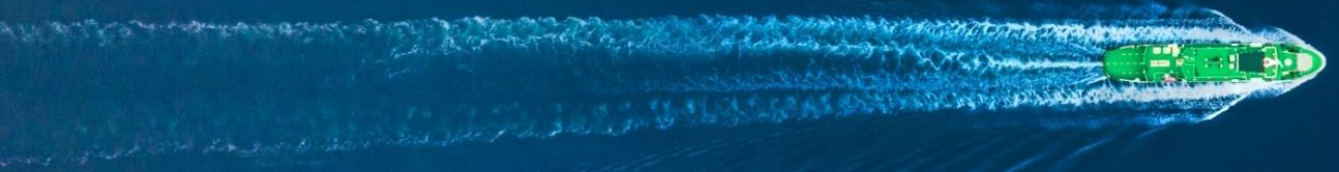
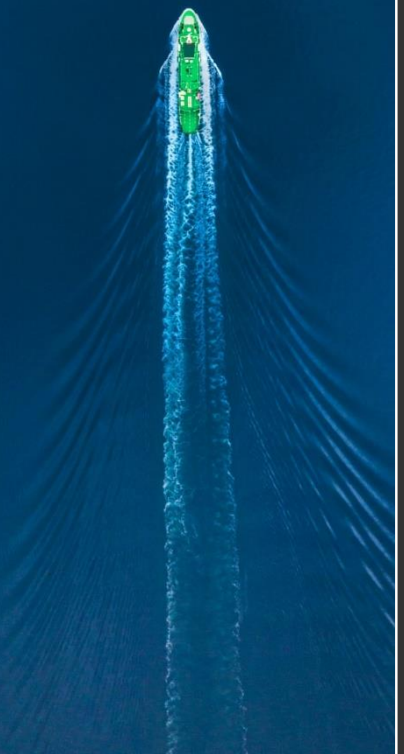
# OCEANIA MARINE ENERGY

*A Strategic Pathway to Sustainable Shipping*



www.oceania.energy



# Sustainable Shipping Fundamentals

| Demonstrate | Generate | Finance & Investment |
| --- | --- | --- |
| Develop, build and demonstrate vessels running on zero-emission or equivalent fuels. Develop operation solutions and supply chain infrastructure flexibility to reduce technology risk | Renewable generation of ship fuels with pathway to scale. Bio and hydrogen based fuels. Increasing volumes and decreasing costs. | Develop sustainable business models across the value chain. Connecting energy producers, infrastructure developers, operators and ship owners. Ensure security of supply, minimising risk. Encourage support by government in port fee and tax incentives. |

# AMBITION

Oceania's ambition is to deliver the world’s first ammonia-ready LNG bunkering vessel, powering a sustainable shipping industry with Australian natural resources.

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## Advantage

- First mover to supply an LNG bunkering vessel to Australia
- Provides a transition pathway to green sustainable-shipping
    - Meets the ESG requirements of commodity exporters
- Multi-source and secure availability of fuel for bunkering service
- Catalyst for the next wave of newbuild LNG and ammonia powered ship tonnage
- Fully scalable solution across multiple geographies, initially focussed on Australia

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# COLLABORATE and PARTNERSHIP

- Oceania are actively fostering collaboration
  - Ship owners & Charters
  - Energy Producers
  - Technology Suppliers
- Partnerships with landholders, indigenous entities and local government and regional industry
- Federal Government support

# THE TIME IS NOW

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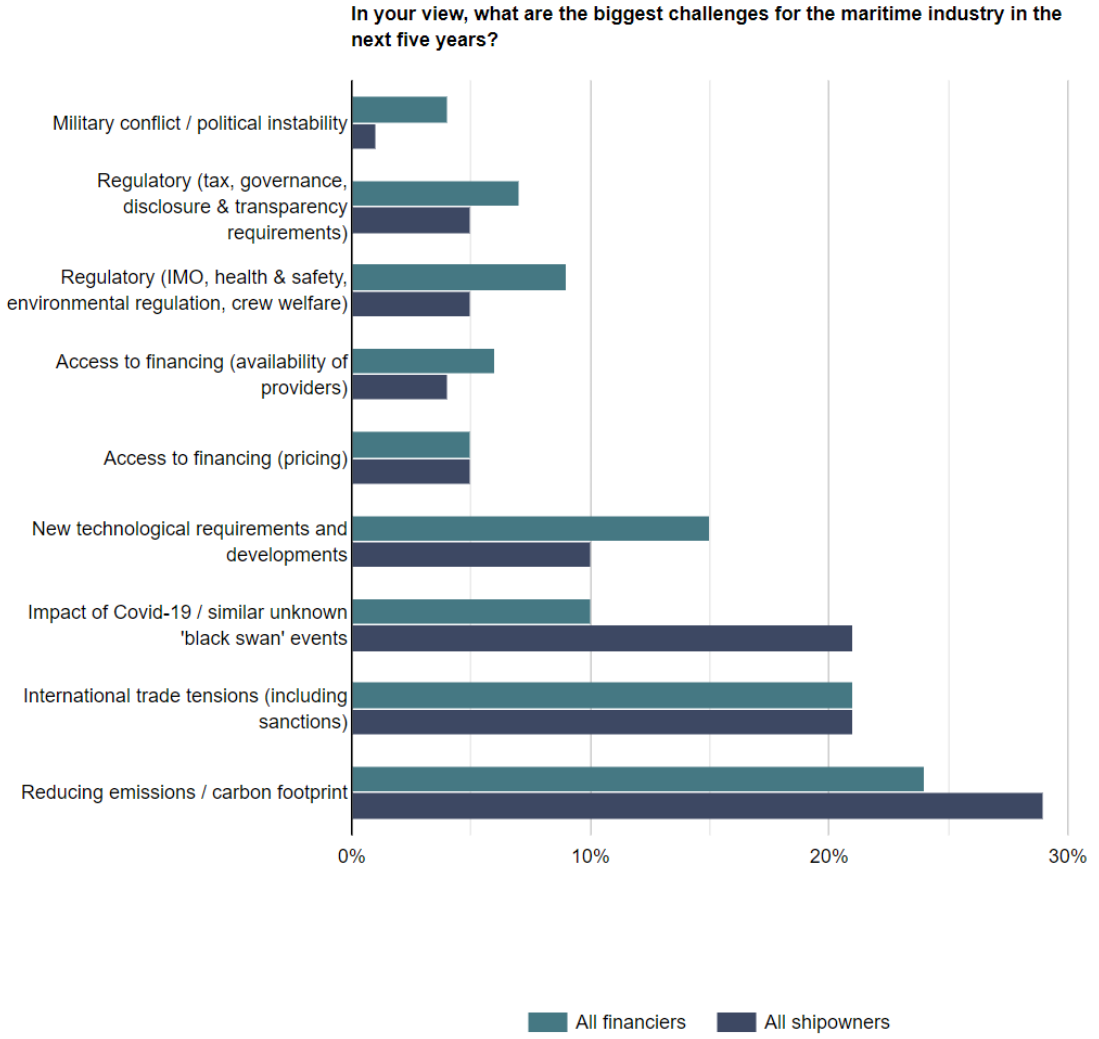
Shipping represents 3% of global GHG emissions.

Sustainability concerns now top the shipping agenda, with environmental, social and corporate governance (ESG) issues heavily influencing financing decisions.

Decarbonisation of shipping is by far the most pressing factor for charterers, owners and financiers.

Fleet renewal is starting a super-cycle, now is the time to be ready to meet the demand.




*WFW 2021*

# ENERGY TRANSITION

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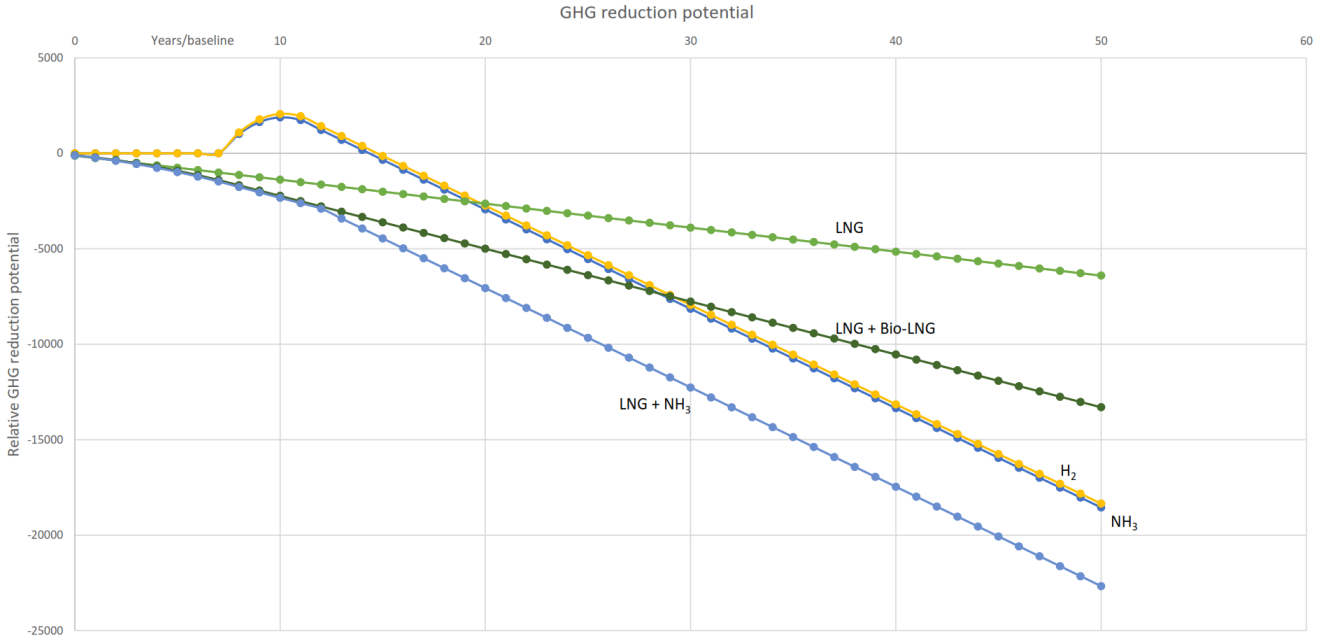
The International Maritime Organisation's 2050 Greenhouse Gas (GHG) emission target, is an ambition that requires commercially viable deep-sea Zero-Emission Vessels (ZEVs) in operation by 2030.

A two pronged approach is needed

Using LNG as the transition fuel to ammonia is crucial to maximise emission reductions


2 stroke engine: 8 years until $H_2$, additional 4 years to green $H_2$. Biogas 0 % to 50 % within 8 years.

*GASNOR 2021*

# STATUS OF LNG FUELLED SHIPPING

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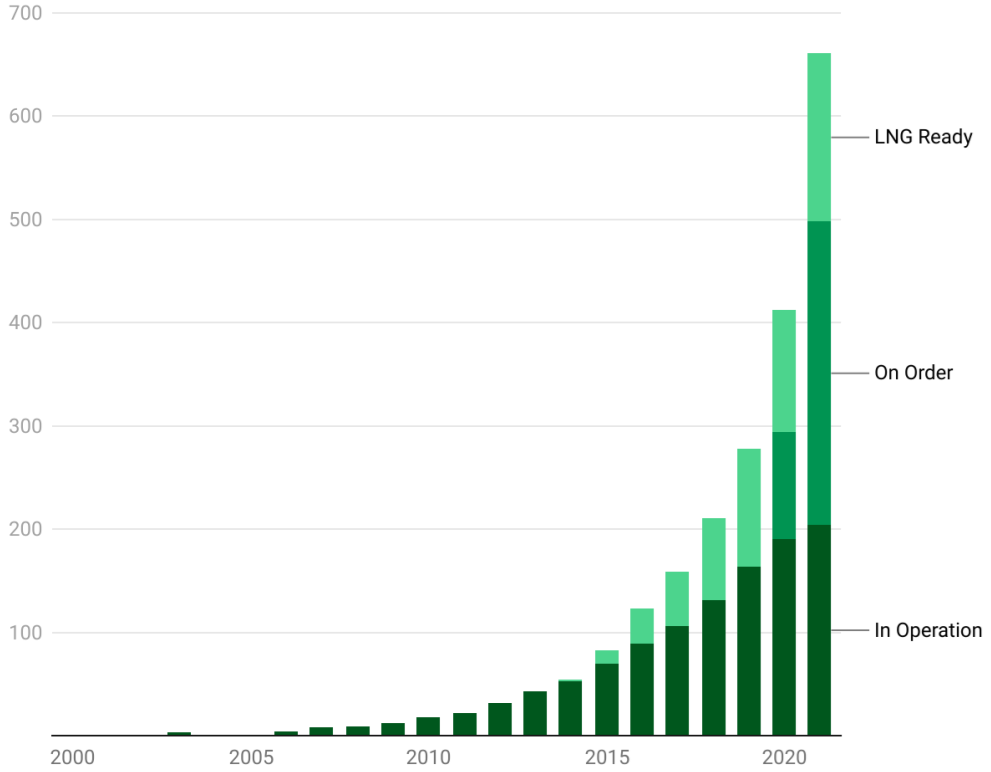
- LNG accounts for just over 3% of total global marine fuel consumption
- Recently  the number of LNG-fuelled vessels has grown consistently by between 20%-40% per annum
- LNG-fuelled vessels amount to about 13% of the current newbuild order book, rising to 16% if LNG-ready vessels are included
- For some segments, such as the ultra-large container vessels, more than 50% of the order book is either LNG-fuelled or LNG-ready.
- A similar trendline is expected from mid-decade for Ammonia

**LNG Ready Ships**




| In Operation | On Order | LNG Ready |
|---|---|---|
| 210 | 375 | 175 |

# EMISSION SAVINGS

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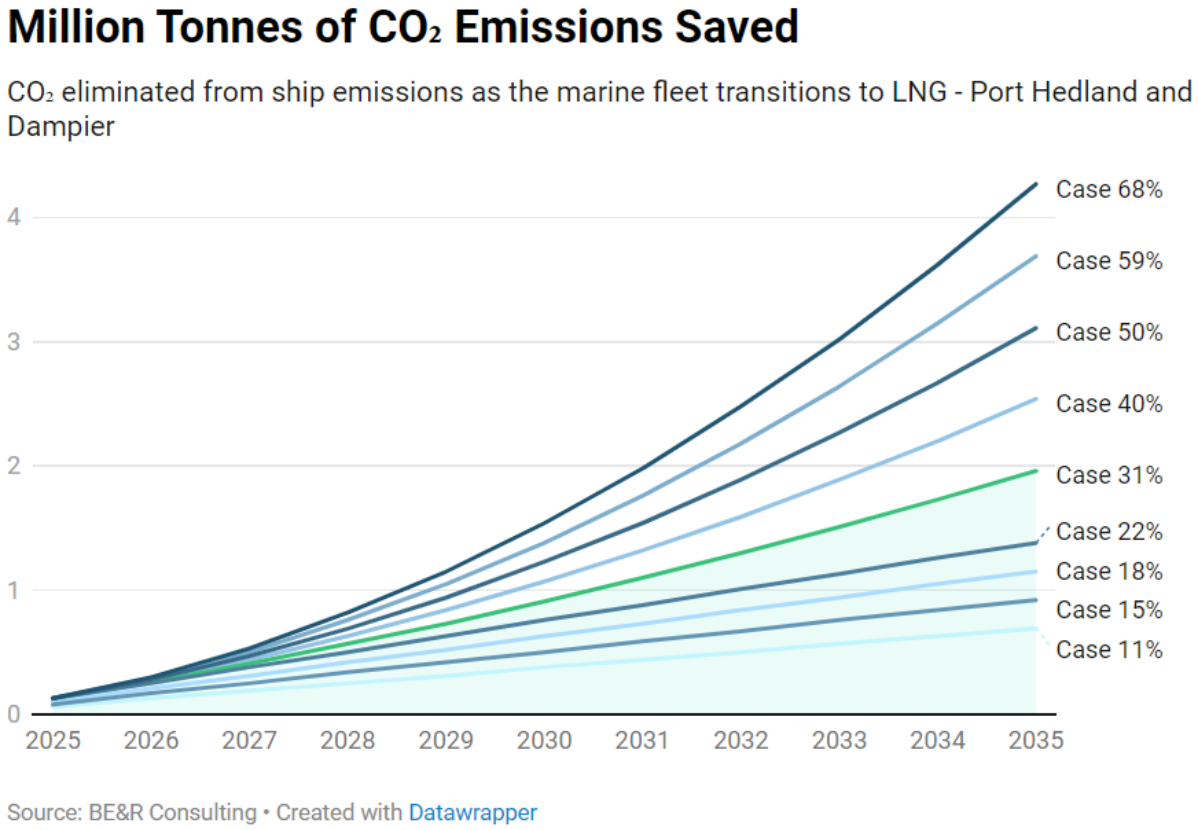
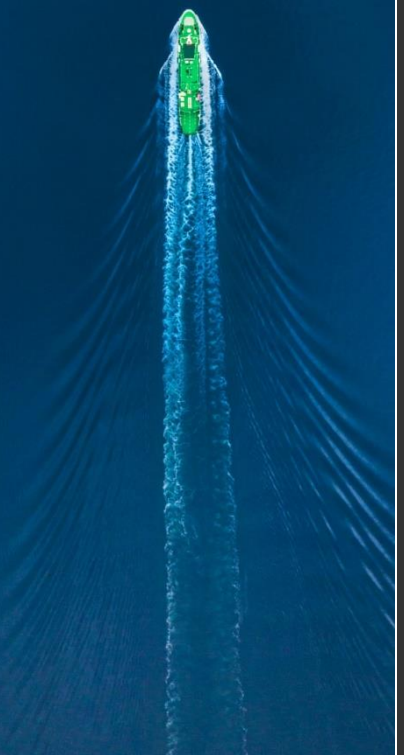
With a flexible multi-fuel system we can bank the emission savings from LNG whilst ammonia fuelled engines are commercialised.

This approach will save 7.5MTPA of CO2 emissions over the next decade in the 30% case conversion to LNG





# Prime Location

# THE PILBARA

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The Port Hedland & Dampier iron ore export industry present as a prime opportunity for the development of an LNG Bunkering industry

- Iron ore shipped per annum
  - 130 MPTA (Dampier)
  - 600 MPTA (Port Hedland)
- Equivalent of ~3,650 bulk shipments per annum
- Primary market destination is China

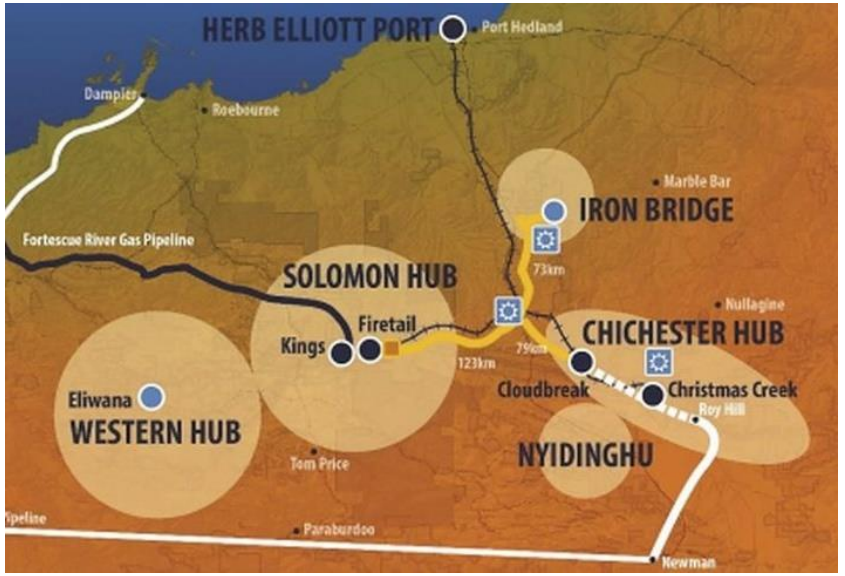
# ENERGY SUPPLY

The north-west of Australia is an energy powerhouse.

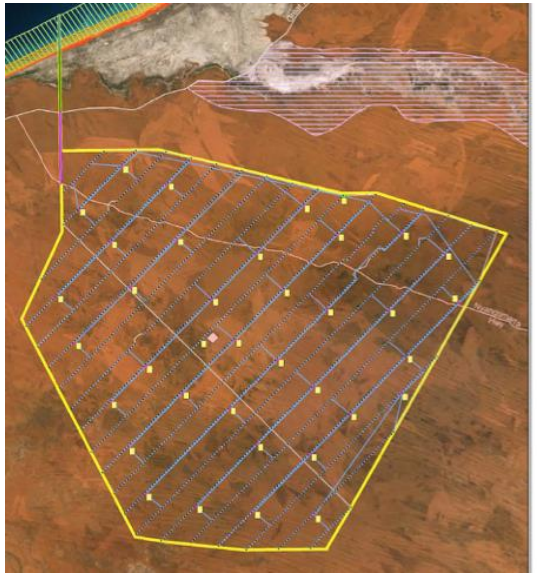
A multitude of renewable energy projects are developing significant generation capacity within the region

- 15 GW of Wind and Solar generation gained environmental approval in 2020
- 26 GW planned to come on stream in later phases
- 15 GW of electrolyser capacity
- Ammonia production targeting 8.5 million tonnes (MTPA) by 2037

A competitive framework of natural gas and energy suppliers can provide initial small-scale parcels for marine bunkering.

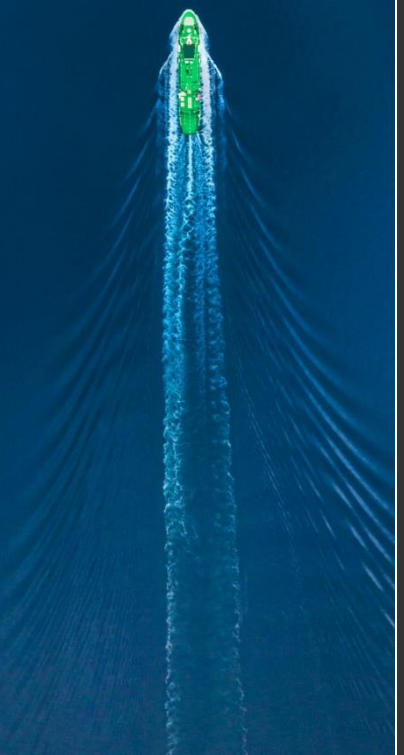



*Fortescue Future Industries*



*Asian Renewable Energy Hub*


*Yara-Engie*



# Market Demand

# LNG DEMAND

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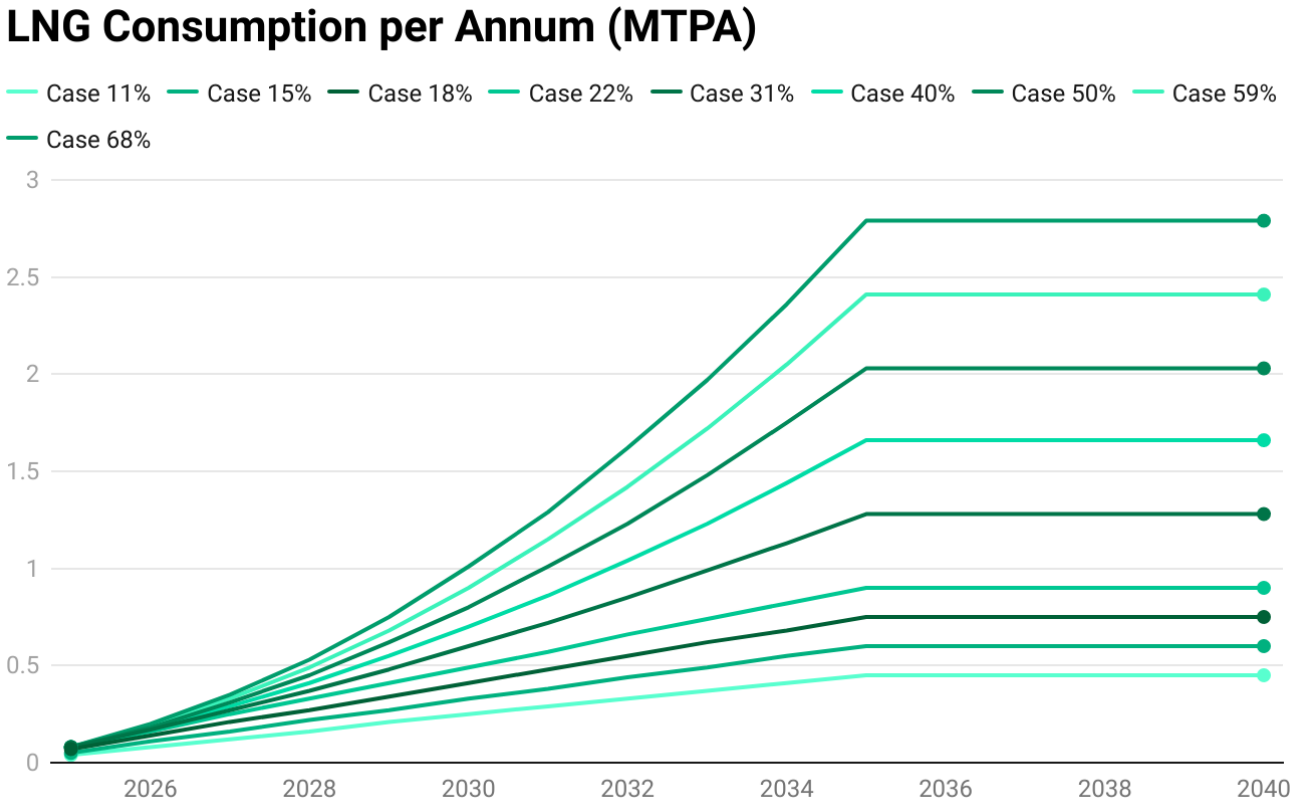
Pilbara's LNG bunkering market is projected to be 1.5 MTPA by 2035

- Serving Port Hedland and Dampier
- LNG serves 30% of fuel market
- 100 LNG fuelled vessels
- 1,200 Bunkering operations per year
- LNG Consumption per round trip 2,500$m^3$
- Model conservatively assumes no further growth in market share from 2035 to 2040




[1] LNG consumption based on a 2,500 $m^3$ per VLOC per round trip

https://datawrapper.dwcdn.net/Qm8Ea/1/

# AMMONIA DEMAND

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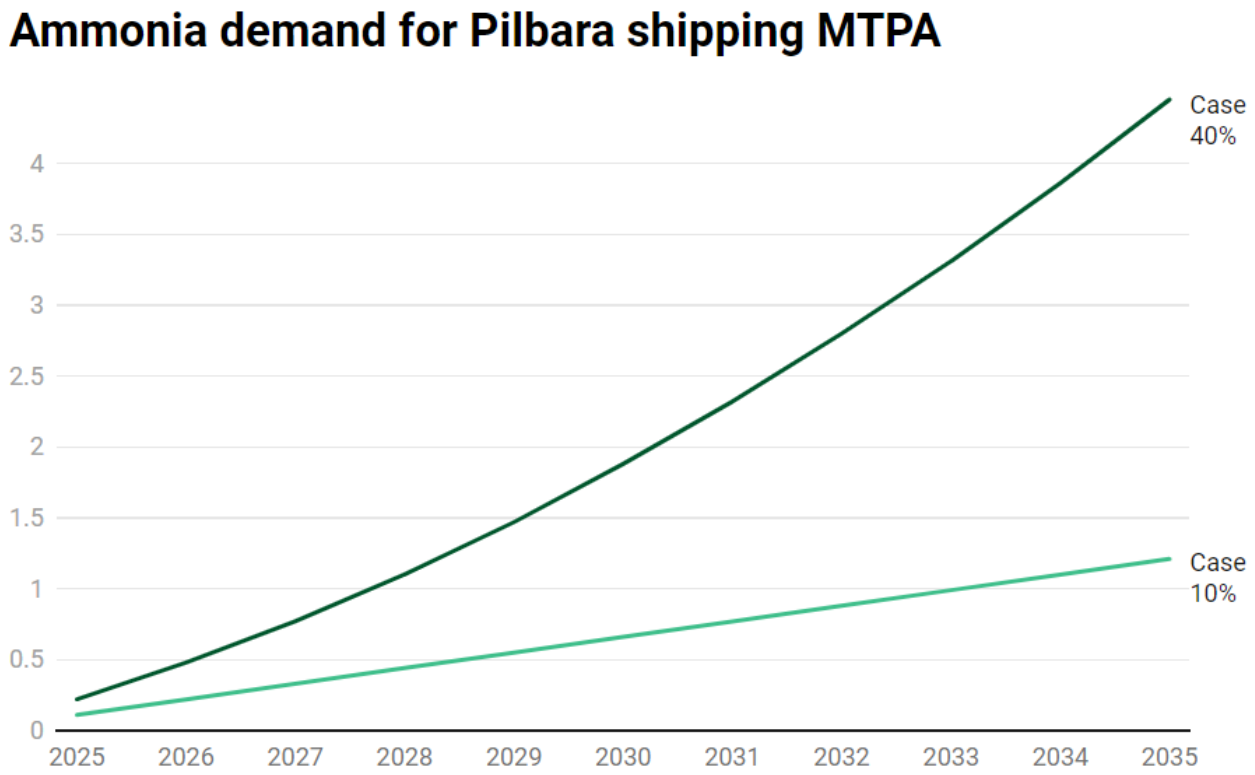
Pilbara's Ammonia bunkering market between 1-4 MTPA

- Ammonia at 10% of fuel market by 2035 - 1 MTPA of Ammonia fuel demand
- Ammonia at 40% of fuel market by 2035 - 4 MTPA of Ammonia fuel demand
- Ammonia Consumption per round trip to China 4,500m$^3$




[1] Ammonia consumption based on a 4,500 m$^3$ per VLOC per round trip

| | | |
|---|---|---|
| Current Annual Ammonia Production | 180 | MTPA |
| Production required to meet the ammonia fuel demand by 2050 | 150 | MTPA |
| Power needed to produce 30% of marine fuel ammonia | 400 | GW |
| Price forecasted for green ammonia by 2040-2050 | 13.5-15 | $/GJ |
| Price forecasted for carbon neutral ammonia by 2025-2030 | 16-21.5 | $/GJ |

[2] Haldor Topsoe

# TARGET CUSTOMERS

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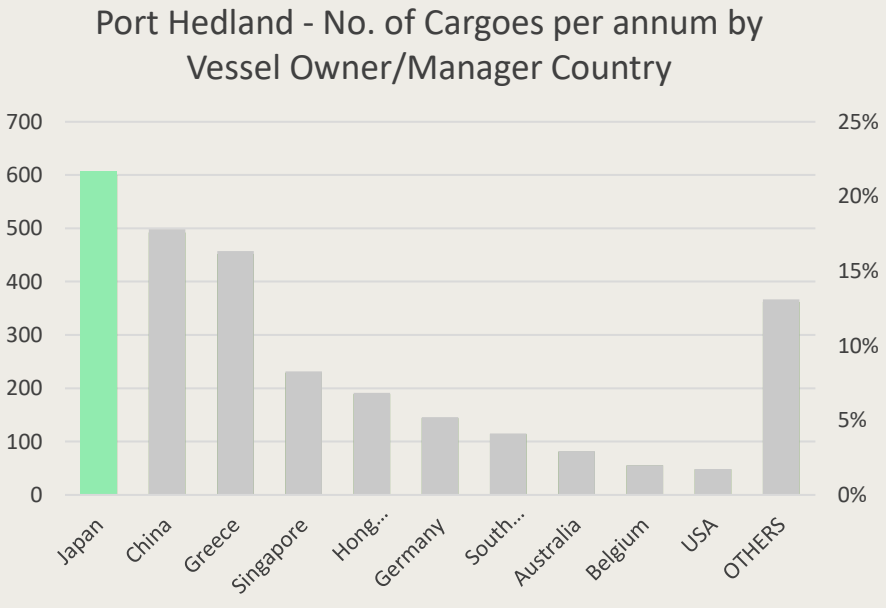
Japanese Ship Owners represent largest segment serving the Pilbara – Asia trade route

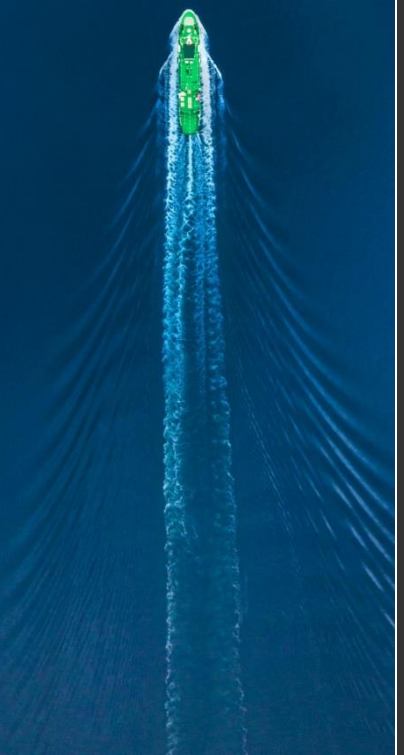
- 20% of Market




| Japanese Ship Owner | Country | Ship No. |
|---|---|---|
| Toyo Sangyo | Japanese | 56 |
| K Line | Japanese | 52 |
| NYK | Japanese | 46 |
| Shoei Kisen | Japanese | 36 |
| Mitsui | Japanese | 33 |
| Doun Kisen | Japanese | 29 |
| Mizuho Sangyo | Japanese | 28 |
| Nissen Kaiun | Japanese | 26 |
| Fukujin Kisen | Japanese | 24 |
| Kitaura Kaiun | Japanese | 21 |
| Kotoku Kaiun | Japanese | 17 |
| Kumiai Navigation | Japanese | 15 |
| Shunzan Kaiun | Japanese | 13 |
| Daiwa Kisen | Japanese | 11 |
| Daiichi Chuo Marine | Japanese | 9 |
| El Solshikoku Kaihatsu | Japanese | 9 |
| Sanko Steamship | Japanese | 8 |
| Seno Kisen | Japanese | 8 |
| Taiyo Nippon Kisen Regional Operation | Japanese | 8 |
| Tohmei Shipping | Japanese | 8 |
| Q Kaki Shipping Ltd | Japanese | 7 |
| Kumiai Senpaku | Japanese | 6 |
| Mitsubishi | Japanese | 6 |
| Toyo Shipping Line | Japanese | 6 |
| NS United Marine | Japanese | 5 |
| Fukunaga Kaiun | Japanese | 4 |
| Kambara Kisen | Japanese | 4 |
| Kowa Marine Services | Japanese | 4 |
| Etsunan Kisen Co Ltd | Japanese | 3 |
| MC Shipping Japan | Japanese | 3 |
| Misuga Kaiun | Japanese | 3 |
| Nissen Kaiun Co Ltd | Japanese | 3 |
| Toshin Kisen | Japanese | 3 |
| Biko Kisen | Japanese | 2 |
| Ehime Kaiun | Japanese | 2 |
| El Sol Maritime SA | Japanese | 2 |
| Hachiuma Steamship | Japanese | 2 |
| MBK | Japanese | 2 |

## Targeted Customers

- K Line
- NYK
- Mitsui (MOL)
- Mitsubishi



# Technology

# BUNKER VESSEL

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- Oceania are partnering with Kanfer Shipping - exclusive design
- License with CGR Arctic Marine AS
- The vessel design utilises LNG as a fuel combined Hybrid and peak energy shaving technologies from Kongsberg Maritime
- Rolls-Royce Bergen gas engines can be converted to operate on ammonia
- Ability to load LNG, methanol or ammonia


Kanfer Shipping – CGR Arctic 6,000cbm LNGBV

| DESIGNER | OWNER | ENGINE TECHNOLOGY | BUNKER PARCEL |
|---|---|---|---|
| CGR Arctic Marine AS | Kanfer Shipping | Hybrid LNG-Electric | LNG - Methanol - Ammonia |

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# THANK YOU


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