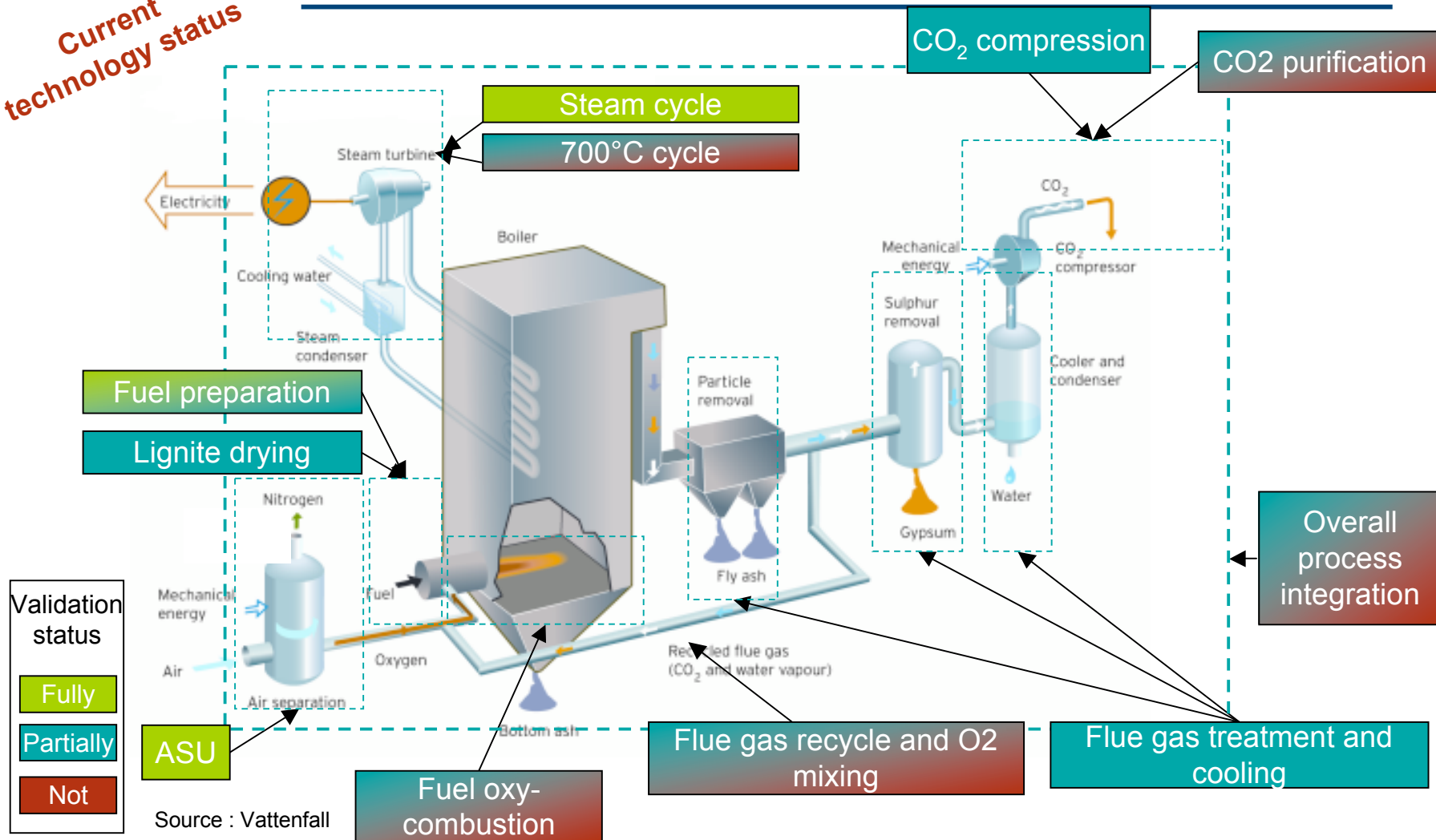


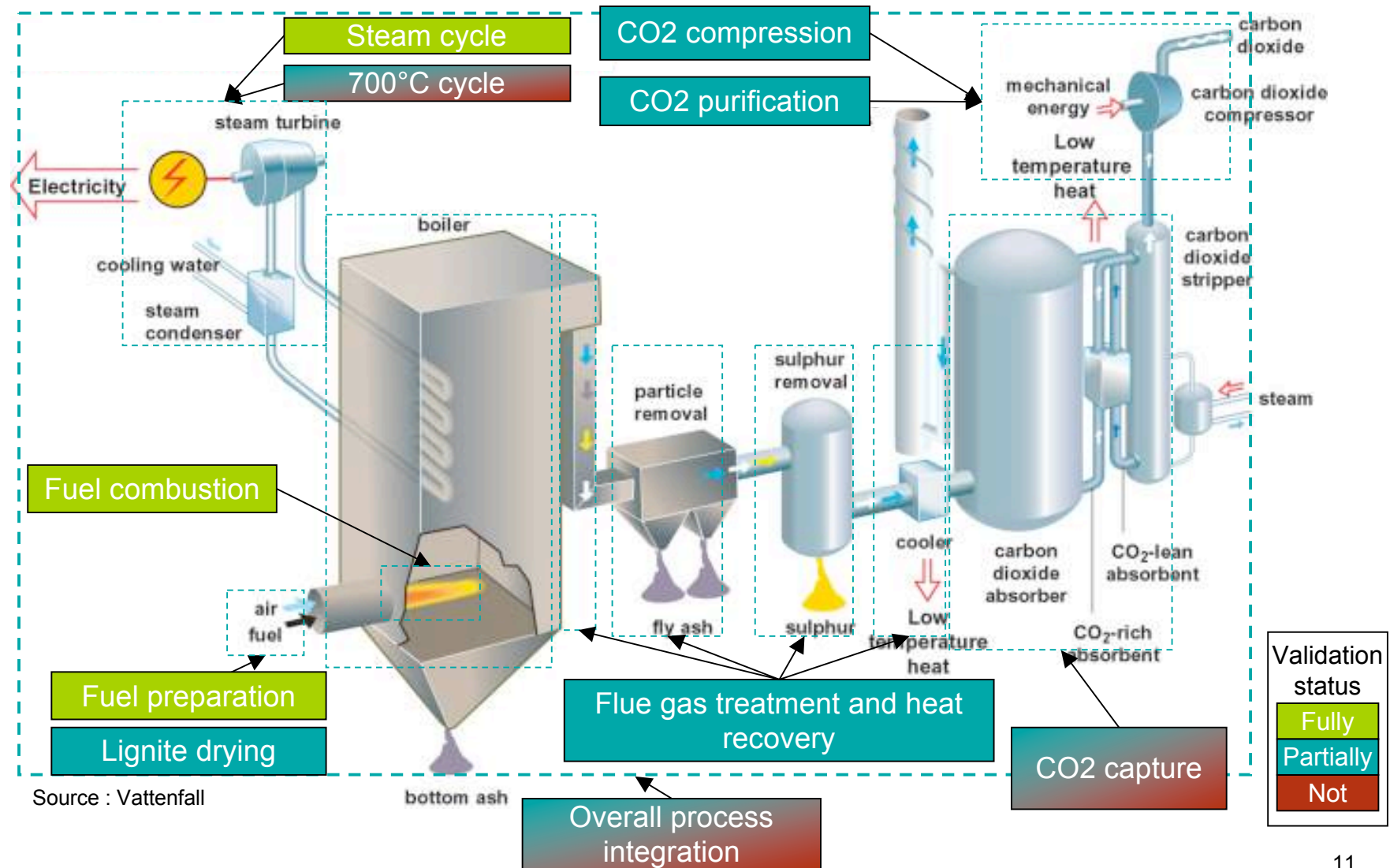
Oxyfuel technology blocks (boiler-based) – current validation status

Current
technology status

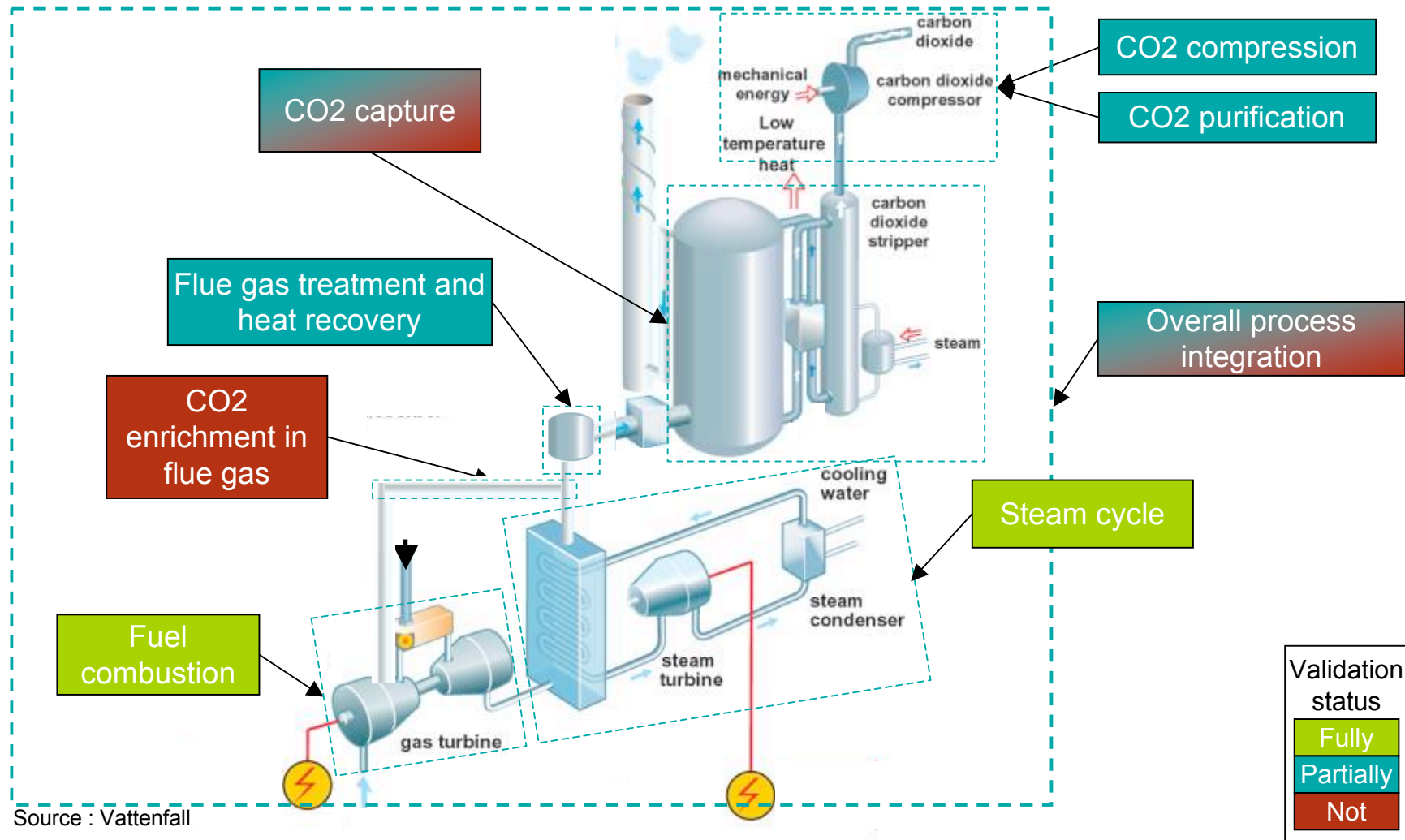


Significant R&D and demonstration work required

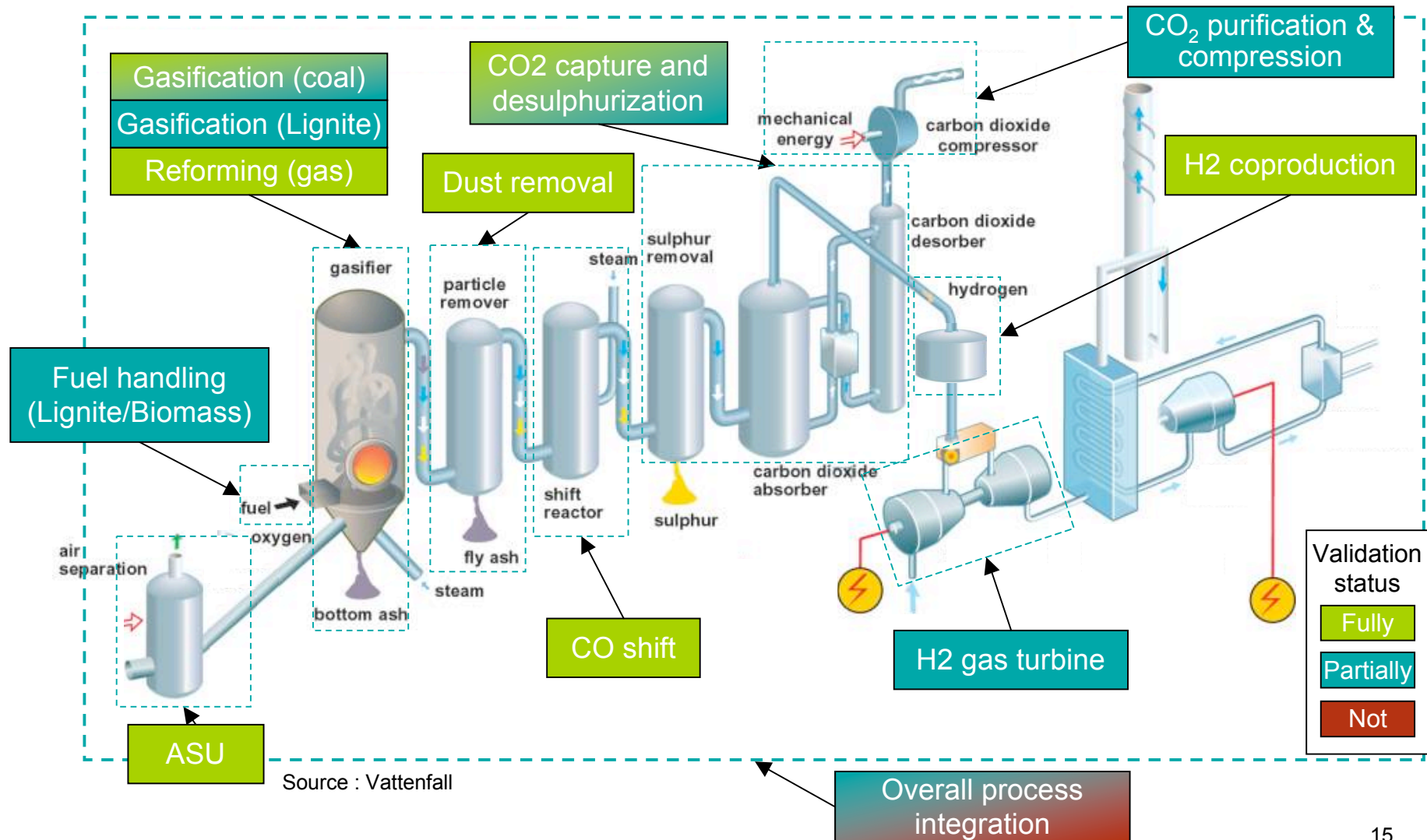
Post-combustion (boiler-based) – current validation status



Post-combustion (GT-based) – current validation status

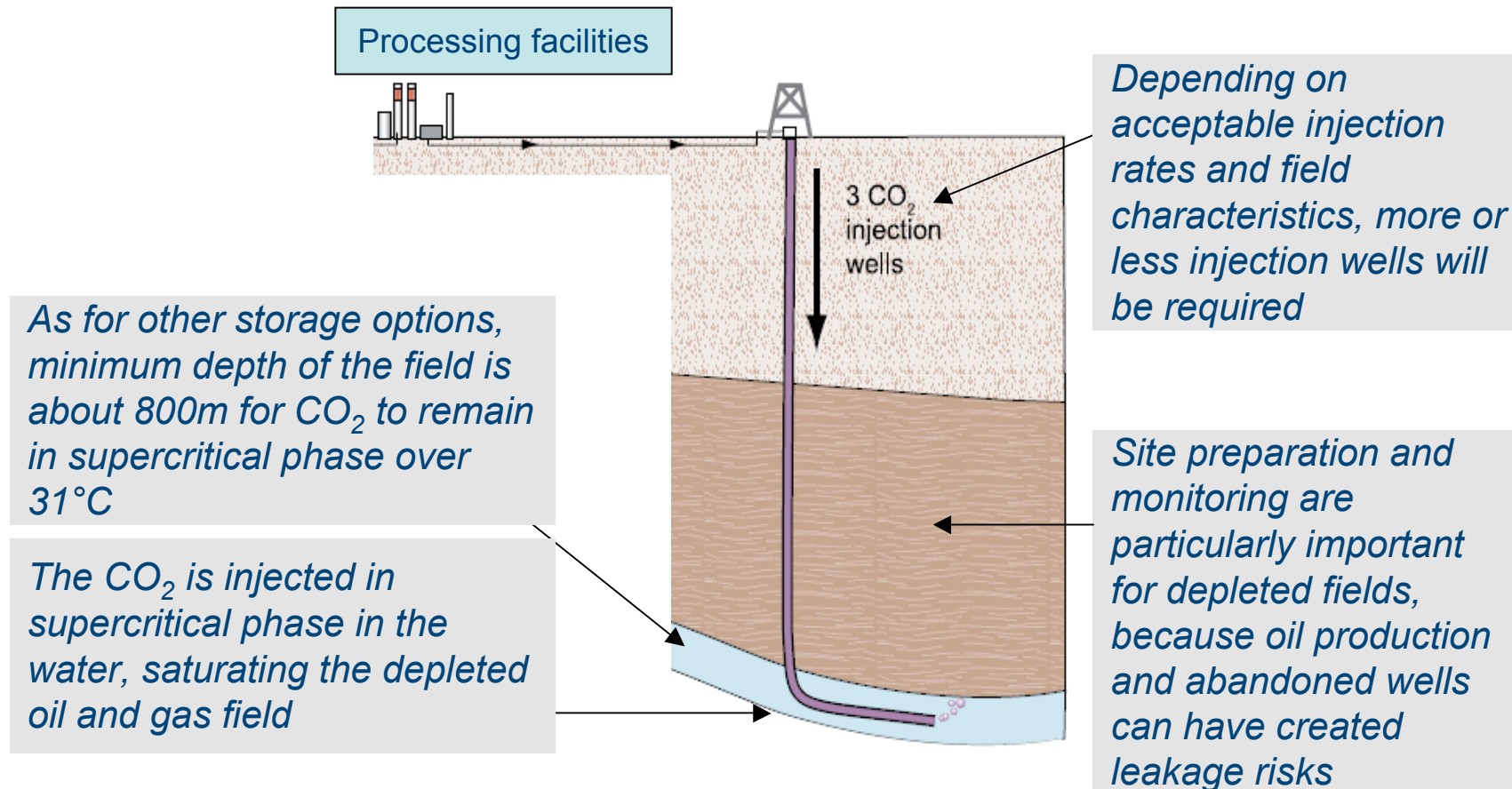


Pre-combustion technology blocks – current validation status



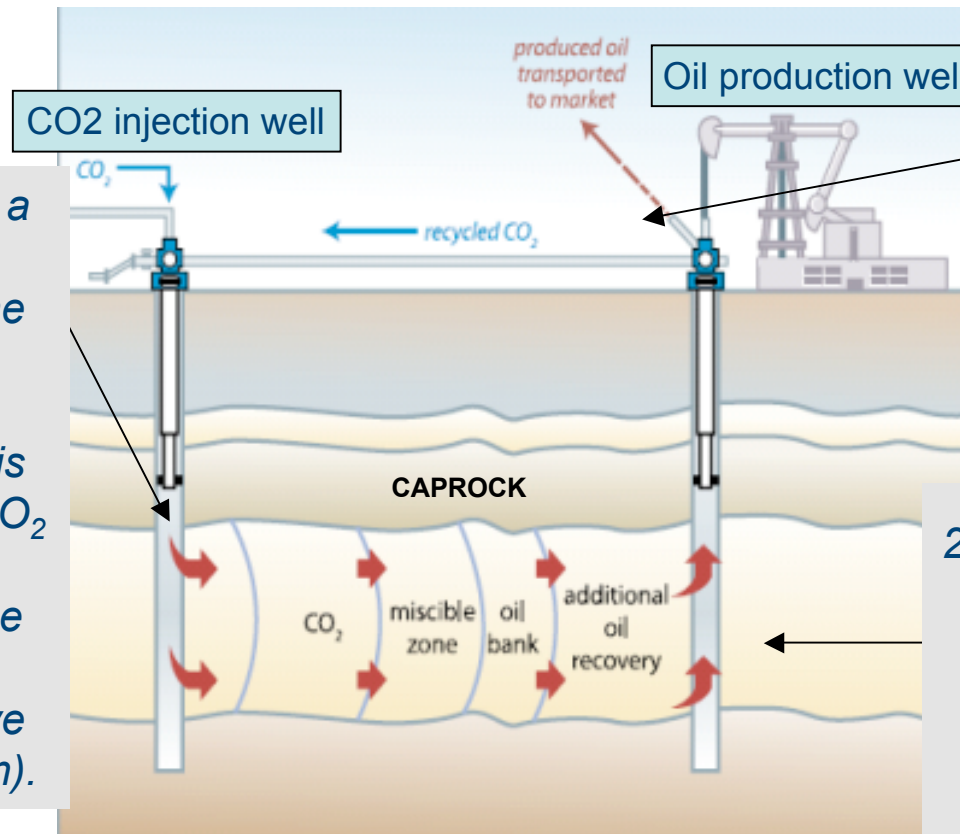
Depleted oil and gas field storage process explanation

Schematic drawing of a depleted oil/gas field CO₂ storage site (In Salah project)



EOR/EGR process explanation

Schematic drawing of an EOR system
(followed by permanent storage) using CO₂



CO₂ is injected in a specific well, separated from the oil extraction well. Minimum optimal depth of the field is about 800m for CO₂ to remain in supercritical phase (natural earth temperature above 31°C at that depth).

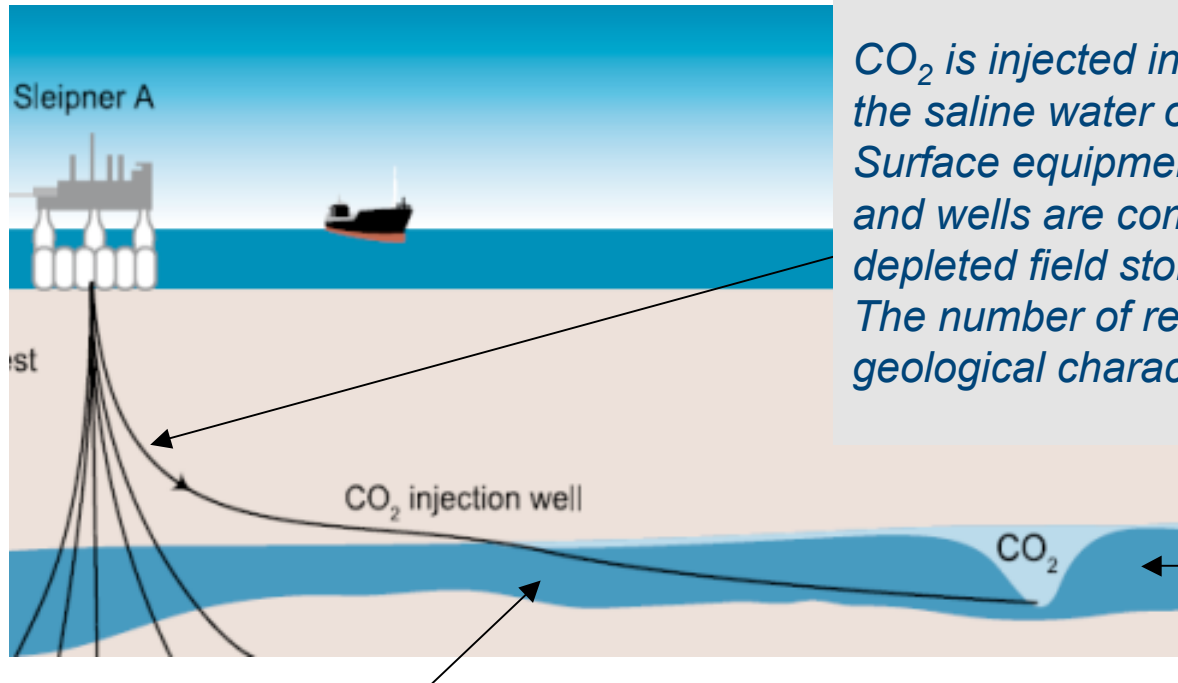
Part of the CO₂ stays in the oil formation, the rest being re-extracted with the oil and partly recycled. Quantity of CO₂ staying in the formation depends on CO₂ and oil characteristics (20%-70%).

2 EOR mechanisms:

- CO₂ "chases" the oil by flooding the formation
- In optimal temperature and pressure conditions, part of the CO₂ also dissolves in the oil (miscible zone), making it more fluid.

Deep saline aquifers storage process explanation

Schematic drawing of Sleipner Utsira Formation deep saline aquifer storage site



CO₂ is injected in supercritical phase in the saline water of the aquifer. Surface equipment, injection equipment and wells are comparable to EOR and depleted field storage. The number of required wells depends on geological characteristics.

Significant uncertainty exists on the share of aquifer volume that can be filled with CO₂ (between 2 and 70% estimates), because the speed and importance of CO₂ dissolution and precipitation is not yet well known.

A deep saline aquifer is a permeable sedimentary rock formation saturated with water. Depth is generally between 800m and 3 km. Thickness and geological characteristics of aquifers (in particular permeability, which defines how “easily” CO₂ can enter) are highly site specific.