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10 February 2026

To: Northern Territory Environmental Protection Authority
Re: Bonaparte Carbon Capture and Storage Project

Thank you for the opportunity for the Institute for Energy Economics and Financial Analysis (IEEFA) to provide input to the Bonaparte Carbon Capture and Storage Project consultation.

IEEFA is an independent energy finance think tank that examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy.

IEEFA's submission to this consultation is focused on the economics of carbon capture and storage (CCS) and its potential role in reducing greenhouse gas (GHG) emissions. In IEEFA's view, Inpex's proposal to build the Bonaparte Carbon Capture and Storage (BCCS) project in the Bonaparte Basin offshore the Northern Territory must still be considered to be at a preliminary stage. The project location has not been proven to be an identified GHG storage formation. Inpex has not completed the required drilling and testing to demonstrate the proposed storage location is suitable to store carbon dioxide (CO_2) permanently.

In addition, IEEFA is concerned about the following issues for the project:

- Inpex used outdated or incomplete information to support its application to develop BCCS, including forecasts of CCS development by the International Energy Agency (IEA) that are no longer their view. In IEEFA's view, Inpex should be required to undertake the required geophysical and geotechnical pipeline and subsea surveys to demonstrate the suitability of the proposed CCS storage location before consideration is given to approving the project. This would require Inpex to refile its application, which would provide it with the opportunity to include more current information, particularly on the International Energy Agency (IEA)'s revised forecasts on the role of CCS in emissions reduction.

- The unprecedented size and scale of the BCCS project carries significant regulatory risk, considering the track record of underperformance for CCS projects to date. This includes the Gorgon CCS project in Western Australia, where capture and injection rates have deteriorated since it started operations in 2019.

- Inpex's environmental record may raise questions about whether it is well placed to develop the project and manage the associated environmental risks. It is currently subject to a federal investigation regarding alleged breaches of environmental management standards.

Kind regards,

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Bonaparte CCS yet to be proven a suitable project location

Inpex plans to build the Bonaparte Carbon Capture and Storage (BCCS) project to initially capture 8 million tonnes per annum (MTPA) of carbon dioxide (CO_2), eventually increasing to 10MTPA.[1] Not only would this represent the largest dedicated carbon capture and storage (CCS) project in the world, but it would almost equal the total amount of CO_2 captured in all dedicated CCS projects globally to 24 July 2025, excluding carbon capture, utilisation and storage (CCUS).[2,3] CCUS is distinct from CCS, with captured CO_2 generally used to increase oil extraction through a process known as enhanced oil recovery.[4]

However, Inpex has not completed the necessary pre-drilling testing and analysis required to determine whether the proposed CCS site is suitable for permanent storage of CO_2.[5] Inpex acknowledged in its planning documents filed to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) that it was yet to undertake the necessary work, stating: "The suitability of the storage formation for stable, long-term storage of CO_2 will be further assessed in the Declaration of Storage under the OPGGS [Offshore Petroleum Greenhouse Gas Storage] Act."[6]

The above statement seems to be at odds with what Inpex claimed in the referral documents filed with the Northern Territory Environmental Protection Agency (NT EPA).[7] Inpex said "the injection formation has been confirmed to have high injectivity, meaning it can accept high rates of CO_2 injection" and that there is "storage capacity in excess of the volume proposed to be sequestered throughout the life of the Project". The latter implies Inpex has done the necessary drilling to confirm that the proposed area has a suitable formation for long-term CO_2 storage.

Both documents were dated 17 October 2025. However, Inpex appears to be taking two different views on the potential CO_2 storage basin. Clarification on whether Inpex has done the necessary work to prove the potential storage capacity for BCCS would be welcome.

Given the proposed BCCS facility has not been verified as a suitable site, the project must still be considered at the conceptual stage. Therefore, no comment can be made in this submission on the technical aspects of the project, on whether it is a suitable geological formation to store CO_2, or on whether it is in fact a viable project.

However, it is worth noting that academics have stated: "Several criteria must be considered when assessing the suitability of basins for CO_2 storage, such as storage capacity based on pore volume, depth of target formation, seal integrity, tectonic hazards and basin type. A typical high-quality reservoir for CO_2 storage would have presence of a seal (layers of impermeable cap

[1] Inpex. Attachment A: Bonaparte Carbon Capture and Storage (CCS) Project – Supporting Information Document. Page 20.
[2] Global CCS Institute (GCCSI). Global Status of CCS 2025. 9 October 2025. Pages 44-46. This is based on the calculation of all projects under the storage type deep saline formation and using storage rates and not nameplate capacity.
[3] IEA. World Energy Outlook 2020. 13 October 2020. Page 131.
[4] Engineering. Investigating the Synergistic Impact of CCUS-EOR. Page 16.
[5] Inpex. Bonaparte Carbon Capture and Storage Project. Page 3. Referral document to the Australian Government.
[6] Inpex. Attachment A: Bonaparte Carbon Capture and Storage (CCS) Project – Supporting Information Document. 17 October 2025 Page 245.
[7] Inpex. Bonaparte Carbon Capture and Storage (CCS) Project – Referral Report. 17 October 2025. Page 45.

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rock), favourable petrophysical parameters for injectivity and storage, sufficient depth, and low risk for reactivation of existing faults."[8]

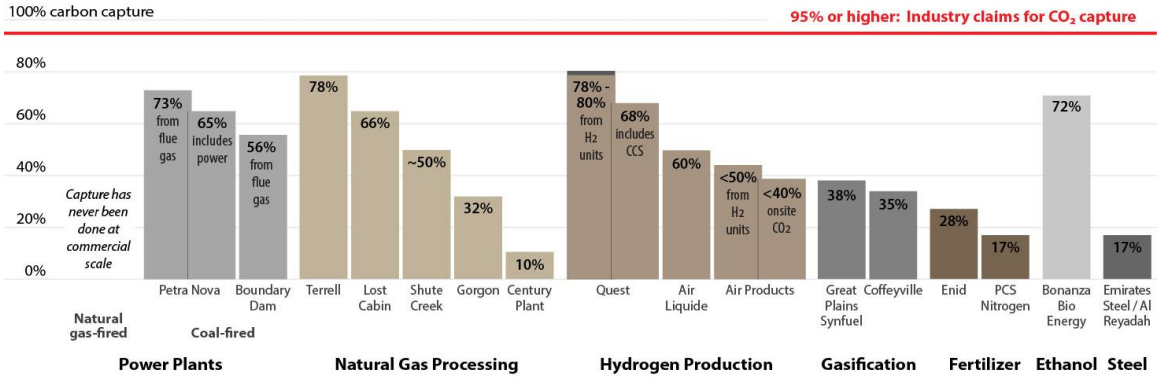
In IEEFA's view, without clear information on the suitability of the proposed location for carbon storage, including the information set out above, it is not clear how to assess the project's viability and longer-term risks. For this reason, IEEFA recommends that Inpex be required to undertake the required work to support declaration of the Bonaparte Basin as an identified GHG storage formation prior to resubmitting its request for approval for the BCCS project.

CCS's history of underperformance and technical issues highlights the risks

There is regulatory risk associated with approving CCS projects given its poor track record. The global CCS industry has struggled to achieve targeted capture and storage rates, notably including at the Gorgon CCS project in Western Australia (see Figure 1).

In late 2022, IEEFA studied 13 global flagship CCS projects, which represented over half of the global CCS capacity at the time and covered several types of facilities globally. The review found failing or underperforming projects were more numerous than successful ones. Two projects failed, one was suspended after four years of operation (but has since restarted), five projects massively underperformed their targets, and two projects provided no performance data. Only three facilities achieved their targets, but two of these projects suffered unanticipated issues.[9]

Figure 1: Real-world CO_2 capture rates at commercial-scale facilities in various sectors



Source: IEEFA.[10]

The BCCS project also has another dimension that Gorgon CCS does not share, which is that the Inpex project intends to import CO_2 from other countries in the Asia Pacific.[11] An assessment by Inpex needs to be undertaken of the net CO_2 stored from the importation of carbon dioxide from countries such as Japan, which has expressed an interest in shipping CO_2 overseas for storage.[12]

[8] Nature. A prudent planetary limit for geologic carbon storage. Volume 645. 3 September 2025.
[9] IEEFA. The carbon capture crux: Lessons learned. 1 September 2022.
[10] IEEFA. Blue Hydrogen: Not clean, not low carbon, not a solution. 12 September 2023. Page 18.
[11] Inpex. Attachment A: Bonaparte Carbon Capture and Storage (CCS) Project – Supporting Information Document. Page 20.
[12] Climate & Capital Media. Japan is betting big on exporting carbon emissions. 1 August 2025

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The imports of CO_2 into Bonaparte CCS would need to be monitored for net GHG reduction and to ensure it is consistent with the claims of emissions reductions of any companies involved in the transportation of CO_2 across international boundaries. Transporting CO_2 over 5,000km from Japan to the BCCS project would likely see the release of significant GHG emissions, as there is currently "no fleet of tankers that can efficiently transport high volumes of CO_2 over long distances".[13] The absence of ships capable of secure, long-range transportation of CO_2 places a question mark over Inpex's business plan for Bonaparte CCS.

A report by the scientific publisher *Nature* concluded that the Earth's capacity for storing CO_2 amounts to 1,460 billion tonnes – far below previous estimates of between 10,000 and 40,000 billion tonnes.[14] The *Nature* report said: "Large-scale utilization of carbon storage comes with sizable risks and deep uncertainty of feasible storage potential and injection rates, which are not well captured in models that describe how future emissions reductions could be achieved. Leakage of CO_2 from storage sites due to seismic activity, well-head failure or other factors would potentially reintroduce carbon into the atmosphere."

Other academic research has noted that CO_2 storage capacity estimates can even differ between departments within the same government, highlighting that estimating geological storage capacity is heavily influenced by the assumptions that are factored into calculations. Independent assessments of geologic storage capacity in the US by the United States Geological Survey (USGS) and Department of Energy (DOE) showed that the DOE's storage capacity estimates were more than twice the USGS's estimates in its medium scenarios.[15] Given the tendency for CO_2 storage estimates to vary widely, it is important for regulators to carefully scrutinise claims made by CCS project proponents and draw more widely on available independent research.

Australia's Gorgon CCS project highlights the flaws of CCS

Chevron's Gorgon CCS facility, located on Barrow Island in Western Australia, is currently the largest CCS project in the world. However, the project has underperformed since it started operations, with injection and storage rates well below intended targets.

Chevron's latest annual performance report showed the facility captured 1.33 million tonnes (Mt) of CO_2-equivalent (CO_2e) in FY2024-25, about one quarter of the CO_2 removed from the Gorgon LNG plant and associated gas field.[16] This is well below target rates of 60%. It is also the lowest annual capture since Gorgon CCS started.

[13] DNV. CO2 Shipping. Navigating the challenges: Liquid CO2 carriers a vital link in global CCS expansion.
[14] Nature. A prudent planetary limit for geologic carbon storage. Volume 645. 3 September 2025.
[15] Energy Proceia. Developing a consistent database for regional geologic CO2 storage capacity worldwide. Volume 114, 2017. Page 4,698.
[16] Chevron. Gorgon Gas Development and Jansz Feed Gas Pipeline. Five-year Environmental Performance Report 2020-2025. Page 112.

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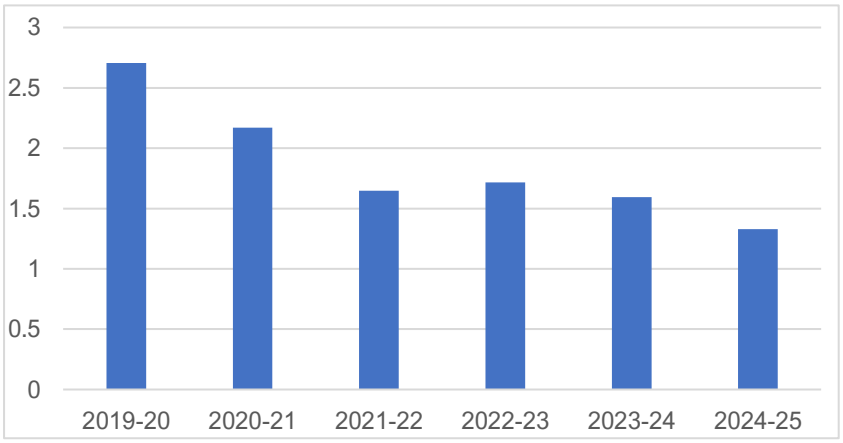
Figure 2: Gorgon CCS volume of CO_2 injected (million tonnes)



Source: Chevron.[17]

Although no two CCS projects can be considered the same, Bonaparte CCS may be more complex than Gorgon given it is located offshore in waters 2,000 metres deep, requiring underwater equipment and a pipeline to transport liquid CO_2 up to 250km.[18] In contrast, Gorgon CCS is located onshore and is required to transport CO_2 only 7km.[19] However, the CO_2 is injected into a reservoir 2,500km under the seabed.

To date there is not a CCS project that pumps CO_2 at a rate of 8MTPA along a 250km pipeline and then inject CO_2 from pumps on the seabed. IEEFA notes that the Northern Lights CCS project offshore Norway injects CO_2 into a reservoir 2,600 metres under the seabed using subsea injection wells. However, Northern Lights only started operation in August 2025 and has a capacity of 1.5MTPA under its first phase.[20] This is about a fifth of the proposed capacity of Bonaparte CCS under its initial stage.

It also must be noted that Santos has operated the 1.7MTPA Moomba CCS project in the onshore Cooper Basin region of South Australia since October 2024. After more than a year of operations, it stored "over 1.5Mt of CO_2e", or 88% of nameplate capacity.[21]

Inpex's environmental management record raises questions

In assessing Inpex's application, there will be a need to carefully consider whether Inpex is well placed to develop the project and manage the associated environmental risks.

Ongoing investigations into allegations of potential breaches of environmental regulations by Inpex may be relevant to assessment of this application. Inpex is currently under investigation for

[17] Chevron. Gorgon Gas Development and Jansz Feed Gas Pipeline. Five-year Environmental Performance Report 2020-2025. Page 112.
[18] Inpex. Attachment A: Bonaparte Carbon Capture and Storage (CCS) Project – Supporting Information Document. Page 20.
[19] MIT Carbon Capture & Sequestration Technologies. Gorgon Fact Sheet: Carbon Dioxide Capture and Storage Project.
[20] Equinor. First CO2 volumes stored at Northern Lights. 25 August 2025.
[21] Beach Energy. FY26 half year results. 5 February 2026.

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an oil spill in Darwin Harbour and the under-reporting of toxic emissions from the Ichthys LNG plant in Darwin.[22]

These investigations follow earlier incidents. In 2019, the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) issued a direction to Inpex to take certain actions to protect the health and safety of the workforce at the Ichthys facilities.[23] In 2021, Inpex was required to halt offshore drilling at its Ichthys gas field after a 200-tonne pipe fell out of control on a drilling rig.[24]

These incidents are relevant to Bonaparte CCS because Inpex plans to separate CO_2 from gas in the Ichthys gas field at its gas processing plant in Darwin prior to injection into the BCCS facility. Given the ongoing investigations, it may be prudent to delay the BCCS project application until they have been resolved and the relevant findings are available.

Inpex relies on outdated information on CCS

Inpex's application states that CCS is expected to play a key role in the energy transition, citing supporting information from the International Energy Agency (IEA). However, some of this information is now outdated; more current information points to a more limited role for CCS.

For example, Inpex refers to the IEA's 2020 World Energy Outlook (WEO) report to support its case.[25,26] In that report the IEA estimated that 1,150 million tonnes of CO_2 would be captured with CCUS in 2030 under its Net Zero Emissions (NZE) 2050 scenario. The NZE scenario represents a pathway towards a goal of limiting global temperature increases to 1.5°C.[27]

Since then, the IEA has trimmed its estimates for both CCUS and CCS.[28] In its 2024 WEO report, it said: "Current project announcements featuring near-zero emissions technologies fall short of what is required in the NZE Scenario. For example, only 19Mt CO_2 of CCUS capacity is installed in the STEPS [Stated Policies Scenario[29]] by 2030, which is 31% of the amount captured in the APS [Announced Pledges Scenario[30]] and just 7% of what is needed in the NZE Scenario."

In the 2025 WEO, the IEA said CCUS is projected to contribute less than 5% to offsetting emissions by 2050.[31]

IEEFA analysis identified that the main driver of this decrease was a 57% reduction in the estimated use of CCS with fossil gas extraction. We also found that estimated coal use with CCS

[22] ABC News. Federal government investigates Inpex's Darwin oil spill, emissions error. 29 October 2025.
[23] NOPSEMA. NOPSEMA regulatory action – Inpex Ichthys project. 17 January 2019.
[24] Boiling Cold. Regulator orders Inpex to stop Ichthys drilling until it is safe. 11 February 2021.
[25] IEA. World Energy Outlook 2020. 13 October 2020.
[26] Inpex. Attachment A: Bonaparte Carbon Capture and Storage (CCS) Project – Supporting Information Document. Page 22.
[27] IEA. Net Zero Emissions by 2050 Scenario (NZE).
[28] IEA. World Energy Outlook 2024. 16 October 2024. Page 119.
[29] IEA. Stated Policies Scenario (STEPS).
[30] IEA. Announced Pledges Scenario (APS).
[31] IEEFA. Minimal role for carbon capture, utilization, and storage (CCUS) in IEA's World Energy Outlook 2025. January 22, 2025.

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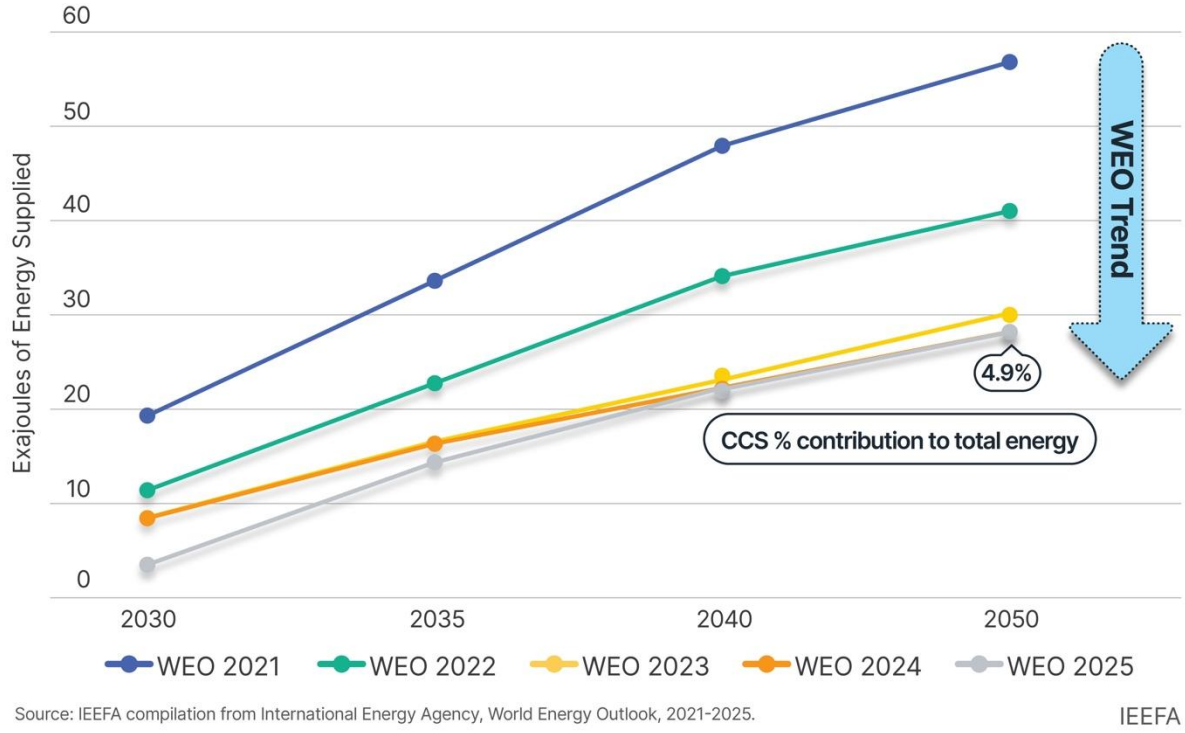
declines by 15%. IEEFA's view is that Inpex should be required to resubmit its application with updated information from the IEA on the outlook for CCS in the energy transition.

Figure 3. Contribution of fossil fuels with CCUS to global energy supply in IEA's NZE Scenario, WEO 2021 to 2025



Source: IEEFA compilation from International Energy Agency, World Energy Outlook, 2021-2025. IEEFA

Conclusion

Inpex should be required to provide sufficient information and analysis to prove that the proposed location qualifies as an identified GHG storage formation before its application for the Bonaparte CCS project is assessed. This is in line with the requirements under the OPGGS Act.

The unprecedented size and scale of the Bonaparte CCS project carries significant regulatory risk considering the track record of underperformance of CCS projects to date.

Inpex is subject to ongoing investigations regarding alleged breaches of environmental management standards. These investigations should be completed and any environmental breaches remedied before the Bonaparte planning process is progressed any further.

Inpex should also be required to resubmit its application with updated information from the IEA on the outlook for CCS and its role in the energy transition.