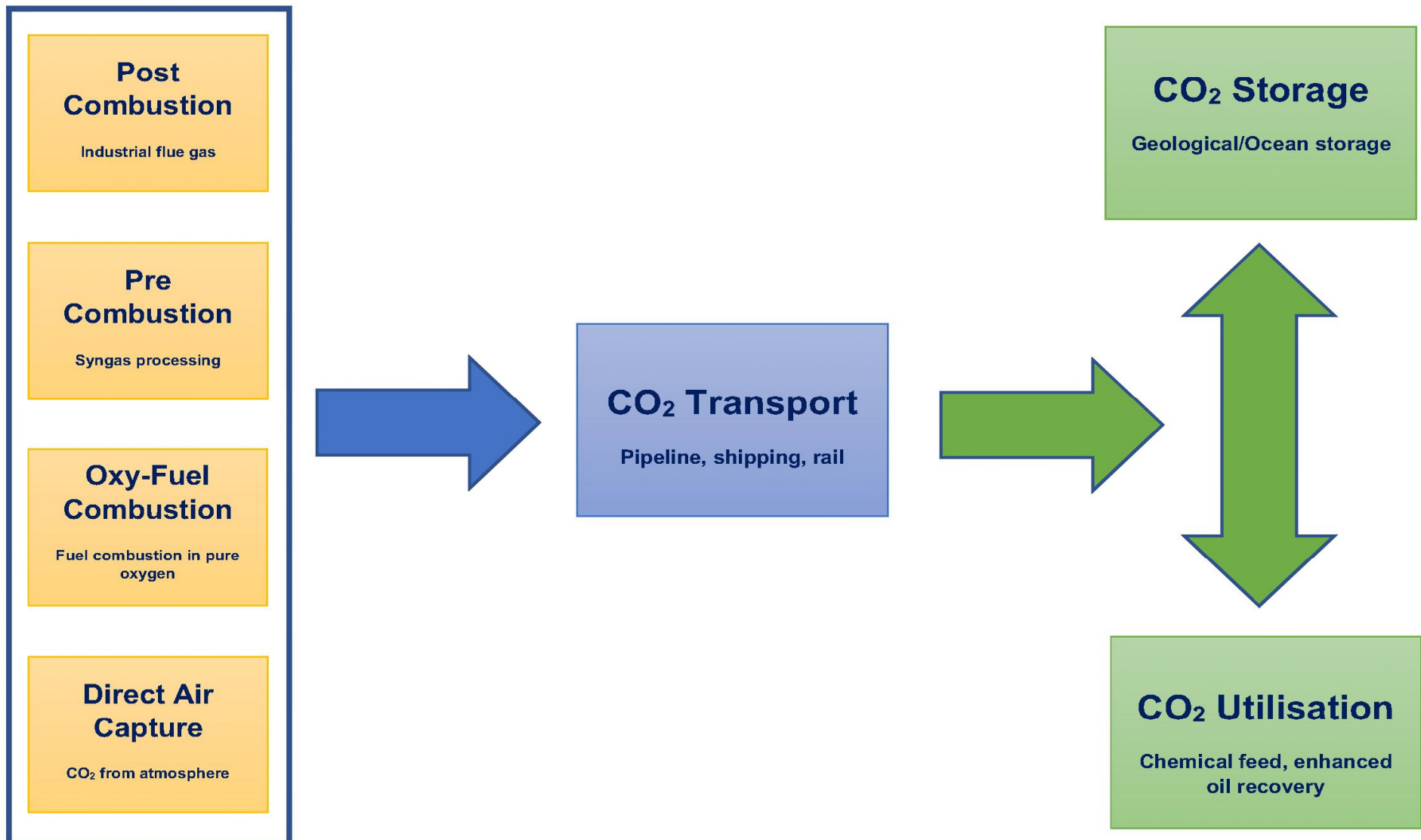


Sources of CO₂



What is Carbon Capture?

- Carbon capture is the process of capturing CO₂ before it enters the atmosphere.
- CO₂ can be capture anywhere from industrial flue gas emission to directly from air

Why Capture CO₂

- According to the Intergovernmental Panel on Climate Change (IPCC), global CO₂ emissions must be cut by 50-80% by 2050 to avoid the most damaging effects of climate change
- CO₂ emissions can be reduced in a number of ways such as increasing global use of renewable energy and reducing fossil fuel consumption
- CO₂ capture allows the use of fossil fuels whilst significantly reducing CO₂ emissions

How is CO₂ Captured?

Post combustion capture - the capture of CO₂ emissions from industrial flue gases, typically from coal or natural gas power plants

Pre combustion capture - the capture of CO₂ emissions from fossil fuels before they are combusted, such as the conversion of natural gas to Hydrogen

Oxy-fuel combustion - the combustion of fossil fuels such as natural gas in pure oxygen instead of air producing a flue gas of pipeline quality CO₂ for transport and storage.

Direct air capture (DAC) - capture of CO₂ directly from the atmosphere

CO₂ Transport

Pipelines - Compressed CO₂ from carbon capture plants can be transported both onshore/offshore in pipeline networks

Shipping - CO₂ from carbon capture plants/intermediate pipelines can be liquified by cooling to sub-zero temperatures and transported offshore to storage sites by ships.

Rail - CO₂ from carbon capture plants can be compressed/liquified to sub zero temperatures and transported onshore by rail tankers

Final uses/storage of CO₂

Chemical feedstock - CO₂ can be used in a number of chemical processes as a feedstock to produce useful products. These range from creating fuel, building materials, fertilisers or polymers.

Enhance Oil Recovery - Compressed CO₂ can be injected into oil wells/natural gas reservoirs to increase production of fossil fuels, in turn storing CO₂

Storage - The vast majority of captured CO₂ will need to be stored underground in either onshore or offshore geological formations (e.g. depleted oil/gas reservoirs).

References/Further Reading

[Intergovernmental Panel on Climate Change \(IPCC\)](#)

[UK government carbon capture, usage and storage](#)

[Global Carbon Capture and Storage Institute](#)

[The International Energy Agency](#)