

Northern Territory Government submission to the Inquiry into the 2009 and 2013 Amendments to the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Protocol)

Introduction

1. The House of Representatives Standing Committee on Climate Change, Energy, Environment and Water commenced the Inquiry into the 2009 and 2013 Amendments to the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Protocol) on 25 January 2023.
2. Terms of Reference for the Inquiry are:
 - the environmental benefits and impacts of exporting and importing carbon dioxide streams for the purpose of sub-seabed sequestration;
 - the environmental benefits and impacts of marine geoengineering activity, such as ocean fertilisation, for scientific research;
 - the international market for carbon dioxide streams; and
 - the interaction of the proposed amendments with greenhouse gas inventories and regulatory and reporting streams.

Policy and Background to carbon capture and storage planning in the Northern Territory

3. Australia is a signatory to the Paris Agreement and has enacted the Climate Change Bill 2022 that legislates commitment to reduce greenhouse gas emissions by 43% below 2005 levels by 2030, and net zero by 2050. This is supported by the Technology Investment Roadmap, a strategy to develop and deploy low emissions technology of which carbon capture and storage (CCS) is recognised as one part of a suite of suitable technologies.
4. The Paris Agreement is a legally binding international treaty on climate change that came into force in 2016. It provides a framework for financial, technical and capacity building support to those countries who need it to meet the goals of limiting global warming to well below 2°C and preferably less than 1.5°C above 'pre-industrial levels'.
5. The Paris Agreement places an emphasis on building capacity for developed countries and requests all developed countries enhance their support for capacity-building actions in developing countries. Construction of a trans-jurisdictional CCS facility in Darwin that imports carbon dioxide streams (CO₂) and exports advanced skills, training and technology, assists the Northern Territory and Australia to meet this expectation.
6. The Northern Territory is well placed to service the international offshore CO₂ storage industry, given its strategic location in the Asia-Pacific region, its proximity to nations which are expected to require CO₂ storage services and its proximity to sub-seabed formations which have the capacity to store large volumes of CO₂, including Bayu-Undan.
7. The Northern Territory is working with the CSIRO, the LNG industry and engineering groups to develop a Low Emissions Hub (LEH) near Darwin. CCS capacity is being developed and employed as an enabler for the LEH to manage CO₂ domestically, and potentially, from nearby jurisdictions in the Asia Pacific region.
8. The first phase of development of the LEH envisages repurposing of the depleted Bayu-Undan gas field, located in the waters of Timor-Leste, as a depository for CO₂. The Northern Territory Government has been working closely with Timor-Leste and the LNG industry to align regulatory requirements and ensure success of this project and its ensuing benefits to Timor-Leste, to Australia and to the Northern Territory.

9. Acceptance of the 2009 amendment is critical to the Bayu-Undan CCS project because this project requires CO₂ to be exported across the Australia – Timor-Leste maritime border.
10. The following phases of development of the LEH envisages development of the Petrel Sub-basin through acreage releases G-7-AP and G-11-AP (the Bonaparte CCS projects). The Petrel Sub-basin has significantly greater capacity to receive CO₂ than Bayu-Undan and could be developed to accept CO₂ from the LNG industry's trading partners in the Asia-Pacific region.
11. Acceptance of the 2009 amendment is critical to the Bonaparte CCS projects because this project requires CO₂ to be imported across Australia's maritime border.
12. This submission will therefore focus on the 2009 amendment with regard to Terms of Reference (a), (c) and (d) and how they pertain to the LEH.

General matters pertaining to the 2009 Amendment

13. The London Convention was developed by the International Maritime Organisation in 1972 following recognition of dumping of wastes at sea as being a significant contributor to degradation of the oceans. In 1996, the London Protocol was adopted, bringing in a precautionary approach through which only certain substances could be sent to marine disposal. At that time, CO₂ was not on the list of substances permitted for disposal.
14. An amendment in 2006 to the London Protocol provided the basis in international environmental law to allow for CO₂ storage beneath the seabed where it is safe to do so. A further amendment in 2009 permits CO₂ to be exported across maritime borders for CCS purposes.
15. The 2009 amendment applies to Article 6 of the London protocol and states: "Notwithstanding paragraph 1, the export of carbon dioxide streams for disposal in accordance with annex 1 may occur, provided that an agreement or arrangement has been entered into by the countries concerned. Such an agreement or arrangement shall include:
 - confirmation and allocation of permitting responsibilities between the exporting and receiving countries, consistent with the provisions of this Protocol and other applicable international law; and
 - in the case of export to non-Contracting Parties, provisions at a minimum equivalent to those contained in this Protocol, including those relating to the issuance of permits and permit conditions for complying with the provisions of annex 2, to ensure that the agreement or arrangement does not derogate from the obligations of Contracting Parties under this Protocol to protect and preserve the marine environment.

A Contracting Party entering into such an agreement or arrangement shall notify it to the Organization".

16. The London Protocol came into force in Australia in March 2006, but the 2009 amendment has yet to be accepted by the Commonwealth Government.
17. The export of carbon dioxide is affirmed under provisional application of Article 6 of the London Protocol and contracting parties are urged to consider its acceptance by way of Instrument LP.5(14), adopted on 11 October 2019. Provisional application allows CO₂ to be transported across international borders, thus removing the last significant barrier to offshore storage.
18. Acceptance of the 2009 amendment, would allow import and export of CO₂ for disposal by sub-seabed CCS, subject to permitting requirements. The Northern Territory deems import and export of CO₂ to be an integral and vital part of its plans to develop an environmentally sound and economically viable low-emissions industry built upon the CCS foundation.

TOR (a) – the environmental benefits and impacts of exporting and importing carbon dioxide streams for the purpose of sub-seabed sequestration.

Benefits:

19. Climate change poses major challenges to environmental stability, economic growth and human development in the Asia-Pacific region. This region includes 13 of the 30 countries most vulnerable to the impacts of climate change, and without concerted action, the region could see an additional 7.5 million people fall into poverty due to climate impacts by 2030. Allowing import and export of large quantities of CO₂ will help alleviate climate-based social impacts.
20. IEA data estimates a total of 36Gt (billion tonnes) of CO₂ was emitted globally in 2021, representing an average increase of 3% across the preceding 10 years. Close to 50% of these emissions are from the Asia-Pacific region, highlighting the significance of the regional problem and the need to maximise opportunities for CO₂ disposal.
21. It is recognised that not all countries have sub-seabed or subterranean formations that are suitable for storage of CO₂. Export and import of CO₂ will provide a route for disposal of CO₂ from jurisdictions that do not have sub-seabed formations suitable for storage, or do not have the financial capacity to design and build their own CCS facilities in the immediate future.
22. The Global Carbon Capture and Storage Institute has identified Japan and South Korea (both Northern Territory trading partners) and the Philippines as nations that have insufficient access to CO₂ storage within their national boundaries, compared to their total emissions. Exporting their CO₂ into the Northern Territory's CCS facilities will support these nations to reduce their hard to abate and emissions intensive industries.
23. Acceptance of the 2009 Amendment creates potential for faster uptake of CO₂ that might otherwise occur if jurisdictions without adequate resources or access to local depositories require additional time to develop their own CCS capacity. In the context of the Northern Territory, it is planned for the Bayu-Undan CCS facility to be in operation by 2026, several years in advance of the Bonaparte CCS facilities. This timeline will not be met if the 2009 amendment is not accepted.
24. Development of large-scale trans-jurisdictional facilities permits scaling of technological solutions for CO₂ emissions across a broader region.
25. Development of very large-scale CCS facilities will be required for the production of large quantities of low-emissions hydrogen (H₂) from natural gas or LNG as the world transitions to a zero-emissions H₂ economy. In the Northern Territory context, it is likely that LNG shipped to international trading partners would be converted into H₂ there and the produced CO₂ returned for disposal.

Impacts:

26. There is risk of a negligible increase in the volume of CO₂ emitted by vessels participating in the LNG – CO₂ value chain due to increased trans-jurisdictional shipping. This could be addressed if alternative sources of low-emissions maritime energy are used, but this will not occur until low-emissions alternatives are in place.
27. There is a risk that CO₂ captured for disposal would be lost to the atmosphere in the event that a vessel is lost at sea.
28. There is a risk of local, short-term environmental impacts including acidification of the ocean should the CCS facility fail and CO₂ be released to the atmosphere. However, in terms of atmospheric impact, the volume of CO₂ that could be lost would not exceed that amount which would otherwise have been ejected into the atmosphere if the CCS facility did not exist.

29. There is a risk of fatality in the event of a catastrophic facility failure. The extent of this risk would depend on the magnitude and location of the failure, for example risk associated with failure of a valve would be significantly lower than that experienced for rupture of a high-pressure pipeline or a holding tank.
30. Implementation of stringent construction, management and monitoring standards and processes will minimise the risk of catastrophic failure or ongoing leakage.

TOR (c) – the international market for carbon dioxide streams.

31. The international market for CO₂ is twofold. It may be considered as a waste that requires disposal (storage) services or as an input for production. Around 20Mtpa of CO₂ is used in the manufacture of marketable goods globally. This amount will be increased if CO₂ is captured and re-used in processes that are designed to recycle CO₂ before it is emitted to the air or after it has been captured from the air.
32. There is widespread disparity amongst economists regarding the value of the global CO₂ market and the rate at which it is expected to grow over the next five to 10 years. As a yardstick, the World Bank reports that in 2021, the total traded value of the voluntary carbon market was around US\$1.4 billion. This significant increase in value from previous years reflects both rising prices and rising demand from corporate buyers leading to higher transacted volumes.
33. Development of CCS facilities at Middle Arm creates opportunity for international trade in CO₂ as a mechanism through which international jurisdictions and trading partners will contribute to the Timor-Leste, Australian and Northern Territory economies.
34. The full value of the Northern Territory's CCS value chain is yet to be determined. Based on the recommended capped price of AU\$75 per tonne, the Northern Territory's offshore fields offer potential for a CO₂ disposal market that grows from AU\$400 million in 2026 to in excess of AU\$1.5 billion per annum for duration of its operation beyond 2040.
35. The value of the Northern Territory's CCS facility to the Asia-Pacific region has the potential to grow further if it is developed as a service, supply and support industry capable of providing key outcomes such as technology, skills and training. Potential economic gains will not be optimised if the 2009 amendment is not accepted.
36. The size of the potential CCS market across the Asia-Pacific region means that competition is of no serious concern in the immediate future. To reach net zero emissions in the Asia-Pacific region, over 17Gt of CO₂ will need abatement annually. In addition to technological improvements and use of alternative energies, multiple large-scale CCS facilities with the capacity to import and export CO₂ will need to be constructed quickly to meet this goal.
37. Completing the required actions to allow provisional application of the 2009 amendments to the London Protocol enables cross-border transportation of CO₂ for sub-seabed storage, and creates new international trade offerings and routes that can establish the Northern Territory and Australia as regional leaders in decarbonisation.

Carbon utilisation

38. Recycling of CO₂ can provide climate benefits where the application is scalable, uses low-carbon energy sources and displaces products that have higher life-cycle emissions.
39. Additional economic value and environmental benefit may be achieved if CO₂ within the CCS facility can be recycled and re-used. Manufactured products can offer two marketable routes having different levels of CO₂ retention and therefore environmental benefit.

40. Products that involve permanent CO₂ retention such as building materials can be considered to provide negative emissions if the CO₂ is extracted directly from the atmosphere using novel technologies, such as direct air capture (DAC).
41. Products such as fuels and chemicals that re-release CO₂ into the atmosphere following combustion or re-use, contribute to moves towards net-zero emissions. Although they do not provide for negative emissions, they effectively lower the rate of production of new emissions by reducing the volume of gas required for their manufacture. Reduction in the rate at which CO₂ is released is an important contributor in the transition to net-zero.
42. Acceptance of the 2009 amendment maximises the volume of CO₂ that becomes available to the Middle Arm circular economy and therefore, the potential for economic gain to Australia and the Northern Territory.

TOR (d) – the interaction of the proposed amendments with greenhouse gas inventories and regulatory and reporting streams.

43. Australia's national greenhouse accounts report only on emissions that arise from activities within Australia. Noting that a single tonne of CO₂ may be attributed to multiple actors, each to a different extent of responsibility, it is unclear how importing CO₂ to Australia and storing it in sub-seabed formations within Australia's boundaries would affect the national greenhouse gas inventory.
44. Under existing arrangements, where CO₂ is considered as a Scope 1 or Scope 2 emission, those emissions will be attributed to the exporting nations' inventory and reporting. However, it is noted that there may be scope for adding imported CO₂ to the Australian inventory if the imports are considered as Scope 3 emissions and attributed to specific source companies in the future.
45. Although the emissions reduction benefit of storing imported CO₂ is likely to be attributed to the country of export, the Northern Territory may benefit from charging a service fee to facilitate storage, maintain the required infrastructure, and perform ongoing monitoring of the storage formation's integrity. Importing CO₂ for sub-seabed storage within Australian waters may also provide additional scale and financial resourcing (through charging a service fee) to enable CCS for CO₂ produced in the Northern Territory e.g. from Middle Arm, future onshore gas development.
46. Australian Carbon Credit Units (ACCUs) are the principle currency for the trade of CO₂ within Australia. To include capture of imported CO₂ into its inventory as ACCUs, those emissions would need to be first transferred to the Northern Territory and then subtracted once sub-seabed storage has been achieved. This would result in no net benefit to Northern Territory or national accounts and would not contribute to overall emissions reduction targets.
47. The Australian National Registry of Emissions Units (ANREU) is administered by the Clean Energy Regulator. ANREU is a system designed to meet one of Australia's commitments under the Kyoto Protocol. The Protocol requires each country with an emission reduction target to establish a national registry to ensure accurate accounting of the issuance, holding, transfer, acquisition, cancellation, retirement and carry-over of Kyoto units. It is relevant to domestic Australian Carbon Credit Units issued under the Emissions Reduction Fund (ERF).
48. Until such time as suitable technology is in place, many large emitters will become increasingly reliant on purchase and retirement of ACCUs to meet their baseline emissions requirements under the ERF. Displacement of ACCU capacity through the introduction of CO₂ from international sources may reduce opportunities for Australian companies to participate in CO₂ reduction. In the context of the Northern Territory, the potential capacity of the Petrel Sub-basin is sufficient that this may not be an ongoing concern.

49. International Carbon Credit Units (ICCU) are also financial instruments that represent a tonne of CO₂ removed or reduced from the atmosphere as a result of an emissions reduction project. Similar to ACCUs, they are primarily designed as a currency for the trade of CO₂ but across a trans-jurisdictional region. ICCUs are well-developed within the European Unions' Emissions Trading System and offer a potential means through which imports and exports of CO₂ may be accounted for in Australia's inventories, regulatory and reporting streams.
50. An alternative approach, where international import and/or export occurs is to provide a 'fee for service' system where customers are charged a toll for CO₂ disposal, with royalties paid to domestic jurisdictions. International customers would pursue carbon credits in their home countries with no necessity to utilise ACCUs or ICCUs.
51. The Safeguard Mechanism is a means through which Australia's largest greenhouse gas emitters can manage their net emissions below a baseline target by direct action, and assist other companies through provision of ACCUs. Development of CCS capacity in the Northern Territory offers the opportunity to manage baseline targets and create ACCUs that can be applied to domestic customers.
52. The Safeguard Mechanism should be considered a temporary measure to manage CO₂ emissions until such time that zero-emissions technology becomes economically viable. Over time, the national relevance of the Safeguard Mechanism will reduce in line with reduced emissions, thus creating the opportunity to transform its purpose to one having greater relevance for management of imported and exported CO₂ if ICCUs are made tradeable in the same manner as ACCUs.
53. The Commonwealth Government currently proposes to modify the Safeguard Mechanism so that it provides tailored treatment to emissions-intensive, trade-exposed facilities, including LNG manufacturers. The intent is to provide a means through which businesses established and operating in Australia are not placed at a disadvantage compared to international competitors and so that emissions do not increase overseas. Permitting trans-jurisdictional import and export of CO₂ provides one pathway to address this concern, while also making additional offshore storage capacity available across the Asia Pacific.

Summary

54. The Northern Territory Government supports acceptance of the 2009 amendment to the London Protocol, to permit import and export of CO₂ across international maritime borders for sub-seabed disposal.
55. Said acceptance will allow the CCS facility being planned for Darwin to contribute meaningfully to CO₂ mitigation efforts in the Asia-Pacific region by providing capacity for CO₂ storage in excess of that required by the Northern Territory.
56. Said acceptance will allow the CCS facility to develop as a long-term supply, support and service hub capable of providing technology, skills and experience to other participants across the Asia-Pacific region.
57. There is potential for further expansion of CO₂ disposal in the Northern Australian region's offshore waters. Encouraging investment in trans-jurisdictional transport of CO₂ for disposal will increase awareness of these opportunities and promote implementation of further innovative technologies that aim to maximise carbon mitigation in the APAC region.