State of Play of CCS and where to from here?

A regulator's perspective

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SOUTH AUSTRALIA

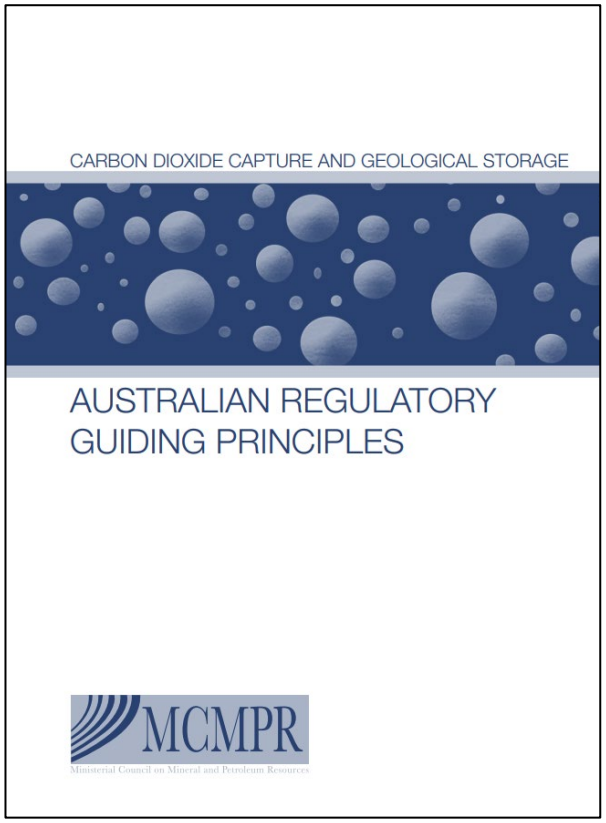
Government of South Australia

Department for Energy and Mining

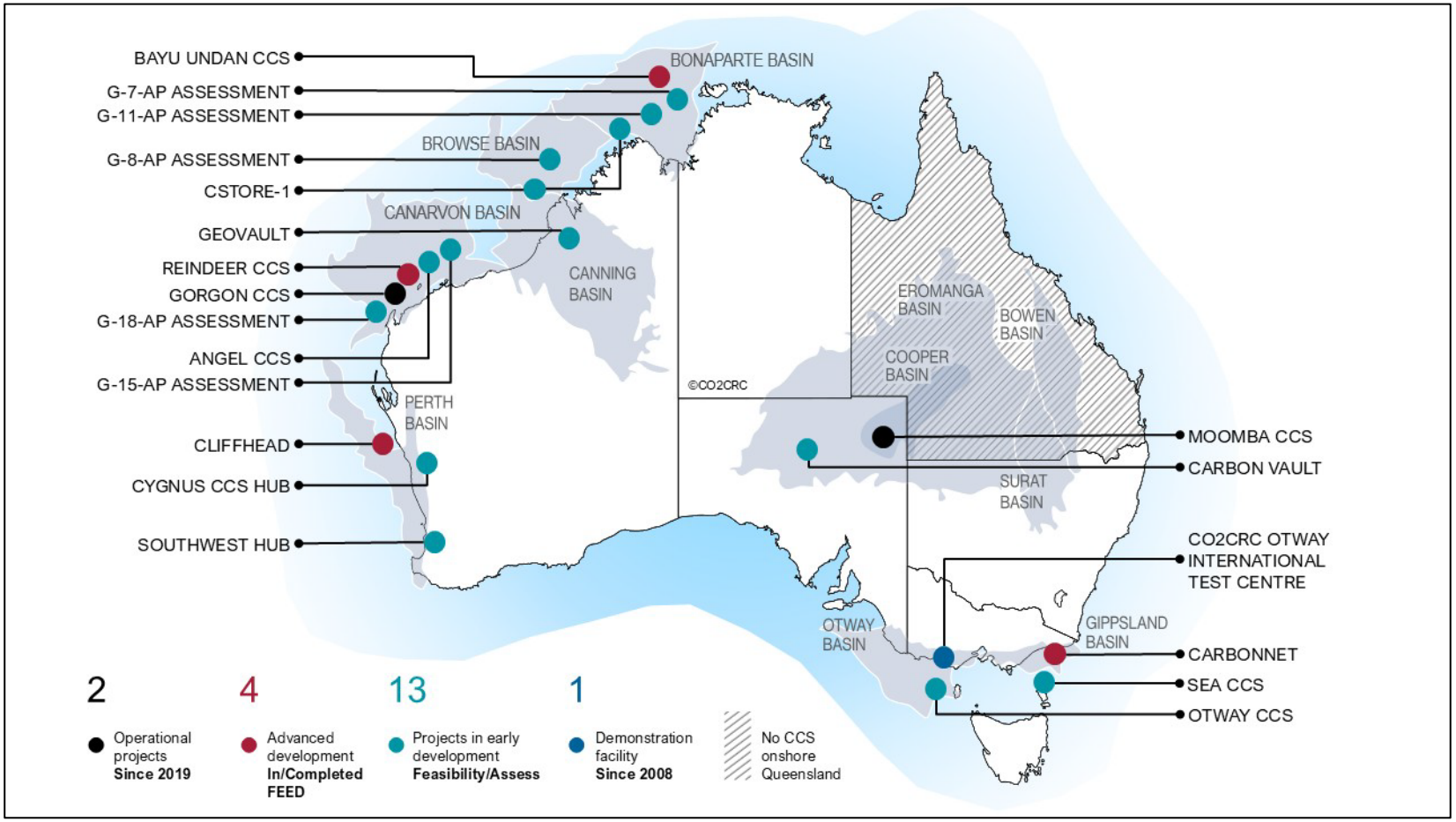
CCS Legislation – Australian context

In 2005 Australian federal government published guiding regulatory principles for CCS, calling for:

- Effective property rights
  - *Secure CCS storage rights – industry investment certainty*
- Nationally consistent assessment and approval processes
  - *Risk based regulation – Process Safety Management framework*
- Effective Monitoring and Verification
  - *Demonstrate CCS is working*
- Long term liability post closure
  - *Once secure storage is demonstrated – liability reverts to state*



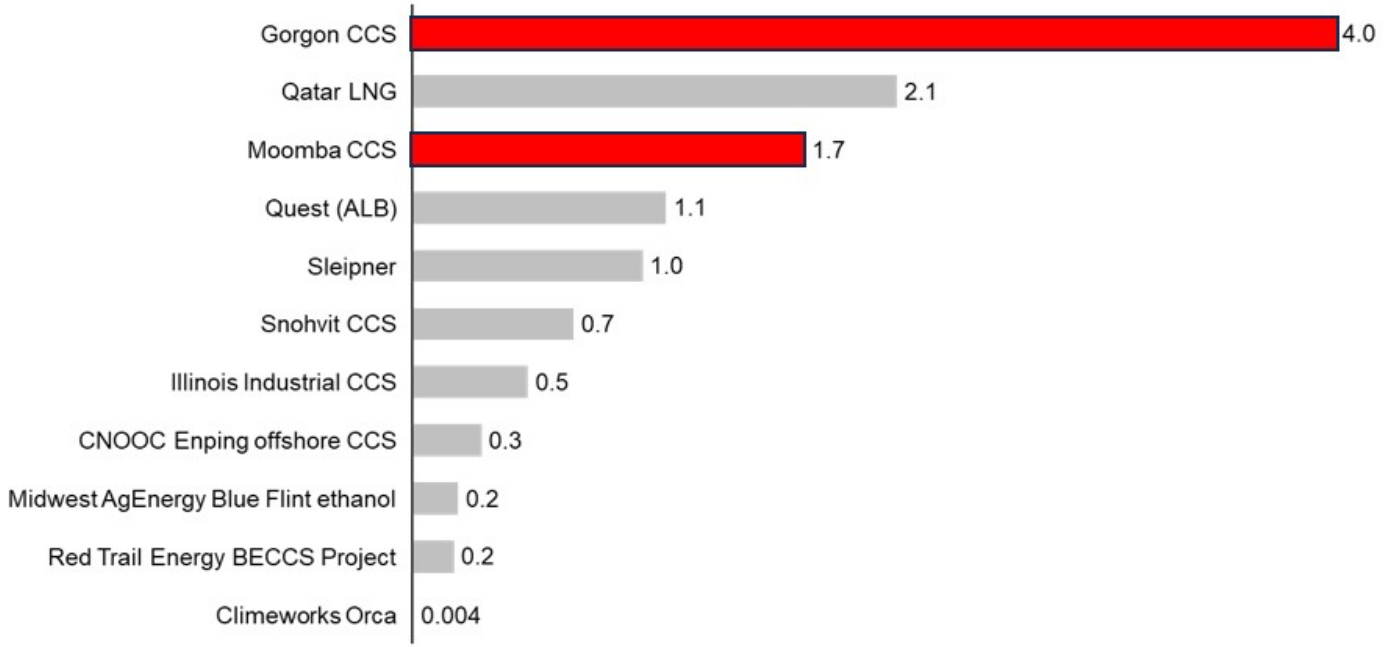
CCS Operations in Australia



Source: co2crc

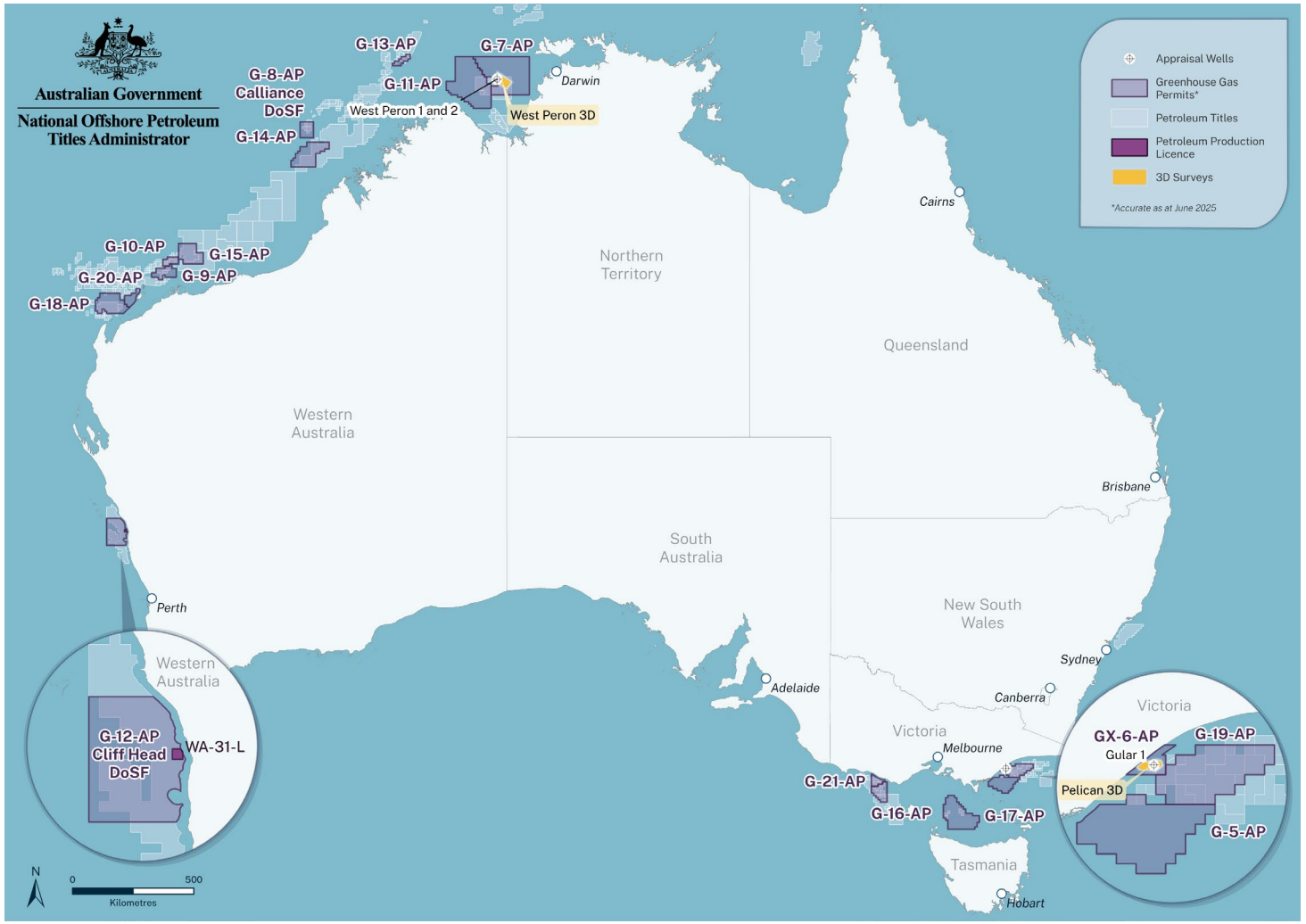
CCS Facilities Globally

Announced capacity of dedicated storage CCS projects mtpa, IEA database



https://www.iea.org/data-and-statistics/data-product/ccus-projects-database, accessed 16th July 2024 by Santos Ltd.

CCS Offshore Permits in Australia



Source: NOPTA

Important technical CCS matters

- Above all, objective is to maintain greater than 95% CCS network availability – community confidence
- Understand the underground geology and how CO_2 plume will hydrodynamically behave
- Know your CO_2 stream specification/composition and impurities
- Impurities affect phase behaviour – in turn can lead to uncontrollable corrosion during:
  - Start-ups: – incl. commissioning
  - Shut-downs: planned and unplanned
  - Depressurisation events: planned and unplanned
- Material selection and dehydration: addressing corrosion risks – don't forget what happened at Gorgon!
- Establish community confidence in CCS by proving that CCS works – effective Monitoring and Verification – show the world why Gorgon and Moomba CCS projects are proving to be successful – sell the wins!

Some policy observations to progress CCS:

- Above all: must have technologically agnostic government CO_2 abatement policy – don't pick winners – allow all technologies to serve their purpose
- Best achieved through effective financial incentive frameworks – e.g. carbon pricing/credit mechanisms
- Recognise and acknowledge that CCS is "**a**" CO_2 abatement technology not "**the**" abatement technology
- Won't be long before narrative moves from "net-zero" to "net-negative" – hence importance of CCS
- Practical regulation premised on:
    - Best practice CCS standards encapsulating capture, transport and storage (incl. M&V)

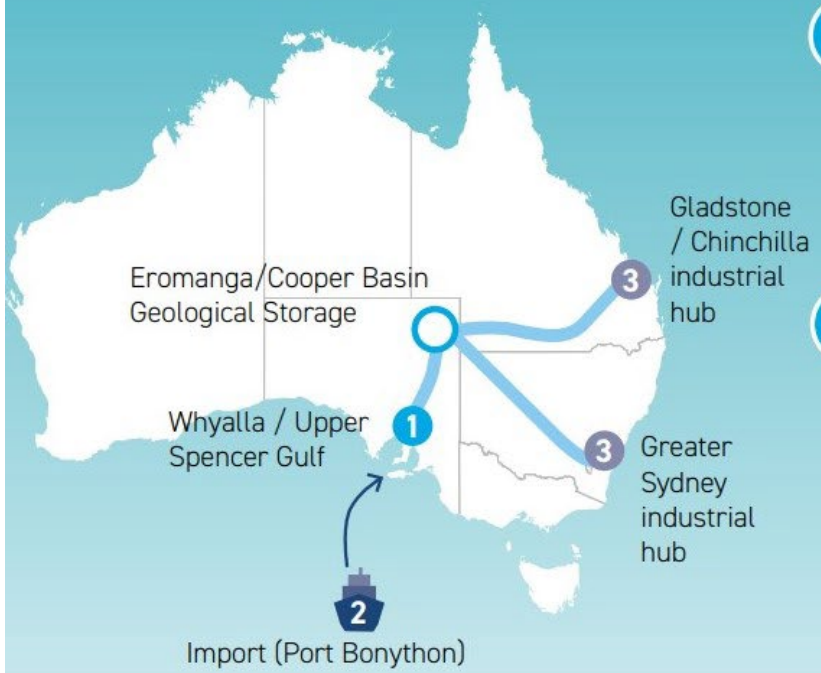
Initiatives to progress CCS:

- Need economies of scale: establish CCS hubs – adjacent to point sources – e.g. steel/cement/power plants
- Importance of ship transport – Australia has potential to become Asia's CCS hub!
- Regional hub model? Australia/Indonesia work together?
- Government/industry partnerships
  – particularly for key infrastructure (SA Government CCUS Infrastructure Report)

South Australian CCUS Infrastructure Report

Next Steps

ISA undertook this study to understand the potential establishment of a CCUS industry in SA and the ability to address local, national and international opportunities. This study indicates that a range of opportunities exist for SA and presents one potential scenario for infrastructure and partnerships. The next steps will further explore the opportunities and feasibility of CCUS for SA.



1. **CCUS Partnerships** – Establish a holistic CCUS forum (network or similar) across all elements of the supply chain, including regulators, industrial emitters, technology partners, potential owners/operators, and research and development partners.

2. **Development Pathway** – Undertake a strategic assessment of the frameworks under which a CCUS ecosystem would be developed, regulatory approvals, engage with supply chain operators, and undertake analysis of discrete project elements and business models

3. **Detailed Business Case** – A detailed business case will be developed for feasible opportunities identified as part of Step 2, including preferred operating model and underpinning infrastructure