

Global geological storage capacity for captured CO<sub>2</sub> is estimated to be in excess of storage requirements for limiting global warming to 1.5C, however regional availability could pose challenges for CO<sub>2</sub> captured from locations significant distances from storage infrastructure. Nonetheless, with the correct approach to storage site selection and management, experts estimate that CO<sub>2</sub> can be permanently isolated from the atmosphere.

With decarbonised industrial production processes for many primary metals, building materials, and chemicals still some years away from commercial availability, essential near-term emissions reduction in the industrial sector will rely substantially on the availability of CCS.



CCS is proven technology with an important role to play in meeting emissions reduction targets. Experts say greater use of CCS is needed to meet agreed global emissions targets.

### **Investment in CCS in Australia has been limited to date.**

Appetite for investment in CCS projects in Australia is limited but, however slowly, the wheels continue to turn. The Climate Change Authority has self-initiated a research project on Australia's carbon sequestration (storage) potential.

**According to the CSIRO, Australia has the abundant land-resources, geological storage capacity, and vast marine estate needed to translate sequestration opportunities into reality.**



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Phone: (07) 3839 8588  
Fax: (07) 3839 8404

The CSIRO has also recommended that carbon capture and utilisation form part of a portfolio of decarbonisation solutions for hard-to-abate industries such as cement, steel, plastics, and transport.

The only large-scale operational CCS project in Australia is Chevron's Gorgon Gas Project, commissioned in 2019 and located off the coast of Western Australia. It still yet to achieve its mandated goal to capture and bury 80% of its CO2 emissions annually. Past demonstration projects include the Callide Oxyfuel Project in Queensland, which saw Callide A Power Station retrofitted with CCS technology and captured CO2 transported to Victoria for injection at the Otway Project site. Before the pilot project wrapped up in March 2015, the Callide Oxyfuel Project had demonstrated more than 5,000 hours of carbon capture from Callide A Power Station.

Meanwhile, the Hydrogen Energy Supply Chain (HESC) project in Victoria's Latrobe Valley completed its pilot phase in February 2022. The project successfully demonstrated the extraction of hydrogen from Latrobe Valley-mined coal and biomass using CCS technology, followed by the liquefaction of hydrogen gas, and transportation of liquid hydrogen to Japan. Having completed the pilot phase, the facilities are now either under care and maintenance or being utilised for research and development. Modelling shows that, if the HESC project was scaled up to commercial production levels of 225,000 tonnes of liquid hydrogen per year, it would reduce global emissions by 1.8 million tonnes per year.

The cost involved in establishing CCS projects has been a barrier to its further expansion. As renewable sources of electricity generation have become progressively cheaper, the most likely prospects for CCS in Australia have shifted away from power generation and to the industrial sector. In the latest federal budget, the Australian Government made a \$141.1 million funding commitment over 10 years to establish a 'Carbon Capture Technologies for Net Zero and Negative Emissions' program. This program focuses on CCS technology development for hard-to-abate industrial sectors.

**Unfortunately, the politics of CCS in Australia have suffered from long-term campaigns that have portrayed CCS as a cynical ploy to allow fossil fuel companies to pollute for longer. These campaigns disregard the widespread international recognition that CCS will be essential to achieving the world's climate goals.**

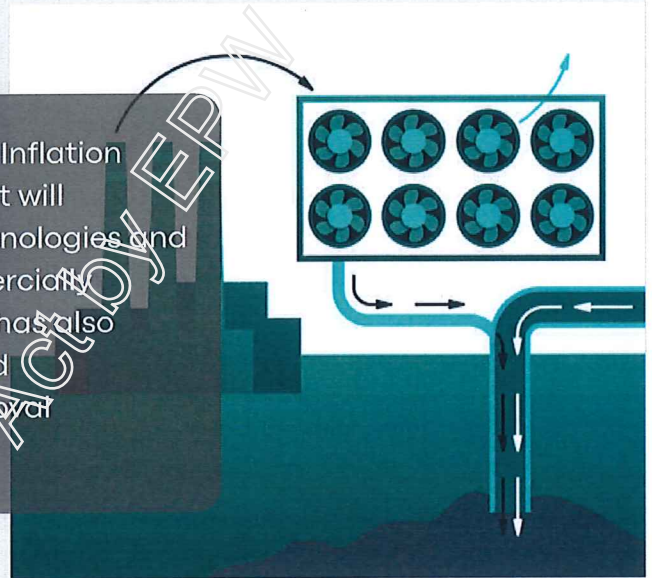


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Fax: (07) 3839 8404

## Investment in CCS is ramping up internationally.

As the world's major economies step up to take action on climate change, they are acknowledging that support for investment in CCS is imperative. And they are acting accordingly. Analysis in the latest Global Status of CCS Report places the world's carbon capture capacity in development at 244 million tonnes CO<sub>2</sub> per year, already some 44% higher than it was in 2021.

In the US, President Biden's signature Inflation Reduction Act contains measures that will incentivise the expansion of CCS technologies and make them significantly more commercially viable. The US Department of Energy has also announced \$30 billion in research and development funding for carbon removal technology.



The European Commission's proposed Green Deal Industrial Plan and Net Zero Industry Act are set to provide a 'simplified regulatory framework' for products essential to Europe's climate neutrality goals, including carbon capture and storage technologies. Prominent CCS projects under development in Europe include Norway's ambitious Longship Project, which will capture CO<sub>2</sub> from a cement factory and ship it to Norway's west coast, where it will then be stored beneath the seabed. The transport and storage elements of the project are designed to enable additional volumes of captured carbon from other projects across Norway and beyond.

Demonstrating the vastly different approach to CCS taken by climate policy advocates outside Australia, ten leading environmental NGOs joined an open letter to the European Commission in December, calling attention to the need for a policy framework, guiding principles, and safeguards to facilitate the deployment of CCS so that Europe can reach climate neutrality.



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Spring Hill Qld 4000  
Phone: (07) 3839 8588  
Fax: (07) 3839 8404

## CCS should have a future in Australia.

The potential for use of CCS in Australia's coal-fired power industry has been compromised by lack of investment at a critical phase in the early 2000s, the cost of retrofitting or building new CCS coal-fired power stations, and the fact that alternative electricity sources have become cheaper during that time.

The most recent CSIRO figures place the cost of electricity generation for coal fitted with CCS in the realm of \$100/MWh more expensive than that of solar PV and onshore wind generation. And, on current trajectories, firming capacity in the grid is far more likely to come from sources other than coal power, such as the utility scale battery storage and hydro generation that underpin AEMO's Integrated System Plan.

While CCS stands to be necessary and pragmatic for emerging and developing economies with younger coal power fleets, coal with CCS likely won't be in the mix across the European, North American, or Australian power sector.

It is disappointing that there was not more committed investment in CCS technology from the coal-fired power stations to establish its role in emissions reduction frameworks. But the story is the same outside of Australia. The coal industry has preferred to sit back and continue raking in profits under relaxed emissions regulations rather than invest in possibilities for the future of coal power.

However CCS can and should be an essential element in achieving emissions reduction in industry.

Decarbonised alternatives in heavy industry, such as steelmaking and cement, are still years away from commercial availability. This means that coal will remain a central part of the industrial sector during critical years for emissions reduction – and, therefore, that investment in and use of CCS technologies will be essential. International Energy Agency modelling of countries' emissions reduction pledges sees the use hydrogen and CCUS technologies accounting for over 15% of emissions reduction in the industrial sector between 2030 and 2050. CCS presents a huge opportunity for economic activity and investment, and one that other countries are eagerly taking advantage of – Queensland should be joining them!



District office: Level 2, 61 Bowen Street,  
Spring Hill Qld 4000  
Phone: (07) 3839 8588  
Fax: (07) 3839 8404



## Government has a role to play.

### We urge the Queensland Government to:

- Release modelling and costings on the use of CCS in coal power generation and industry, including past pilot projects and any forward modelling.
- Examine the use of new CCS technologies internationally and their potential to sustain and expand global demand for Queensland metallurgical coal.
- Invest in modelling the economic benefits for Queensland of investing in CCS technology to support emissions-reduction targets in industry, alongside modelling of potential uses of CCS in coal-fired generation to bolster energy security for Queenslanders.
- Review options for utilising Queensland's carbon sequestration potential.



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Spring Hill Qld 4000  
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Fax: (07) 3839 8404

s.73(2) - Irrelevant

**From:** EPW DLO <dlo@epw.qld.gov.au>  
**Sent:** Tuesday, 14 March 2023 5:44 PM  
**To:** s.78 s.78  
**Subject:** Re: CCS Policy

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**From:** s.78 s.78  
**Sent:** Tuesday, March 14, 2023 5:41:36 PM  
**To:** EPW DLO <dlo@epw.qld.gov.au>  
**Subject:** FW: CCS Policy

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Kind regards,#

#



s.78 s.78

**Office of the Hon. Mick de Brenni MP#**  
Minister for Energy, Renewables and Hydrogen#  
Minister for Public Works and Procurement #

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1 William Street, Brisbane GPO Box 2457 Brisbane QLD 4001#

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**From:** s.78 s.78  
**Sent:** Tuesday, 14 March 2023 5:41 PM  
**To:** s.78 s.78  
**Subject:** RE: CCS Policy #

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**From:** EPW <Epw@ministerial.qld.gov.au>  
**Sent:** Tuesday, 14 March 2023 5:09 PM  
**To:** s.78 s.78  
**Subject:** FW: CCS Policy #

#

Hi

#

Corro from MEU QLD FYI. Please advise on next action.#

#

Kind regards,#

#



s.78 s.78

Office of the Hon. Mick de Brenni MP#  
Minister for Energy, Renewables and Hydrogen#  
Minister for Public Works and Procurement # #

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From: s.78 s.78  
Sent: Tuesday, 14 March 2023 8:53 AM  
To: EPW <Epw@ministerial.qld.gov.au>; External - Springwood Electorate Office  
<springwood@parliament.qld.gov.au>  
Cc: s.78 s.78  
Subject: CCS Policy #

#  
Dear Minister De Brenni #  
#  
Please find attached correspondence (and attachment) relating to the above.#  
#  
Regards#

s.78  
s.78

Mining and Energy Union Queensland  
(a division of the CFMMEU)#  
Tel: # s.78 s.78  
Fax: # 07 3839 8404  
Email: s.78 s.78  
Web: #www.meuqld.org.au

**Office Location:**  
Level 2, 61 Bowen Street  
Spring Hill QLD 4000  
**Postal Address:**#  
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**Sent:** Thursday, 16 March 2023 12:29 PM  
**To:** s.78s.78  
**Cc:** EPW DLO  
**Subject:** RE: CCS Policy

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s.78 s.78  
Departmental Liaison Officer  
Office of the Director-General  
Department of Energy and Public Works

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Level 36, 1 William Street, Brisbane QLD 4000

**From:** s.78 s.78  
**Sent:** Thursday, 16 March 2023 11:14 AM  
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**Subject:** FW: CCS Policy  
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Please action accordingly, as per s.78 s.78 direction in thread below.

Kind regards,

s.78 s.78



**Office of the Hon. Mick de Brenni MP**  
Minister for Energy, Renewables and Hydrogen  
Minister for Public Works and Procurement

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1 William Street, Brisbane GPO Box 2457 Brisbane QLD 4001

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Kind regards,

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Queensland Government

Office of the Hon. Mick de Brenni MP  
Minister for Energy, Renewables and Hydrogen  
Minister for Public Works and Procurement

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From: s.78 s.78

Sent: Tuesday, 14 March 2023 8:53 AM

To: EPW <Epw@ministerial.qld.gov.au>; External - Springwood Electorate Office  
<springwood@parliament.qld.gov.au>

Cc: s.78 s.78

Subject: CCS Policy

#

Dear Minister De Brenni

Please find attached correspondence (and attachment) relating to the above.

Regards

s.78 s.78

Mining and Energy Union Queensland  
(a division of the CFMMEU)

Tel: s.78 s.78

Fax: 07 3839 8404

Email: s.78 s.78

Web: www.meuqld.org.au

Office Location:  
Level 2, 61 Bowen Street  
Spring Hill QLD 4000  
Postal Address:  
PO Box 508  
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**From:** EPW  
**Sent:** Thursday, 16 March 2023 8:24 AM  
**To:** s.78 s.78  
**Subject:** FW: CCS Policy  
**Attachments:** 3-13-23 Letter to Energy Minister CCS final.pdf; FINAL CCS Discussion Paper .pdf

Hi s.78

Here's the digital copy

Kind regards,

s.78

s.78



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Minister for Energy, Renewables and Hydrogen  
Minister for Public Works and Procurement

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**To:** EPW <Epw@ministerial.qld.gov.au>; External - Springwood Electorate Office <springwood@parliament.qld.gov.au>  
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**Postal Address:**  
PO Box 508  
Spring Hill QLD 4004

