2 November 2023

Energy Resources Markets Branch
Ministry of Business, Innovation and Employment
15 Stout Street
PO Box 1473, Wellington 6140

Attention: Gas Transition Plan submissions
gastransition@mbie.govt.nz

RE: Submission on the *Gas Transition Plan Issues Paper*

Introduction to Major Gas Users Group Inc

1. This submission is on behalf of the Major Gas Users Group Inc (MGUG). Nothing in this submission is confidential and members may choose to make their own submissions.

2. MGUG was established in 2010 as a consumer voice for the interests of a number of industrials who are major consumers of natural gas.

3. Membership of MGUG includes:

    - Ballance Agri-Nutrients Ltd
    - Oji Fibre Solutions (NZ) Ltd
    - Fonterra Co-operative Group
    - New Zealand Steel Ltd

4. These industries are a significant part of New Zealand's economy, particularly the primary industry export sector, and through import substitution assisting New Zealand's balance of payments. The industry contributes to the overall resilience of the New Zealand economy through the creation of economic diversity and direct and indirect contribution to enhancement of social, financial, human, and natural capital. Collectively our members have invested significant long-term capital in manufacturing facilities that consume about 23 PJ per annum of natural gas, or about 15% of the gas supplied to the market in New Zealand.

5. Our members use natural gas as a feedstock and for process heat. As the technical paper produced by MBIE and EECA in January 2019, *Process Heat in New Zealand: Opportunities and barriers to lowering emissions* points out, large users such as our members have in-built technologies reliant on gas supply for the life of the plant[1]. Specific mention of these industries in the paper include; petrochemicals[2] and steel[3]. Industries with globally traded commodities[4] are also considered at risk of emissions leakage under the New Zealand

[1] EECA, MBIE – *Process Heat in New Zealand: Opportunities and barriers to lowering emissions,* 2019 – p10
[2] This includes from our membership, Ballance
[3] New Zealand Steel
[4] All of our members

Emissions Trading Scheme (NZETS). We are therefore concerned to ensure that energy transition remains orderly, and policies do not create outcomes that shuts down domestic export and import substitution industries and incur broader economic and social welfare costs.

6. MGUG members support efforts to reduce emissions and are already executing or investigating their own projects for this purpose.;

    a. **NZ Steel** - $300 million[5] electric arc furnace to replace the existing steelmaking furnace and two of four coal fired kilns by 2027. This will cut coal use at Glenbrook by about 400,000 tonnes annually, and reduce emissions by 800,000 tonnes per year (45% reduction).

    b. **Ballance** - $50 million[6] investment in green hydrogen production in partnership with Hiringa Energy. During 2022 and 2023, Ballance is investing significant additional money to define its '*Te Ata'* decarbonisation project for Kapuni. The decarbonisation pathway being proposed by Ballance for the Kapuni plant looks to abate approximately 190,000 tonnes per annum, or approximately 90 per cent of the plant's manufacturing emissions[7] over two phases.[8]

    c. **Fonterra** started its decarbonisation journey in 2003. This included a commitment made in 2017 to be net zero by 2050 and to a 30% reduction in GHG manufacturing emissions by 2030 with the priority to phase out coal use by 2037.

    d. Oji Fibre Solutions is already around 85% renewable. An upgrade at the Kinleith facility (costing hundreds of millions of dollars) would increase this further. The upgrade would reduce Oiji's reliance on natural gas and could also facilitate a regional biohub. An initial feasibility study in partnership with Te Uru Rakau, was completed in 2023

7. We believe it's in the interest of all New Zealanders to find more sustainable ways to produce the goods and services New Zealand needs to advance as a society. However, while members anticipate that their requirement for natural gas to progressively decline towards 2050, they will still need reliable, affordable gas for many years as they transition to alternative fuels and feedstocks.

8. This context forms the basis of our submission. Gas transition needs to be integrated within the wider energy and emission reduction debate as policy seeks to find the lowest cost net zero pathway for the New Zealand economy as legislated for under the Climate Change Response Act 2002 (CCRA).

[5] Includes $140 million GIDI funding
[6] Includes $19.9 million from the Regional Economic Development and Investment Unit
[7] compared to the 2022 baseline
[8] The first phase involves reducing emissions from Kapuni utilities and ammonia manufacturing. The second phase would reduce emissions from hydrogen production.

Summary of Submission Points

9. Our summary observations and preferences are provided below. Answers to specific questions are also provided in APPENDIX - Consultation Questions.

10. We support the development of the issues paper and think the scope of issues raised is appropriate. But we are also concerned at the slow progress, lack of vision, and lack of a clear statement about the important transitional role of natural gas. As large users, our primary concern is ongoing availability, reliability and affordability of delivered gas so that our businesses can execute a smooth transition.

11. At a broader level, given the context of transition(s) occurring over decades there should be a wider acceptance that technology progress is exponential. Much of the discussion, framing, and questions relate to very narrowly defined concepts. For example, discussion around hydrogen is restricted to green hydrogen, and CCUS is restricted to CO_2 storage in depleted petroleum reservoirs. Widening the discussion to "clean" hydrogen and in-situ CO_2 storage opens other possibilities that offer potentially lower cost emission reduction pathways. This is particularly important when looking at cost-benefit analysis of government policy choices and evolution of legislative instruments that would seek to either enable or restrict technology and use case options. When considering policy choices, our belief is that these should anticipate options that are not yet viable, but show promise.

12. While we support the idea of exploring the possible, and postulating different pathways for gas towards a net carbon zero economy, we also recognise that it is impossible to pre-judge where the most economically efficient emissions reductions will be available across the economy over the transition timeframe. Rather, the eventual pathway will emerge from the complex interactions of economics, technology, policy, and collective behaviours. The incoming Government should focus on ensuring that its regulatory and policy settings enable iterative exploration of all the opportunities to reduce the sector's emissions intensity over time.

Avoid transition shocks

13. We agree with the outgoing government's Minister of Energy's statement that "*New Zealand will need a level of reliable gas supply for years to come*", but we are concerned at the lack of coherent policies to underpin this statement. In particular:

    a. Whether existing gas supply forecasts are reliable enough for capital investment planning purposes. While producers have maintained production through the last six years, the extreme variation in the 2023 reserve and resource reporting suggests that sentiment for new investment has reduced significantly. Correspondingly, user confidence in the ongoing reliability and price of delivered gas is undermining confidence that transitional shocks can be avoided.

    b. Producer requests for policies that create investment certainty have been largely ignored and incorrectly interpreted as requests for taxpayer subsidies. This is unconstructive in the context of a workable Gas Transition Plan. We agree with the producers that investment certainty is needed to avoid transition shocks.

c. Provisions in the Gas Act, the Gas Policy Statement, the Crown Minerals Act, the Commerce Act, and the RMA are in conflict. Some legislative instruments are intended to promote downward pressure on consumer gas prices, while other legislation with similar purposes is contributing to increased delivered gas prices. MGUG is also aware that specific parts of the new Crown Minerals Act decommissioning legislation has made traditional investment attraction options untenable, potentially exacerbating our concerns about reliability over the next 10 years.

Consider the current gas sector context

14. Regarding the need for reliable supply, MGUG has noted the following:

a. All New Zealand's natural gas fields have come off plateau production and are in decline. Further exploration is effectively banned.

b. 2018-2020, New Zealand's largest gas field at the time – Pohokura, developed production issues that resulted in a serious supply and price shock for a number of users. A disorderly transition would be similar to this period, but with more severe economic consequences for New Zealand

c. Exploration activity has not resulted in a meaningful commercial gas discovery since the Turangi Field was discovered by Greymouth Petroleum in 2005

d. Exploration acreage has reduced dramatically from ~100,000km^2 in 2018 to 6,032km^2 in 2023 (-94%)

e. Shell International exited New Zealand after 50 years and OMV are now running a divestment process. The large international oil and gas companies and New Zealand's then national oil and gas company – Petrocorp, were critical to the establishment of an oil and gas industry in New Zealand. The loss of large international companies with access to cutting edge technology (including renewables) and capital, adds to the uncertainty about future supply

f. Even if policies towards petroleum exploration and development were changed today, the timeframes for new field discoveries are 5 to 10 years at best. In a commercial success case, additional time, (2-5 years) needs to be factored in to field development.

g. Contingent resources exist around existing fields, but in many cases, these have a high level of appraisal and development risk. Producers need investment certainty to justify the high level of commercial risk, or invest elsewhere. Producer uncertainty is exacerbated by demand side uncertainty stemming from other government policy proposals and interventions targeting gas use cases.

h. MBIE's 2023 petroleum reserves update showed material reduction in 2C Resources of 1,100 PJ in just one year.

i. LNG as a fallback supply option involves serious investment in infrastructure and time for development. The size of the New Zealand market (excluding Methanex) means it's unlikely to be viable. It's also a poor strategic option because New Zealand gas users would be competing with larger Asian and European markets

j. Negative views on declining future gas volumes are already contributing to higher delivered gas prices via transmission price increases. This is having an inflationary impact on consumer goods and services and risks a self-fulfilling prophecy of a demand death spiral that prematurely shuts down opportunities for infrastructure repurposing, and cuts off supply to users still reliant on gas.

k. The overall gas supply picture that has emerged as a result of declining investment opportunity and sentiment paints a gloomy picture for future supply. As Figure 1 shows, the latest 2P production profiles produced from the 2023 reserves information reported to MBIE illustrates the falling deliverability, and the considerable drop in expected production in the front-loaded years[9], continuing through the back-end years.

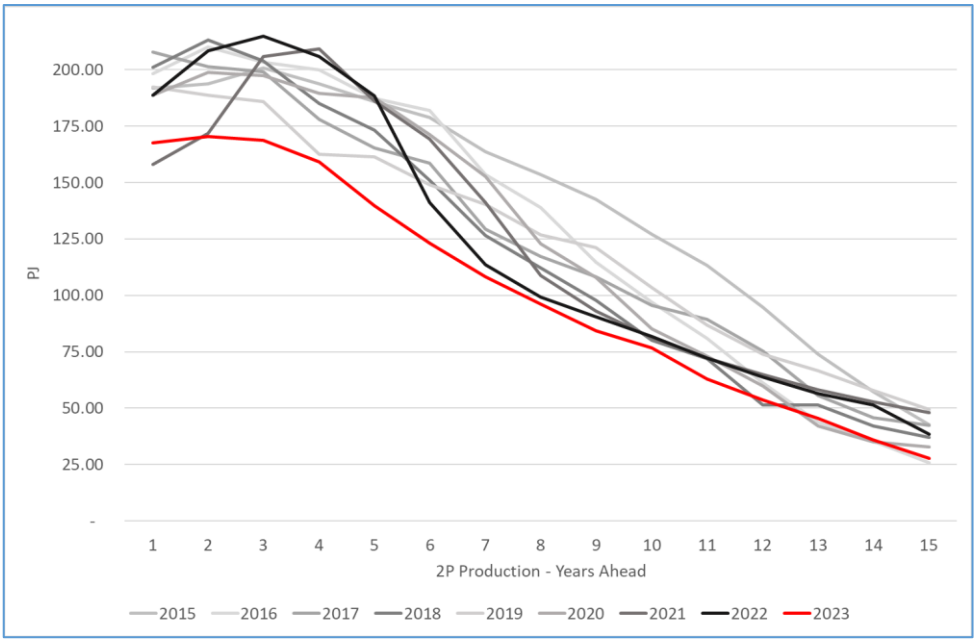


Figure 1: 2P gas production profile - Source MBIE statistics

15. For an incoming government it is not simply the case of lifting exploration restrictions and then assuming that this will fix the problems. The points noted above indicate reliability is likely to be an ongoing issue without overall coherent and constructive gas policy.

[9] The 2P production profiles typically show supplies meeting the market3-5 years ahead as producers invest in production well to connect contingent resource (front loaded gas).

Consider all technology options to reduce emissions without a sudden reduction in gas

16. We think all technology options should be available to reduce emissions. Over time some options won't get off the ground, others will prove ineffective and uneconomic, but a portfolio of options increases the probability that some options will be beneficial to the transition. We think Government should avoid "picking winners" and simply focus on facilitating adaptable and permissive legislation. In terms of a vision, choose a broad pathway (Figure 2) and focus on addressing the policy barriers preventing development of potential low emission enablers.

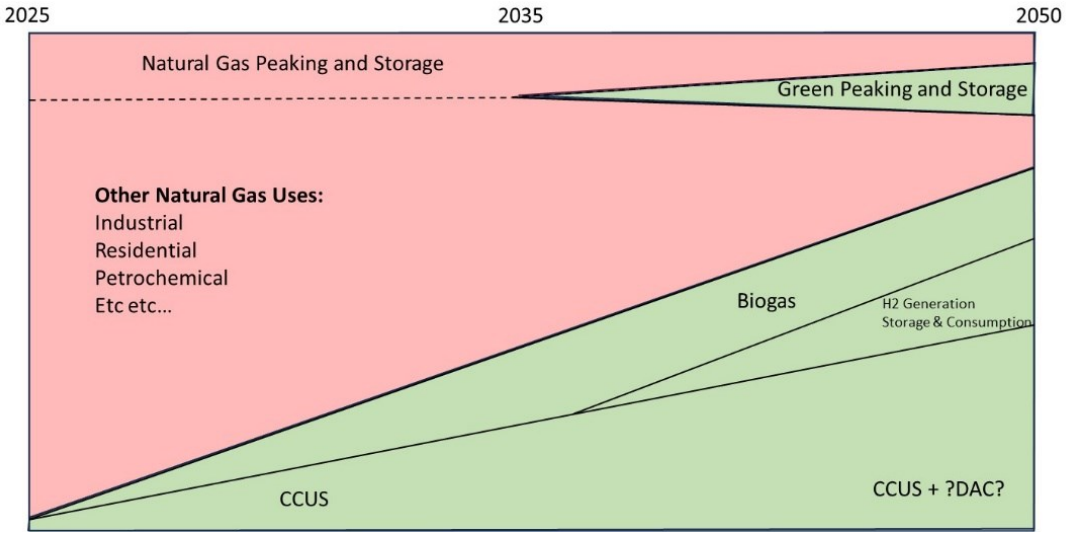


Figure 2: Hypothetical emissions reduction pathway

17. It is possible to continue to consume gas while reducing emissions. We are encouraged to see CCUS has finally been accepted as an important emissions reduction technology. We see CCUS as an important enabler to create a smooth transition. In particular CCUS would potentially allow New Zealand's petrochemical industry to continue. Large gas consumers ensure New Zealand has critical demand mass to justify ongoing investment, not only in natural gas field development, but also biogas, hydrogen, e-methane, and other alternatives. We think an indicator of a successful transition, would be if the industries that currently rely on natural gas are:

    a. Intact and operating in New Zealand in 2050

    b. Showing a clear trend toward renewable gas fuels and feedstocks

    c. Emissions from these industries are carbon neutral or carbon negative.

18. In summary, the New Zealand gas sector makes an important contribution to New Zealand self-sufficiency in critical products and services as well as globally.

19. The drawn-out timeframes and lack of coherent policy for gas and its role in the low emissions transition, are creating concerns about future reliability and availability, and about the sustainability of increasing delivered gas prices.

20. MGUG members believe the conditions currently exist for a disorderly transition. We are particularly concerned at the prospect of ongoing supply and price shocks similar to those experienced 2018 to 2021. We encourage the incoming government to develop a clear vision and adaptable policies that provide support for all gases beyond 2050, taking a technology agnostic position, and acknowledging that gas production and consumption and emissions reduction can occur together.

APPENDIX - Consultation Questions

The Transitions Challenge

How can New Zealand transition to a smaller gas market over time?

The question presupposes that the gas market will be (or should be) smaller. We question this framing. The goal (as legislated) is to reach net zero emissions by 2050. The question that is consistent with the net carbon zero legislation is "*What role does gas have play in the transition to a net zero carbon economy?*"

The question about the size of the gas market is simply an outcome (not a target) of evolving government policy, technology, and relative economics over the next 30 years. New Zealand shouldn't be ruling out energy options for least cost pathways to emission reduction. To that end the Castalia report[10] modelled alternative policy pathways for emission reductions for gas. It demonstrated that relative to the CCC demonstration pathway a combination of adopting CCS for large emitters, renewable gases (biomethane and hydrogen), and carbon prices offered a lower cost pathway to emission reduction.

What is needed to ensure fossil gas availability over the transition period?

New Zealand has sufficient natural gas resources for it not to be a limiting factor for domestic consumption[11]. However, this requires a confidence to continue to invest in our natural endowment to support the demand for natural gas. Government policy direction and decisions have eroded that confidence:

- Sudden announcement of offshore exploration ban in 2018 has negatively affected New Zealand sovereign risk and regulatory stability for investment more generally.
- Changes to the Crown Mineral Act seeking to alter the purpose statement away from promoting exploration and production of petroleum.
- Offshore decommissioning regulation and restrictive provisions on financial assurance[12].
- RMA changes requiring those with existing air discharge consents to "prove" that they should continue to be allowed to use gas in their already consented permits.
- Government intervention in the electricity market with respect to 100% renewable electricity target by 2030 and dry year storage solution with Lake Onslow has stopped investment in new gas peaking plant[13].

In trying to address perceived market failures in adopting these prescriptions, the possibility that these policy interventions have led to government failure has been overlooked.

The corollary of this, is that government policy levers should focus more on enabling outcomes, and be coherent across whole of government.

[10] Castalia - 2035/2050 Vision for Gas MARCH 2023

[11] MBIE gas reserves as at 1 Jan 2023 indicate a typical reserves to production ratio (RPR) of 10 years and 2C resources equivalent to current 2P reserves.

[12] MBIE has a targeted consultation on financial assurance mechanisms for decommissioning that are being planned by upstream as a further disincentive to invest even in the development plans for existing mining permits.

[13] Eg Nova's consented peakers at Otorohanga

- **The ETS should continue to do the heavy lifting** in emissions reduction by pricing for the externalities that emissions create. The price pathway for ETS should be predictable.
- **The option and supporting regulation for CCS should be implemented**. This is low hanging fruit as noted in various GIC reports and studies.
- **The Commerce Act Part 4 needs amending** to remove the restrictive assumption that regulated gas pipeline services are for the carriage of natural gas. The current version of Part 4 has forced large prices increases on consumers that jeopardise the future of renewable gases in the reticulated market[14].
- **Exploration for natural occurring hydrogen under the Crown Minerals Act should be enabled.** For example, in April last year, as part of a series of amendments to its mining code, France added "native hydrogen" to the list of substances that could be mined. France is the only country in Europe where hydrogen has been introduced in these laws. The lack of permits in other countries is not linked to the geology, but to the policy.
- **Environmental policies (MfE) and Energy Policy (MBIE) need to work together.**
- **Regulation and legislation should address energy affordability directly** – we are concerned that the current separation between market regulation (GIC) and economic regulation for monopoly services has left accountability for energy affordability divided. An overall energy market regulator, as used in Australia, seems to be more appropriate for the energy transition to manage the affordability leg of the energy trilemma.

What factors do you see driving decisions to invest or wind down fossil gas production?

Government policy is one factor as explained in the previous question. The other factors are what has historically explained energy transitions; technology, and economics. Technology advances are occurring exponentially ion multiple decarbonising area; sequestration options (biological, mineral, geological); hydrogen production technologies (electrolysis, pyrolysis, catalytic splitting); energy efficiency. Relative economics influence final energy choices.

These factors operate in a complex adaptive system (i.e., predictable only with hindsight as outcomes emerge from system component interaction in unpredictable ways). Recognising this as an underlying feature of the energy system means adopting an interconnected thinking mindset. This recognises that these systems are continually evolving and steadily exhibit new forms of emergent behaviour (including unintended consequences). Good practice policy approach relies on a "disturb/ observe/ adapt" approach. i.e., a policy intervention is made, the emergent outcome is observed, and this information is acted on to adapt policy (including the ability to reverse policy settings). Practically this means that a full range of energy choices should be left on the table with the focus on reducing emission intensity.

[14] Suppliers receive no recognition of any investments they make to blend renewable gases into the reticulated market. Equally steep prices on consumers encourage demand destruction for gas pipeline services that render any investments in renewable gas uneconomic.

Does the Government have a role in enabling continued investment in the gas sector to meet energy security needs? If yes, what do you see this role being?
Yes – mostly in the policy areas outlined in the preceding questions.
Does the Government have a role in supporting vulnerable residential consumers as network fossil gas use declines? If yes, what do you see this role being?
This is a broader policy question concerning energy poverty, and extends beyond gas to all energy forms. For gas, currently vulnerable consumers are facing double digit price rises in the regulated gas pipeline services because of a provision in the Commerce Act that defines these services as being solely for natural gas carriage, rather than more broadly for gas energy carrier. This has permitted pipeline companies to accelerate price rises to consumer connections on the presumption of economic stranding risk, even as they continue to anticipate that that gas networks won't be left stranded and will be needed well beyond 2050. This is a poor outcome for gas affordability, not just for vulnerable residential customers. This can be partially mitigated by changing the definition of gas pipeline services in the Commerce Act to transport of all forms of gas, not just natural gas. More generally, the issue of energy affordability is likely to become more important in an energy transition period. Fundamentally, the separation of gas market regulation (GIC) and monopoly economic regulation (Commerce Commission) isn't adequately addressing consumer interest for affordable energy. The impact on all gas consumers (residential, commercial, and industrial) of New Zealand's current regulatory framework suggests that our current model is no longer fit for purpose in an energy transition environment. We would suggest that officials look to Australia for a better regulator model. The Australian Energy Regulator (AER) operates to specifically include energy affordability measures in its regulatory decisions and allowances, that directly address vulnerable residential consumer interests. This is immediately evident in the different (much lower) allowances given by the AER, for essentially a similar set of circumstances[15].
What role do you see for gas in the electricity generation market going forward?
Some of our members will engage in the consultation on the Renewable Electricity System paper.
What would need to be in place to allow gas to play this role in the electricity market?
We have no comments to make.
Do you think gas can play a role in providing security of supply and/or price stability in the electricity market? Why / Why not?
We have no comments to make.

[15] https://www.aer.gov.au/system/files/AER%20-%20MGN%202023-28%20-%20Final%20Decision%20-%20Overview%20-%20June%202023.pdf

Do you see alternative technology options offering credible options to replace gas in electricity generation over time? Why / Why not?

We have no comments to make.

If you believe additional investment in fossil gas infrastructure is needed, how do you think this should be funded?

This depends on the policy signals from the incoming government. As already outlined, the sector is taking a short-term view on investment, and putting on hold investments that require long payback periods because the policy signals for gas are to phase it out. Examples of where investment is on hold include; new gas peaking plant, additional gas storage, and contingent resource development. Under the current settings, if the incoming government believes these projects should proceed because of the public benefit they produce (including orderly transition), in absence of any current policy changes, the government will need to find ways to underwrite the commercial risk.

However, we would prefer to see a better set of policy measures for gas that recognises that it is not the energy form that is the problem, but how its emissions are managed. While officials and politicians can and should speculate (and model) on how different sectors might contribute to the overall emission reduction outcome, communicating these as sector targets should be avoided. Least cost abatement pathways change as technologies and economics progress across sectors differently. Ultimately the only outcome that matters is achieving net zero emissions across the whole economy. The incoming government should be indifferent as to how these reductions are achieved between different economic sectors.

BIOGAS/ BIOMETHANE

On a scale of one to five, how important do you think biogas is for reducing emissions from fossil gas? - Why did you give it this rating?

We would assess it as being very important (five).

The reason for this rating is because the technology and economics of biogas are commercially proven, and with further scale, can only be enhanced. This means that adoption is already achieving emission reduction. In terms of atmospheric CO_2 and its impact on climate change, a tonne of emission saved today is worth more than a tonne of emission tomorrow. While policy levers and investment are still being assessed, accelerating what already works should be a priority.

Do you see biogas being used as a substitute for fossil gas? - If so, how?

Yes – It is economic, proven technically feasible, and being implemented. Biogas adoption doesn't rely on speculative scenario modelling that require constraining assumptions about technology, costs, or policy settings, or government interventions. From a consumer perspective nothing changes. The existing infrastructure and appliances can continue to be used, and it has no energy

system spill over effects into requiring building more electricity infrastructure (currently estimated at $22 billion during the 2020s by BCG). [16]

Biogas converted to biomethane is particularly suited for decarbonising gas network supplying residential households, the commercial sector, and industrials embedded in these networks. Networks currently transport around 32 PJ pa of natural gas to these 307,000 connections. The potential 7 PJ pa of assessed accessible and economic biogas by 2035 is low hanging fruit to substitute for 20% of this demand. As noted in the discussion paper there is a considerable biomass resource available, but this is excluded on the basis of current understanding of economics and technology. Given a further 10 years of technology acceleration and cost learning curve we don't assume that 7 PJ pa will remain as a limit for economic biogas production.

HYDROGEN

On a scale of one to five, how important do you think hydrogen is for reducing emissions from fossil gas use? Why do you think this?

We would assess it as being relatively unimportant (two).

Currently, it appears that the official assumption is that green hydrogen is the only acceptable alternative form of hydrogen that should be considered. We encourage that the conversation and framing should shift to "clean", rather than just green hydrogen. Clean hydrogen is a broader encompassing term for decarbonising energy through alternative hydrogen production routes, and includes not just green hydrogen, but also blue hydrogen, and potentially turquoise, and gold hydrogen[17]. These alternatives have advantages over green hydrogen production in that they do not compete for scarce renewable electricity generation, offer potentially lower cost pathways to hydrogen, and improve energy security and resilience through resource diversity.

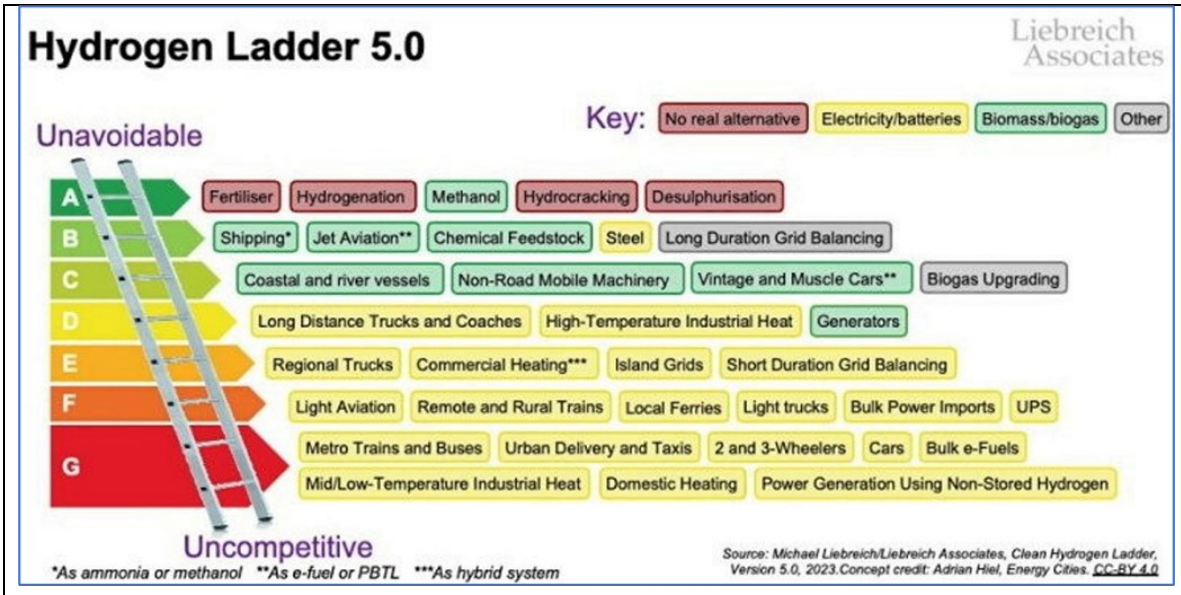
Currently, green hydrogen will have to win its way into the economy, on a use case by use case. It competes with every other clean technology that could solve the same problem. In most use cases green hydrogen is not currently seen as a viable option because other solutions are cheaper, simpler, safer or more convenient.

A useful guide for selecting green hydrogen against competing technologies is given by the hydrogen ladder[18]

[16] https://web-assets.bcg.com/b3/79/19665b7f40c8ba52d5b372cf7e6c/the-future-is-electric-full-report-october-2022.pdf

[17] Blue hydrogen = Grey Hydrogen + CCS, turquoise hydrogen = methane pyrolysis, and gold hydrogen = naturally occurring hydrogen in geological formations.

[18] https://www.hydrogeninsight.com/policy/hydrogen-ladder-seven-h2-applications-relegated-in-updated-use-case-analysis-but-three-promoted/2-1-1540086



Green hydrogen has a unique offering where there are no alternatives – i.e., where the molecule itself is needed, rather than its energy content. In a New Zealand context that means for ammonia production (to make into urea), hydrogen peroxide, and methanol. Steel production is another possible candidate through DRI[19].

However, in even these few use cases, green hydrogen is likely to play a limited role where the economy remains open to grey hydrogen imports. For example, urea produced at Ballance has to compete with imported urea (principally from MENA region and Indonesia), countries with abundant cheap gas resources and lower commitments to decarbonisation. To retain domestic production capability based on green hydrogen will almost certainly require government support to keep the playing field level[20].

Do you see hydrogen being used as a substitute for fossil gas? If so, how and when?

See previous answer. While we are doubtful that hydrogen will play much of a role in New Zealand, this is based on an assumption that current government policy is only interested in pursuing green hydrogen. We would see blue hydrogen as an immediate opportunity for decarbonising ammonia and methanol production that could compete with grey hydrogen imports. [21] This would require legislative changes to allow for CCUS in New Zealand[22]. Opening up exploration to natural hydrogen mining offers potentially the lowest cost hydrogen route[23].

[19] Although there are alternatives like molten oxide electrolysis that could out-compete it.
[20] https://www.hydrogeninsight.com/industrial/fertiliser-production-is-an-obvious-use-case-for-green-hydrogen-so-why-are-producers-more-likely-to-want-blue-/2-1-1533395
[21] Flue gas capture from gas fuel use in reformer and gas compressors, treatment, compression, and transport to onshore depleted reservoirs.
[22] See 2023 Barry Barton, Centre for Environmental, Resources and Energy Law, Te Piringa Faculty of Law University of Waikato, *Carbon Capture and Storage: Taking Action under the Present Law*
[23] https://www.hydrogeninsight.com/innovation/massive-underground-reservoir-of-natural-hydrogen-in-spain-could-deliver-the-cheapest-h2-in-the-world/2-1-1431515

What else can be done to accelerate the replacement of fossil gas with low-emissions alternative gases?
We consider that biomethane/ biogas is the most likely replacement for natural gas, particularly in reticulated networks for reasons explained earlier. A further opportunity exists for adoption of e-methane[24]. Adoption/ substitution will rely on access to the existing gas transport network. Currently the Commerce Act Part 4 assumes that gas pipeline services should be regulated on the basis of natural gas transport. As noted, this has led to accelerated prices for gas connections and disincentives to invest in gas pipeline repurposing, including for low emission alternative gases. An update to the Commerce Act is low hanging fruit and can be done relatively simply via an omnibus Regulatory Systems Amendment Bill. We understand that MBIE has already agreed that this should be done. The Regulatory Systems Amendment Bill (No 4) was delayed to allow for other high priority legislation to be progressed. We would urge MBIE to bring this back to the Minister in the incoming government.
RENEWABLE GAS TRADING
On a scale of one to five how important is a renewable gas trading to supporting the uptake of renewable gases? - Why have you given it this rating?
We would assess it as being important (four). The reason for this rating is that it is likely that renewable gases will be blended with natural gas in gas transport systems, effectively making the molecules indistinguishable from each other – equally injection sources may be downstream of where demand for renewable gas sits. There therefore has to be a way for buyers, who wish to benefit from the marketing (or ETS savings and other gas levies) to certify that their energy source as renewable. Renewable Energy Certificates are a way to do this. We note that this scheme already exists.
What role do you see for the government in supporting such a scheme?
The incoming government should remove to the narrow restriction in the Commerce Act (Part 4) that defines gas pipeline services only in terms of carriage of natural gas, to a broader definition of gas that includes all forms of gas energy. This would allow regulated pipeline companies to invest in repurposing pipelines and expect to earn a regulated return on their investment. Currently the legislation prevents that investment and associated operating expenditure being recognised by the Commerce Commission as allowable expenditure. This disincentivises early and timely investment in decarbonising domestic gas use.

[24] E-methane assumes clean hydrogen production combining with CO2 capture recycling a carbon molecule for one further cycle and enabling the product to be marketed as "carbon neutral". The advantage of e-methane is that off-take and infrastructure already exists.

CARBON CAPTURE, UTILISATION AND STORAGE (CCUS)

On a scale of one to five how important do you think CCUS is for reducing emissions from fossil gas use? - Why did you give it this rating?

We would assess it as being very important (five).

Depleted field natural gas storage has been a proven technology for many years and has been adopted in various parts of the world in other jurisdictions (Australia, US, Europe).

The studies already completed for MBIE and GIC indicate that the concept is both technically and economically feasible in New Zealand[2526]. This is further supported by work done through Castalia[27] that shows early adoption of CCUS as the lowest cost emission reduction pathway for gas in New Zealand.

What are the most significant barriers to the use of CCUS in New Zealand?

The technological and economic feasibility has been studied in the New Zealand context (Professor Barton, and Wood Beca). The opportunities and challenges are aptly described in these commissioned articles.

One barrier is legislative, as outlined in Professor Barton's paper. However, the paper offers legislative solutions. We would expect the incoming government to have a more pragmatic appreciation of the opportunity that CCUS provides for emission reduction and act to enable CCUS in New Zealand.

A further barrier, is the assumptive definition of geological sequestration as being storage in depleted petroleum reservoirs. This restricts its use case to location in Taranaki, and scale of co-located point source emissions. However, there are emerging opportunities in in-situ mineral sequestration technologies that overcome the geological, geographical, and scale barriers associated with conventional CCUS understanding[28]. As also noted for hydrogen, across 30-year transition time frames, policy should anticipate technological progress that widen the opportunities for emission reduction.

[25] 2023 Barry Barton, Centre for Environmental, Resources and Energy Law, Te Piringa Faculty of Law University of Waikato, Carbon Capture and Storage: Taking Action under the Present Law.

[26] 28 March 2023 Wood Beca, Review of CCUS/CCS Potential in New Zealand - Written in support of the Gas Transition Plan

[27] Castalia - 2035/2050 Vision for Gas MARCH 2023

[28] August 2023, Al Kalbani, M., Serati, M., Hofmann, H., Bore, T.*, A comprehensive review of enhanced in-situ CO2 mineralisation in Australia and New Zealand* – International Journal of Coal Geology, Volume 276

Do you see any risks in the use of CCUS?

Some communities will argue that the option of CCUS creates a path dependency that will encourage gas to stay in New Zealand's energy mix and slows down decarbonisation efforts. We would argue that early emission reduction is more important than waiting for the perfect solution to become economically feasible.

The risk is rather in not having CCUS as an option. Natural gas is a competitive energy option for our members who compete in international markets and who need time to transition to lower carbon fuels. The ability to have access to competitively priced energy and at the same time, reduce emissions, should be seen as a solution, not a problem.

In what ways do you think CCUS can be used to reduce emissions from the use of fossil gas?

The Wood-Beca report outlines the opportunity clearly (*8.2 What contribution can sequestration make to emissions reductions, security of supply and energy affordability*?):

Combined CCS programmes envisaged for Maui and Kapuni have the potential to reduce emissions after 2027, when operating.
• Significant emissions reductions could be made with CCS (provided this is enabled by legislation).
• Production of natural gas in New Zealand can continue to provide security of supply to energy users
well into the late 2030's. Natural gas is likely to be required but CCS enables it to occur with lower emissions.
• End of field life forecasts at Maui and Kapuni, currently occur before majority electrification replacement (e.g. large-scale offshore wind) conceivably takes effect. Extension of field life through remaining 2P reserves and 2C resource upgrades using capture of CO2 will provide energy security during the transition to electrification.

CCUS is also the decarbonisation option that would allow domestic petrochemical production to not only invest earlier in decarbonisation but also remain internationally competitive. Transitioning from unabated grey hydrogen to blue hydrogen (grey hydrogen with CCUS), initially via fuel gas emissions capture and storage, presents a lower investment retrofit opportunity than a complete plant reconfiguration to use only renewable electricity[29].

ENHANCED GAS STORAGE

What role do you see for gas storage as we transition to a low-emissions economy?

In the absence of new field developments and as New Zealand's legacy fields become less reliable, gas storage will be needed to smooth production and offtake. Storage is already a useful option for producers and users to manage peaks and troughs in demand and production.

[29] https://www.hydrogeninsight.com/industrial/fertiliser-production-is-an-obvious-use-case-for-green-hydrogen-so-why-are-producers-more-likely-to-want-blue-/2-1-1533395 - blue hydrogen derived ammonia is half the cost of green hydrogen derived ammonia

On a scale of one to five, how important do you think increasing gas storage capacity is for supporting the transition? - Why did you give it this rating?
We would assess it as moderately important (four). The market should decide whether additional gas storage has value. However, this relies on investors having confidence that such a project will be able to achieve an economic return over a typical lifetime of 15 -years. This in turn means having policy stability and certainty for gas investment. The incoming government can create the necessary policy environment that focuses on emission reduction rather than energy choices.
What should the role for government be in the gas storage market?
Ideally, no role for government is needed if the gas market can believe that government has shifted to being agnostic to gas being part of New Zealand's energy future. If it can't achieve this, as noted in the discussion document, developers of storage facilities need at least 15 years of offtake agreed. The current policy settings signal a desire to have no gas fired generation by 2030 (in a normal hydro year). Gas storage primarily serves this market. If the policies for 100% renewable electricity generation by 2030, and Onslow pumped storage continue to be a priority for the incoming government it would potentially need to pay for and own the gas in storage, as well as pay for generators to have thermal generation in reserve.
LNG
Our position is that LNG importation is not a viable option for New Zealand. Do you agree or disagree with this position? - If so, why?
LNG is technically viable and clearly economically viable given its global reach and uptake. New Zealand is no different, but context matters. New Zealand isn't short of natural gas resource. It is current policy that prevents it from being explored and developed. That LNG is even being considered, is a sign of policy confusion and objective misalignment between different parts of government. Our view is that industries are more likely to close and choose to import, or base production overseas rather than rely on the vagaries of the LNG market serving a tiny market at the end of a long supply chain.
What risks do you anticipate if New Zealand gas markets were tethered to the international price of gas?
The risks are no different than what other jurisdictions also have to manage. For example, New Zealand is already tethered to the international price of oil and oil products. New Zealand can manage this for gas by taking a term agreement for LNG. For lowest price the quantity would need to be significant. The likely outcome, as was done for oil refining in New Zealand, is that New Zealand chooses to shut down the domestic production industry and rely on imports, and export associated emissions to other countries.