

# Classification of different technologies to decarbonize the industrial sector

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# Decarbonization of systemically important industries is a key task

## Strategies for CO<sub>2</sub> neutrality of industrial processes

### 1. Avoidance

- Increase efficiency
  - Alternative processes
- Carbon Direct Avoidance (CDA)

### 2. Exploitation

- Extension of material use
  - Carbon circular economy
- Carbon Capture and Usage (CCU)

### 3. Storing

- Geological storage
  - If necessary, recirculation
- Carbon Capture and Storage (CCS)

Order = fundamental prioritization

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## Strategies for CO<sub>2</sub> neutrality of industrial processes



### Steel

Source: blast furnace  
Carbon as a **reducing agent** for iron ore



### Cement

Source: cement kiln  
Baking the **raw material** limestone ( $\text{CaCO}_3$ ) into cement clinker






### Aluminum

Source: Aluminum smelter  
**Carbon anodes** in fusion electrolysis

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## Strategies for CO<sub>2</sub> neutrality of industrial processes.

	Carbon Direct Avoidance (CDA)	Carbon Capture and Usage (CCU)	Carbon Capture and Storage (CCS)
 Steel	●	○	?
 Cement	■	●	?
 Aluminum	●	○	?

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