



**CO2CRC Limited**  
ABN 56 117 183 516  
p: +61 (0)3 8595 9600  
e: [info@co2crc.com.au](mailto:info@co2crc.com.au)  
[www.co2crc.com.au](http://www.co2crc.com.au)

L3, 289 Wellington Parade South  
East Melbourne, Victoria 3002  
PO Box 24121, Melbourne  
Victoria 3001

5th July 2023

Committee Secretary

Senate Standing Committees on Environment and Communications Standing Committee on Climate Change, Energy,  
Environment and Water  
PO Box 6021  
Canberra, ACT 2600

Dear Committee Secretary,

**Re: *Inquiry into Environment Protection (Sea Dumping) Amendment (Using New Technologies to Fight Climate Change) Bill 2023 [Provisions]***

Please find CO2CRC's submission to the Australian Senate Environment and Communications Legislation Committee's to the proposed Environment Protection (Sea Dumping) Amendment (Using New Technologies to Fight Climate Change) Bill 2023 [Provisions] provided below. In providing this submission, the CO2CRC notes the findings by the recent House of Representatives inquiry into the 2009 and 2013 amendments to the London Protocol and the imperative for deploying CCS technology created by the Government's recently announced reforms to the Safeguard Mechanism.

By way of background, CO2CRC is a not-for-profit research organisation that has been investigating Carbon Capture, Utilisation and Storage (CCUS) for twenty years. CO2CRC develops and trials next-generation low-emission technologies in commercially relevant, first-of-a-kind demonstrations.

Our portfolio is developed in line with industry and government priorities, which enables collaboration and financial efficiencies to trial the new low-emission technologies. CO2CRC works with national and international discipline leaders, manages interdisciplinary and inter-institutional research projects and has well-established, decade-long relationships, strong international brand recognition, and an outstanding health and safety record. The organisation has an internationally recognised track record of safely delivering complex demonstration projects within a well-established governance structure.

CO2CRC is well regarded nationally and internationally, not only for the quality of its science but also for its independence.

As an independent organisation, CO2CRC considers the signing by Australia of the Article 6 Amendment of the London Protocol as essential. The signing will yield significant environmental and economic benefits to Australia, its major Asia Pacific trading partners, and neighbouring developing countries such as Timor Leste. Failure to sign, or further delays, would entail significant risks to the projects necessary to deliver the government's legislated emissions targets.

Yours sincerely

Dr Matthias Raab  
Chief Executive Officer

# Submission by CO2CRC to the “Inquiry into the Environment Protection (Sea Dumping) Amendment (Using New Technologies to Fight Climate Change) Bill 2023 [Provisions]”

## Submission Summary

Carbon capture and storage (CCS) is a safe, proven and increasingly cost-effective technology that can deliver large-scale reductions in emissions for a wide range of industries. Critically, CCS is becoming an essential step in Australia meeting its emission reduction commitments. The IPCC (reference below\*), for example, stated recently that there is no pathway to net zero which involves increased energy usage globally that does not rely critically upon the greatly accelerated rollout of CCS. The CCS industry is responding robustly to the challenge of net zero globally and, within Australia, to the mandated 43% reduction target by 2030. Domestically, there are approximately 15 large CCS projects which are in the concept selection, development or operational phases, with many more in the earlier evaluation phase. Many of these Australian projects will involve the construction of large CCS storage “hubs”, which will store CO<sub>2</sub> obtained from multiple domestic sources onshore and offshore, as well as, in the longer term, from overseas. It is the latter class of projects, involving the geo-sequestration of CO<sub>2</sub> imported from overseas, which are dependent upon Australia signing the amendment to Article 6 of the London Protocol (*Article 6 Amendment*).

The passage of the proposed amendments to the Sea Dumping Act and the consequent signing of the Article 6 Amendment by Australia is critical for several reasons.

Firstly, there is a groundswell of CCS projects which offer Australia the opportunity to secure its own economic prosperity, whilst meeting the nation’s agreed emissions targets. The importance of this has been reinforced by the recent reforms to the Safeguard Mechanism. The Safeguard Mechanism effectively mandates the use of CCS in all new gas projects, as well as potentially in other high-emissions industries such as cement and steel (i.e., in the hard-to-abate sectors). The approvals of these new CCS projects are both time-sensitive and dependent upon an appropriate and supportive domestic regulatory environment. A once-in-a-generation opportunity to deliver Australian CCS projects, at scale, via large CCS hubs which could make a truly significant difference to the nation’s emissions, could be lost if Australia does not modernise its legislative framework. This modernisation includes the requirements for a reduction in the timeframes for project approvals, as a requirement highlighted recently by Minister King, as well as the signing of the Article 6 Amendment of the London Protocol. Major companies can and will relocate their CCS investments to countries and continents (such as Europe and North America) that have more attractive and supportive regulatory frameworks.

Secondly, many of our key trading partners in the Asia Pacific are actively assessing projects that involve the capture of CO<sub>2</sub> from activities and processes in their own countries, often using Australian LNG, with the subsequent export of that CO<sub>2</sub> for permanent geological storage in Australia. Countries such as Japan, the Republic of Korea and Singapore do not have appropriate geological storage options and hence their projects – and the ability of these countries to meet their own emissions agreements – are dependent on Australia’s approval of the transboundary shipment of CO<sub>2</sub>. Consequently, further delays in the approval by

Australia of the Article 6 Amendment of the London Protocol will adversely affect economic and environmental outcomes both nationally and globally, especially for many of our key strategic Asia Pacific partners. Finally, developing nations such as Timor Leste recognise the long-term economic opportunity that transboundary CO<sub>2</sub> shipment and storage offers; an example of this is the proposed Bayu Undan CCS project, which involves the transportation of CO<sub>2</sub> from Darwin LNG to Bayu Undan. Revenue from this CCS project could provide Timor Leste with much-needed revenue.

The CO2CRC was delighted by the findings of the recent related inquiry into the 2009 and 2013 amendments to the London Protocol by the House of Representatives Standing Committee on Climate Change, Energy, Environment and Water, which recommended that Australia ratify the amendments on the basis that “...the 2009 amendment and the 2013 amendment to the London Protocol provide a means for countries to respond to the real urgency of climate change” and that “ratification of the 2009 amendment would place Australia in good stead regarding its regional foreign policy objectives, given the clear interest from traditional trading partners.” The CO2CRC also supports the Committee’s emphasis on the need for effective and appropriate regulation, including verification, monitoring and reporting and notes the current work on these aspects which currently underway within government and with industry experts.

It is for the reasons listed above, as well as for the factors discussed in more detail in the supporting material below, that CO2CRC urges the inquiry to support the proposed legislative amendment bill.

## Supporting Information

### CCS & Trans-boundary CCS: Safe, Reliable, Necessary and Urgent

According to the IPCC’s Working Group III’s (WGIII) Contribution to the Sixth Assessment Report (AR6; 2022)\*, carbon capture and storage (CCS) is a key necessity if the global emissions reduction targets are to be met. In fact, AR6 notes that there is no scenario involving the future increased use of energy globally that does not require CCS to meet the agreed global emission goals.

Even with the most optimistic uptake of renewable energy, annual storage rates using CCS will need to be 3 gigatons, nearly 75 times the current storage levels. Other, more realistic IPCC scenarios require even greater amounts of CCS-related CO<sub>2</sub> storage. Relatively conservative estimates undertaken by the OGCI and the GCCSI suggest that the existing global CCS storage capacity of approximately 39 million tonnes per annum (2018) will need to be increased approximately 100 times, to 3.8 Gt per annum to meet 2040 Paris Agreement targets.

As of September 2022, the total capacity of CCS projects in development globally was 244 million tonnes per annum (Mtpa) of CO<sub>2</sub>, an increase of 44 per cent over the preceding 12 months (GCCSI annual report 2022). Most of these projects are situated in either North America or Europe, where a range of financial incentives and encouraging policy settings are driving an accelerated CCS project rollout. As with Australia, many of these current and future projects involve transboundary CCS as a key component and hence require the signing of the Article 6 Amendment, which for some countries and projects has already occurred. Within Australia, there are approximately 15 major CCS projects in the detailed planning, approval or implementation stages; perhaps 5-6 of these are already contingent on the amendment to allow transboundary CO<sub>2</sub> transportation.

CCS represents the only suite of proven, viable and available technologies that can significantly reduce emissions from existing and new oil and gas developments, with the injection of CO<sub>2</sub> into proven storage reservoirs being both technically possible and increasingly cost competitive and cost effective. It has been shown that the storage of CO<sub>2</sub> within the many suitable geological formations and settings presents no risk to the environment or to Australia's emission profile. Similarly, the transport of CO<sub>2</sub> via ships and pipelines has also been demonstrated to be safe through decades of large-scale industrial use and has taken place within a well-established regulatory and safety framework.

The future of CCS in Australia and elsewhere will almost certainly be dominated by large and integrated CO<sub>2</sub> capture, utilisation and storage hubs, which will provide collectively the vast storage capacity necessary to meet the national and global emissions reduction targets. An example of this in Australia is the Middle Arm Hub in Darwin, Northern Territory, currently in the planning and development stage.

In summary, CCS is not only necessary, but is also an essential and urgent priority that is accepted as a critical component of the national and global emissions reduction strategies. Australia's amendment to Article 6 of the London Protocol should be considered and adopted expeditiously, so that project momentum within Australia and with its key trading partners can be maintained and our collective emissions targets met.

#### [Long Stranding Bi-Partisan Support for Article 6 Amendment](#)

There has been long-standing, bi-partisan support for the Article 6 Amendment.

In 2009, the Rudd Government voted in the IMO plenary to support the signing and this support was maintained by the Abbott, Turnbull and Morrison Governments. The latter also voted in favour of the 2019 Provisional Application decision, which allows Parties that have accepted the Amendment to provisionally apply the Amendment as if it was legally operative prior to entry into force.

This genuine bi-partisan support for the Article 6 amendment has created a positive environment for business planning and project development, something that the agreement to the amendment will strengthen further. Signing will provide the regulatory certainty that these long-term CCS projects require.

In summary, signing the Article 6 Amendment of the London Protocol will be the culmination of a long-held policy by both parties and will contribute significantly to creating a positive investment environment.

#### [Minimal Risks in Signing Article 6 Amendment](#)

Any transboundary shipment and storage of CO<sub>2</sub> under the Article 6 amendment can be accommodated within Australia's greenhouse gas (GHG) accounting and regulatory frameworks with relatively minor adjustments to the existing methodology. The GHG accounting framework already has existing treatments to measure and account for CCS-related emissions and further regulations will be developed to ensure any projects meet the additional requirements set out in the London Protocol Article 6 amendment and supporting decisions. Importantly, no project will be able to proceed without meeting the full suite of technical requirements and environmental approvals attendant with such projects.

In summary, given that the technical understanding regarding geological carbon storage and the regulatory approvals process for CCS within Australia are both well advanced, the risks related to the signing of the Article 6 Amendment are very low.

### Industry's Response to Emissions Reduction Targets

Industry within Australia is moving proactively with a wide range of investments related to CCS, as shown in Figure 1. Many CCS projects are now in the project pipeline, with another tranche of projects at an earlier stage of formulation.

A significant percentage of these projects will rely in some measure upon transboundary transportation of CO<sub>2</sub>, with CO<sub>2</sub> transported from overseas locations – typically within the Asia Pacific region – into large CCS storage hubs within Australia and within Australia's waters. These London Protocol "dependent" projects will all be very large projects which have high CO<sub>2</sub> storage rates and long lifespans. Clearly, it is these projects which will have the capacity to make the earliest and deepest cuts to Australian and global emissions. Consequently, it is essential, if our national and global emissions targets are to be met, that these projects proceed and proceed promptly. Our major Asia Pacific trading partners, such as the Republic of Korea, Japan and Singapore, have many projects that are critical to their emissions planning and which also rely ultimately upon the transboundary transportation of CO<sub>2</sub> into Australia.

The recent reforms to the national emissions Safeguard Mechanism further strengthen the urgency associated with deploying CCS to support Australia's 2030 and 2050 targets. Under these reforms, all new gas projects will be allocated a zero-emission baseline on the assumption that they are able to access CCS technology. This means that the development of projects will be contingent upon access to cost-effective CCS which, in some instances, may include transboundary solutions undertaken in partnership with our trading partners.

In summary, many of the projects that the Australian CCS industry is rolling out are, to a greater or lesser degree, reliant upon the signing of the Article 6 Amendment to the London Protocol and the attendant modernisation of the national implementing legislation.

### International Status of the Article 6 Amendment

Nine other CCUS deploying Parties (Republic of Korea, Denmark, Estonia, Finland, Islamic Republic of Iran, Netherlands, Norway, Sweden and the United Kingdom) have already accepted the Article 6 Amendment, thereby enabling a number of major transboundary CCS projects to proceed down the project approvals and development pathway. Critically, the delays within Australia are occurring at the same time as our business competitors in North America and Europe are rolling out CCS projects - including transboundary projects - at a dramatically accelerated rate, facilitated by supportive government legislation and legislative processes and very attractive government financial incentives. In an environment wherein competition for investment funding and technical expertise, amongst other things, is intense, further delays will only make the required project roll out progressively more challenging.

By moving to formalise this support through the acceptance of the Article 6 Amendment to the London Protocol and by updating the enabling national (Sea Dumping Act 1981) and associated regulatory structures to align with the internationally agreed London Protocol and requirements for carbon accounting under the UNFCCC, Australia will remove a critical legal barrier to project development and investment. Thereby, Australia will support its clean energy trading partners in their respective moves towards their own net-zero targets and to unlock investment decisions in 2023-24, and subsequently. This will clear a pipeline of major clean energy projects that represent significant infrastructure, trade and employment

opportunities in the Asia-Pacific region, opportunities that rely upon the certainty from Australia regarding its commitment on the Amendment.

In summary, acceptance of the Article 6 Amendment will create options and opportunities for the development of new industries and trade across the region, as well as for strengthening the already vital regional relationships with the Republic of Korea, Japan, Singapore and Timor Leste and other strategic partners. Maintaining Australia's globally competitive stature requires action.

### Recommendations

CCS projects in Australia and in partner countries have long lead times between conception and commencement, with project roll out involving a detailed staged and gated investment process. Without the removal of the current legal impediments to transboundary shipment and storage, companies are unable to consider and then make the very significant required investments and this introduces costly delays. These delays will inevitably make the achievement of our shared climate and business transformation goals - within the required timeframes - almost impossible.

CCS is an essential and urgent priority that is accepted as a critical component of national and global emissions reduction strategies. Australia's amendment to Article 6 of the London Protocol should be considered carefully and then adopted expeditiously, so that project momentum within Australia and with its key trading partners can be maintained and, thereby, our collective emissions targets can be met.

In summary, CCS is safe, reliable and necessary, industry has a pipeline of projects awaiting approval, there is bi-partisan support for the Article 6 amendment, the risks are very low, quantifiable and manageable, transboundary CO<sub>2</sub> transportation is rolling out globally and our trading partners are relying upon Australian action. The Australian Government has a great opportunity to show leadership in CCS within the Asia Pacific region and, by removing this regulatory impediment, facilitate developments between Australia and its strategic partners, to the benefit of our respective economies and environments.



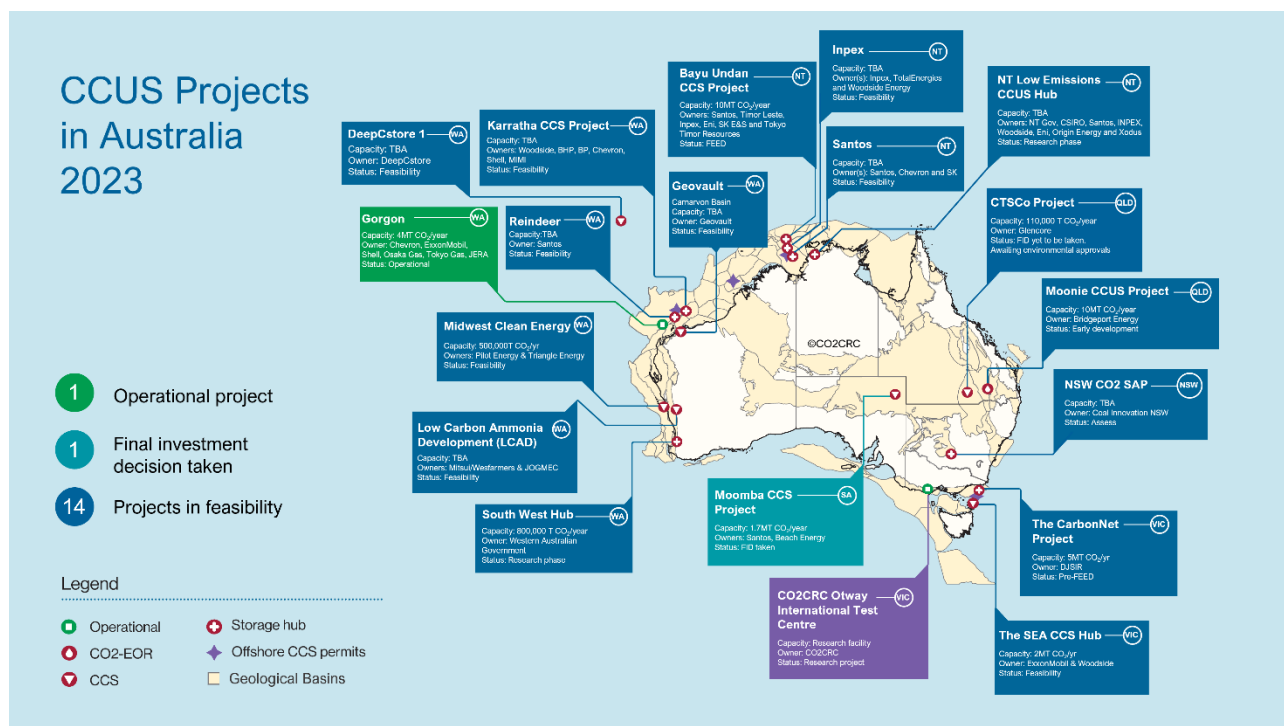


Figure 1. A map showing the location of planned and active CCS projects in onshore and offshore Australia.