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Bioenergy Australia: MERNAP Issues Paper - Energy Sources and Technologies

Bioenergy Australia (BA) is the national industry association committed to accelerating Australia's bio economy. Our mission is to foster the bioenergy sector to generate jobs, secure investment, maximise the value of local resources, minimise waste and environmental impact, and develop and promote national bioenergy expertise into international markets.

This submission from Bioenergy Australia is on behalf of the Cleaner Fuels Alliance (CFA). This alliance was founded to accelerate the development and deployment of a renewable liquid fuels industry in Australia as a means to deliver meaningful social, environmental, and economic benefits. Individual members of the alliances will be providing more detailed submissions specific to their business and expertise.

Australia's Bioenergy Roadmap (ARENA, November 2021) outlines how, by the start of the next decade, Australia's bioenergy sector could contribute to around $10 billion in extra GDP per annum and 26,200 new jobs (predominately regional), reduce emissions by about 9 per cent, divert an extra 6 per cent of waste from landfill, and enhance fuel security. Now is the time to capitalise on these opportunities by prioritising biofuels or **renewable liquid fuels** within the Maritime Emissions Reduction National Action Plan (MERNAP).

Bioenergy Australia thanks the Department for the opportunity to provide feedback on the MERNAP Issues Paper - Energy Sources and Technologies. There is no doubt that emissions from the maritime and shipping sector will continue to increase unless immediate action is taken. We commend the Department for recognising that biofuels or renewable liquid fuels play a key role in decarbonising the maritime industry and will support Australia in meeting its net zero goals.

We provide the following responses to the MERNAP Issues Paper: Energy Sources and Technologies questions:

- **The differing properties of each energy source means that, given current technologies, they are not appropriate for all vessel types. What are key technical considerations that your organisation considers when exploring alternate energy sources?**

Key considerations include:

  - **Compatibility with existing technologies** – Much of the maritime sector is expected to continue relying on liquid fuels, as hydrogen and electrification are not currently available or economically feasible to fully support the sector in achieving net-zero targets on time.

    Furthermore, the lifespan of maritime fleets and infrastructure can approach 30 years and upgrading these technologies is time-consuming, expensive and impractical. This means that today's fuel reliant technologies will likely continue to be used into the future and a solution to decarbonise these existing technologies is required.

    Renewable liquid fuels, including biodiesel, renewable diesel, and ethanol, are immediately deployable and compatible with existing infrastructure. This eliminates the need for significant technology or infrastructure upgrades or investment.

- Immediacy of the technology to start decarbonising the sector- We welcome the Australian Government's commitment to cut carbon emissions by 43% by 2030 and to achieve net zero by 2050. However, these are fast-approaching objectives and there is a significant risk of failure if immediate decarbonisation solutions, such as the development and deployment of renewable liquid fuels, are not prioritised.

  Drop-in replacement fuels, like renewable diesel biodiesel and ethanol, are a straightforward solution to start decarbonising now. Renewable liquid fuels burn in combustion engines and can be used as a direct replacement for traditional fossil fuels, without requiring significant changes to existing technologies, infrastructure or storage facilities. This technology is also tried, tested and proven. These fuels are cost-competitive, readily deployable and have convenient storage and handling properties. Renewable liquid fuels allow the maritime sector to decarbonise now, rather than waiting to act until alternative solutions are available or compatible.

- From the following list, what are the primary barriers to investing in low emission energy sources in the maritime sector? Can you comment on what your organisation thinks about each of these factors?

  - Cost - Renewable fuels currently face a cost disparity compared to fossil fuels, primarily due to factors such as a lack of domestic supply, absence of subsidies (as seen in the fossil fuel sector), and the absence of tax benefits. We believe that a combination of subsidies, capital grants, and an economy wide market-based mechanism is needed to support the business case for the adoption low-emission energy sources.

  - Technology choice - Industry stakeholders are keen on solutions that are compatible with existing technology and offer immediate decarbonization potential. We support technology choices that can integrate with current maritime infrastructure and technologies, ensuring a cost-effective and efficient clean energy transition. We also support the need for frameworks to promote transparency around emissions reduction potential for different technology choices to build confidence in these technologies and facilitate informed choice.

  - Fuel availability/infrastructure - The lack of a domestic industry or supply of renewable fuels in Australia stands as a current barrier. However, given Australia's vast feedstock might, our refining capabilities and our renowned ingenuity, we have the opportunity to overcome this barrier and become a leading player in the renewable liquid fuel. By supporting the development and expansion of a domestic renewable liquid fuel industry, we can ensure the availability of these fuels, facilitating the maritime sector's transition to low-emission energy sources and contributing to overall decarbonization efforts.

  - Regulations and standards – Supportive regulations and standards are imperative for driving the availability and adoption of renewable liquid fuels. The commitment to and implementation of clear and favourable regulations will support the business case for these fuels as well as project viability. This provides the necessary certainty for investors and industry players, fostering a conducive environment for the development and utilization of renewable fuels.

  - Safety – Renewable liquid fuels are tried, tested, and proven to be compatible and safe, within existing technology.

- What are the specific barriers to using each potential energy source in your organisation?

Hydrogen and electrification are not yet available or economically feasible to fully support this sector in time to achieve our net-zero targets. Therefore, industry requires a solution that can start decarbonising now and drop in replacement fuels, like renewable liquid fuels, are a key solution.

Currently, the significant barriers impacting the adoption of renewable liquid fuels in Australia include: the absence of supportive regulations and standards, insufficient domestic supply and the cost differential compared to fossil fuels. These barriers undermine the feasibility of a viable business case for scaling up production of these essential fuels.

The implementation of regulations and standards, serving the dual purpose of driving immediate action and establishing a stable, long-term framework, is critical. Such frameworks could effectively address challenges like the domestic availability of renewable fuels and the substantial cost gap between conventional fossil fuels and renewable liquid fuel. This regulatory initiative is pivotal for the government to successfully achieve its net-zero targets.

- Do you foresee a slow, or a steady, uptake of low and zero emission energy provision in the maritime sector? What are major factors that will drive demand for alternate energy sources?

There is a clear and significant demand for renewable liquid fuels, not only within the maritime sector but also across several of Australia's hard-to-abate industries, including transport, aviation, construction, and agriculture. All these sectors are actively advocating for the establishment of domestic renewable liquid fuel industries.

To further demonstrate industry's demand for these renewable fuels, major maritime organisations have made the following commitments:

  - Svitzer is one of the world's largest towage and marine services providers, servicing approximately 140,000 tug assists globally annually. They are seeking to achieve a 50% reduction in the CO2 intensity by 2030 and to have fully carbon neutral operations by 2040. They have expressed that biofuel and green diesel represent an accessible and pragmatic pathway to achieve these goals by 2030 and beyond.

  - MIAL has shown its strong support for the revised IMO strategy to be net-zero by 2050 and supports an international market-based mechanism that helps address the cost delta between conventional and net-zero carbon fuels through a combination of pricing carbon emissions and rewarding early movers.

  - Maersk one of the world's largest shipping companies has a 2040 target of net zero GHG and aims to transport a minimum of 25% of ocean cargo using green fuels by 2030 and are already placing orders for renewable diesel and renewable methanol.

  - The Global Centre for Maritime Decarbonisation (GCMD) successfully bunkered the third supply chain of a biofuel blend as part of its pilot to develop a quality, quantity and GHG abatement assurance framework for drop-in green fuels. In this trial, approximately 200 MT of a B30 biofuel blend of hydrotreated vegetable oil (HVO) and marine gas oil (MGO) provided by GoodFuels was bunkered in the Port of Vlissingen (Flushing) as the pilot fuel for LPG propulsion.

  - The Canada Steam Ship Lines (CSL) launched its biodiesel demonstration program in 2019 with tests on the auxiliary engine of one vessel in its Great Lakes fleet. By 2020, CSL trial expanded to main and auxiliary engines on two vessels, using B80 and then B100. Between

2021 – 2023 B100 was consumed on eight vessels each year. It has now completed a cumulative 75,000 running hours on B100 biofuel over the past four years. Results from this trial conclude:

- It is technically viable - over 60,000 running hours on B100
- It is reliable - 0hrs of downtime
- Reduction of well-to-wake GHG emissions of ~70-80%.
- 12% increase in consumption of fuel due to calorific value.
- NOx within Tier II limits
- S% below detectable limit of equipment

These commitments made by major players in the maritime sector serve as a clear indication of an immediate market demand for renewable liquid fuels. This suggests a positive trajectory for the adoption of low and zero-emission energy solutions in the maritime sector.

- **Given the evidence in relation to potential shortfalls for biofuels and methanol availability, as well as competition from other sectors, what impact is this likely to have on energy source prices into the future?**

We note that the consultation paper raises concerns on the availability of low emission marine fuels. However, we submit that these fuels are already operational in matured international markets and are anticipated to experience substantial growth.

Global demand for biofuels is set to grow by 41 billion litres, or 28%, over 2021-2026 in the main case. The global marine biofuel market size is calculated at a value of US$3.94 billion for 2024 and is projected to end up at US$7.99 billion by 2034. Worldwide demand from marine biofuel is forecasted to rise at 7.3% CAGR between 2024 and 2034.

However, while governments and industry across Europe, the United States, the United Kingdom, Singapore, Japan and Canada progress policy to accelerate the adoption of renewable liquid fuels, signalling to the market through ambitious targets, through fuel subsidies, blending mandates, capital grants and loans, and funding for individual projects, Australia remains at first base.

Australia has the potential to catch up and become a leading player in this field, particularly by capitalizing on our robust feedstock capabilities. The significance of Australia's agricultural feedstock cannot be overstated, accounting for an estimated 41 percent, or 1066PJ per annum, of the nation's bioenergy resource potential by 2030. Australia boasts a substantial supply of suitable renewable liquid fuel feedstock, including fats and oil feedstocks (oilseeds, tallow, and other rendered animal fats, used cooking oil) and lignocellulosic feedstocks (straw, cotton trash, sugarcane bagasse, forestry, urban waste streams, sugarcane, grass, woody biomass, and algae).

Australia has the natural resources and an agricultural sector with the capabilities and sustainability to meet the growing demand for renewable feedstocks, while minimising or avoiding land use change. Australian farmers already produce enough food for 60 million people, cotton to clothe 500 million annually, and significant amounts of canola for both local food consumption as well as renewable fuel use in Europe (Australia's Chief Scientist, Australia 2025: Smart Science, 'Agriculture in Australia: growing more than our farming future'). Advances in plant science, crop management and rotation changes, along with clearly defined sustainability standards and certification systems will enable increased feedstock production that supports food and fuel security in Australia. Thus, a local renewable liquid fuels industry can enhance our sovereign capabilities, promote sustainability and decarbonisation, and generate domestic economic opportunities.

Although Australia lags behind in capitalizing on the renewable liquid fuel opportunity, with the technical capabilities to adopt this technology, a robust feedstock supply for industry growth, and

substantial manufacturing companies demanding this product, there is no reason Australia cannot catch up and catch up quickly.

- **How can the Australian Government support the timely adoption of alternative fuels in the domestic maritime sector?**

We recommend the following regulatory arrangements that are key to the development and adoption of renewable liquid fuels within the domestic maritime sector:

- Development of a legislative approach that supports early movers, creates incentives and provides a stable, long term regulatory framework that helps to address the significant cost gap between conventional and renewable liquid fuels.
- Expansion of excise relief to support existing, new and developing renewable fuels as a means to generate market development and support the demand of motivated customers.
- Implementation of a Carbon Intensity Standard across all fuel types.
- Leveraging existing Government programs such as the National Reconstruction Fund, Powering the Regions Fund, Industry Growth Program and future investments through the Net Zero Authority.
- Leveraging Government procurement of renewable fuels primarily through Defence.
- Replacing the location-based accounting under the National Greenhouse and Energy Reporting (NGER) Scheme with a market-based accounting approach.
- Delivery of demand-side commercialisation support and supply-side financial support.

There are multiple overseas examples where stable long term regulatory frameworks are in place and leading to incremental increases in production and adoption of low carbon fuels by offsetting production and consumption costs. Examples include the Canadian Clean Fuel Regulations and the Californian Low Carbon Fuel Standard.

Australia is playing catch-up to its global peers, and it is imperative that governments look to these matured international frameworks that encourage investment, innovation and deployment, so that these opportunities can be fully capitalised here, just as they are being capitalised in Europe and North America.

Thank you for the opportunity to provide this submission. Please send any comments or queries to myself at s 47F @bioenergaustralia.org.au or s 47F

Sincerely,

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CEO Bioenergy Australia

CRUISE LINES INTERNATIONAL ASSOCIATION

Submission to MERNAP Issues Paper: Energy Sources and Technologies

Cruise Lines International Association (CLIA) is the global peak body for the cruise industry, representing 95% of the world's ocean-going cruise capacity. CLIA also serves as a non-governmental consultative organisation to the International Maritime Organization (IMO), an agency of the United Nations.

Together with its members and partners, CLIA supports policies and practices that foster safe, healthy and sustainable cruise operations; tourism strategies that maximise the socioeconomic benefits of cruise travel; and technologies and innovations that both protect and preserve our planet.

Our global commitment to sailing to a better future extends well beyond minimising environmental impacts to also include harnessing the power of travel to support responsible tourism, connecting people and places. Our vision is for the cruise industry to be recognised as a leader in responsible travel and the best way to experience the world, sustainably.

CLIA member lines are committed to reducing carbon intensity as an average across the cruise fleet by 40% by 2030 compared to 2008 in line with the International Maritime Organization (IMO) Revised GHG strategy and are pursuing net zero carbon cruising by 2050.

To demonstrate progress towards realising our vision, CLIA tracks the uptake of sustainable renewable fuels and energy sources by CLIA member cruise lines and publishes the data annually showing the deployment of environmental technologies and practices on board cruise ships.

Although small in size the cruise industry has a powerful impact in terms of innovation in the area of sustainability. The CLIA member fleet each year becomes more efficient – embracing new technologies, innovations and, as available, the uptake of sustainable alternative fuels. Cruise lines are implementing processes to scale up the use of advanced biofuels, green methanol and synthetic fuels. They are also deploying new sustainable energy sources such as electric batteries, hydrogen fuel cells and even wind and solar to reduce significantly their environmental footprint. To reduce emissions in port, 120 CLIA member cruise line ships today are capable of plugging into shoreside electricity, where available

Please find our response to the suggested questions below.

Energy Efficiency Measures

What energy efficiency measures would your / is your organisation considering utilising to reduce emissions?

CLIA members are focused on investment in solutions to increase efficiencies in ship operations to reduce energy consumption. Energy efficiency is a focus of CLIA member lines

as they work to achieve a 40% carbon emissions reduction by 2030 (compared to a baseline of 2008). Between now and 2030, the industry will need to maximise energy efficiency improvements alongside the uptake of sustainable drop-in biofuels and biogas. Today's global cruise fleet is the most efficient in history, with each new class of ship approximately 20% more energy efficient than the one it replaces. This represents around 4% to 5% energy efficiency gains year-on-year to date.

Measures to reduce emissions include:

Advanced Biofuels – Advanced biofuels, derived from renewable biological resources, represent a key strategy for reducing emissions in the cruise industry. These biofuels are produced in a manner that ensures sustainability and minimal environmental impact. The advantage of using advanced biofuels lies in their ability to integrate with existing propulsion technologies while significantly lowering carbon footprints. This approach also aligns with global efforts to reduce reliance on fossil fuels, presenting a transitional pathway towards more sustainable fuel sources in the maritime sector.

Shoreside Electricity - Shoreside electricity, also known as cold ironing, involves connecting docked ships to the local electrical grid. This practice allows ships to turn off their diesel engines while in port, significantly reducing emissions of greenhouse gases and other pollutants. Shoreside electricity provides a cleaner and quieter environment in port cities and is an effective way to reduce the environmental impact of cruising. The implementation of shoreside electricity requires infrastructure development at ports, which is a collaborative effort between cruise lines and port authorities. The White Bay Cruise Terminal in Sydney will be the first cruise terminal in the Southern Hemisphere to offer shoreside electricity.

Green Methanol and Synthetic Fuels - Green methanol and synthetic fuels are emerging as viable alternatives to traditional marine fuels. Green methanol is produced using renewable energy sources, which significantly reduces its carbon footprint compared to conventional methanol. Synthetic fuels, generated from captured carbon dioxide and renewable energy, offer a closed carbon cycle, making them an environmentally friendly option. These fuels are particularly attractive due to their potential to be used in existing engine technologies, providing a practical solution for reducing emissions without the need for extensive modifications to current ship designs.

Electric Batteries and Hydrogen Fuel Cells - The adoption of electric batteries and hydrogen fuel cells marks a significant move towards zero-emission technologies in the cruise industry. Electric batteries are ideal for short-range operations and can significantly reduce emissions, especially when charged with renewable energy. Hydrogen fuel cells offer a promising solution for longer voyages, producing energy through a chemical reaction with only water as a byproduct. These technologies not only contribute to reducing greenhouse gas emissions but also help in reducing noise and air pollution in marine environments.

Renewable Energy (Wind and Solar Power) - Wind and solar power are being increasingly integrated into cruise ships as supplementary energy sources. Harnessing renewable energy through solar panels and wind turbines can significantly reduce the reliance on conventional fuels. This approach not only decreases fuel consumption but also reduces greenhouse gas emissions. The integration of these renewable sources is a testament to the industry's commitment to sustainable operations, showcasing innovative approaches to energy generation in a maritime context.

Exhaust Gas Cleaning Systems (EGCS) - Currently, 60% of ships operated by CLIA cruise line members, representing 77% of global capacity, utilise EGCS to comply with the IMO 2020 Global Sulphur Cap and the more stringent requirements of Emission Control Areas (ECAs). These systems are a recognised alternative to the use of low-sulphur fuels because they are designed to remove the emission components that are deemed harmful.

Hull coatings - Use of nontoxic anti-fouling paints help a ship move more efficiently through water, reducing energy consumption. CLIA cruise line members have long been committed to using advanced green paints and varnishes and silicon-based anti-fouling coatings.

Air lubrication systems - Many cruise ships now use a built-in air lubrication system which channels air to the bottom of the hull, creating millions of microscopic air bubbles, which reduces drag and conserves fuel and energy.

Hull design - An optimised hull design can reduce drag and improve fuel efficiency by generating a bow wave which can result in up to 15% energy savings.

Optimised speed - Software to optimise fuel efficiency and energy management has become a significant factor in achieving efficiency gains – in addition to adjusting speed and sailing with currents.

Waste heat recovery - Even the most efficient engine will produce some waste energy. CLIA cruise line members have invested in technologies that put this waste energy into use on ships. One way to recover lost heat energy is to install heat exchangers to turn water into steam. Steam generated from the engines is used to create fresh water for showers, pools, galleys and heating cabins.

Efficient HVAC systems - Heating, ventilation and air conditioning systems are among the largest consumers of energy on board ships. As cruise ships operate in temperature extremes, demands on systems vary significantly. Many CLIA member cruise lines have upgraded their HVAC systems to more efficient technology that reduces power consumption.

Digitalisation and data use - Cruise lines are rolling out technology upgrades to save both energy and fuel. A large majority of the CLIA member fleet are using efficiency tracking systems and software to cut fuel consumption. From tracking the energy use in a ship's galley to routing ships to use less fuel, digital technologies offer a new energy-saving tool. Many cruise lines now continuously monitor fleet operations remotely from their land-based offices.

The aim is to support decision-making by collecting and analysing data on various components of ship operations such as routes, speed, engine performance and emissions data and then transmitting it back to the operational crew.

Is there sufficient information available to maritime industry stakeholders about energy efficiency measures? What are the barriers to accessing this information?

The interconnected nature of the cruise community means that many different actors play distinct but critical roles that contribute towards the achievement of our overall sustainability goals. Through membership and partnership, CLIA brings together a community of ports, fuel manufacturers, shipyards, terminal operators, technical suppliers, and many more, as collaboration is key to unlocking innovation and energy efficiency solutions for the future. While there is a substantial amount of information available on energy efficiency measures for the maritime industry, accessing this information for smaller operators, ports and suppliers can present challenges. Barriers include the technical complexity of maritime operations, the rapid pace of technological advancements, and the variability in regulatory environments across different regions. Additionally, there may be gaps in the dissemination of information, making it difficult for stakeholders to stay informed about the latest developments and best practices in energy efficiency. These barriers can hinder the widespread adoption and implementation of efficient technologies and practices in the maritime sector.

How do the energy efficiency technologies suitable for international shipping differ in their applicability to domestic vessels?

The energy efficiency technologies suitable for international cruise itineraries often differ in their applicability to domestic voyages due to several factors. These include differences in voyage distances, operational profiles, and port infrastructure. International vessels, typically larger and on longer voyages, may benefit more from technologies like advanced waste heat recovery systems or larger scale alternative fuel systems. In contrast, domestic cruise operations, which often operate over shorter distances and may have more frequent port visits, might find greater benefits in technologies like battery systems or localized renewable energy sources. Additionally, the economic and regulatory frameworks within which these vessels operate can influence the suitability and adoption of various technologies.

What are the barriers your organisation faces in investing in energy efficiency technologies or measures?

The global cruise industry faces several barriers in investing in energy efficiency technologies or measures. These include high initial capital investment costs, technological readiness and the pace of innovation, regulatory uncertainty and differing standards across jurisdictions, challenges in retrofitting existing fleets with new technologies, and the availability and scalability of new fuel types and energy sources. Navigating these barriers requires coordinated efforts among industry players, regulators, and technology providers to foster a sustainable transition in maritime operations.

Alternative Low Emission Energy Provision

The differing properties of each energy source means that, given current technologies, they are not appropriate for all vessel types. What are key technical considerations that your organisation considers when exploring alternate energy sources?

Exploring alternate energy sources involves addressing multiple technical issues. For example, energy density and storage properties for fuels impact their viability for use in the cruise industry. Some fuels require significantly more space than others, while providing the same amount of energy, and a wide range of safety aspects must be addressed with the introduction of any new fuels, systems, handling procedures and training. For example, the inherent risks of ammonia and public perception of this fuel, and the potentially greater consequence of a failure on a cruise ship, may make them less suitable for use on cruise ships. Additionally, the availability of refuelling infrastructure and supply chains for these alternate fuels is a crucial factor. Cruise lines will assess these aspects to ensure that the chosen energy sources are feasible, efficient, and sustainable for their specific fleet and operational needs.

From the following list, what are the primary barriers to investing in low emission energy sources in the maritime sector? Can you comment on what your organisation thinks about each of these factors?

o Cost – Cost plays a significant role as a barrier to investing in low emission energy sources in a competitive environment, with current costs for maritime fuels more than double the energy density provided. The development and implementation of these technologies often require substantial upfront investment, which can be a deterrent, especially for smaller operators. Additionally, the cost of new fuels and the need to modify or build new infrastructure can add financial strain. This factor necessitates careful consideration of long-term benefits versus immediate expenditures, and often requires industry-wide collaboration and support from regulatory bodies to make these investments more feasible.

o Technology choice – Technology choice plays a crucial role as a barrier to investing in low emission energy sources in the maritime sector because it involves considerations about the compatibility of new technologies with existing vessel designs, the scalability and reliability of these technologies, and their long-term viability and cost-effectiveness. With a typical lifespan

of around 30 years, cruise ships being launched today will be sailing in 2050 and beyond. To meet sustainability goals, the focus is on developing new ships that are future-focused with the latest innovations, state-of-the-art equipment, and adaptability to work with new sustainable fuels once available to meet the challenges of the future. Therefore, making the right technology choice is critical, as it impacts not only the environmental performance but also the operational efficiency and economic feasibility for cruise lines.

o Fuel availability/infrastructure – This is also a key factor, especially in Australia and New Zealand. While many ports in Europe and North America are investing in bunkering facilities and shore side electricity technology, there is no similar investment in our region. This is a major barrier in the utilisation of low emission energy sources both now and in the short to medium term future.

All CLIA member ocean cruise lines have made a commitment that all ships calling at ports capable of providing shoreside power are anticipated to be equipped to either use SSE by 2035 or to be able to use alternative low carbon technologies, as available, to reduce emissions in port. As part of the EU's Fit for 55 program all major ports in Europe will be required to have shoreside power by 2030. The deployment of shoreside electricity (SSE) infrastructure at a port is a multi-million dollar investment project. In key Northern Hemisphere cruise markets, SSE is a core element of many local public policies to improve air quality and reduce noise levels for the wider benefit of mobility infrastructure, but also of some national decarbonisation strategies. As such, it is essential that SSE projects, like other public infrastructure development initiatives, benefit from the financial support of national and local authorities in Australia.

o Regulations and standards – Regulations and standards play a significant role as barriers to investing in low emission energy sources in the maritime sector. They create challenges due to their variability across different regions and the pace at which they adapt to technological advancements. Compliance with these varying regulations requires significant investment and planning. Furthermore, the lack of global standardization can make it difficult for industry players to commit to specific technologies, as they might not be universally acceptable or feasible in all jurisdictions. This regulatory uncertainty can hinder investment decisions and slow down the adoption of new, cleaner energy technologies. CLIA is in dialogue with policymakers in key cruise markets about the need for a regulatory environment that provides certainty and supports the production, distribution, and use of renewable fuels. It is critical that as those discussions take place in Australia, that cruise is considered in the broader maritime mix.

o Safety – Safety plays a crucial role as a primary barrier to investing in low emission energy sources in the maritime sector. The introduction of new fuels and technologies brings challenges related to storage, handling, and use, particularly in the harsh marine environment. Safety concerns include the risk of fires, explosions, and chemical hazards, which require the development of new safety protocols and training. The sector must ensure that these new

energy sources meet stringent safety standards to protect crew, passengers, and the environment. This necessity for rigorous safety measures can slow down the adoption of new, cleaner energy technologies, for example, e-Ammonia. Appropriate resources for systems and training must be provided.

What are the specific barriers to using each potential energy source in your organisation? Given many low/zero emission propulsion systems are still in the early stages of development, how is your organisation considering its medium and long-term investments in low emission energy sources?

Cruise lines are investing today in fuel flexibility and propulsion technologies with conversion capabilities for the future. Multiple pilot projects and collaborative initiatives with sustainable fuel producers and engine companies are underway or in the works. As cruise lines identify future fuel pathways to move away from fossil fuel, a variety of new and more sustainable alternative energy sources are being pursued such as biofuels made from non-food biomass (plant material and animal waste); synthetic e-fuels such as e-methane and e-methanol; electric batteries; bio-LNG and/or synthetic LNG, methanol and hydrogen fuel cells, wind, and solar.

Given the technology forecast, in the short term (up to 2030), the decarbonisation of cruise will rely on maximising energy efficiency improvements, supplemented by use of drop-in biofuels and biogas.

In the mid-term (2030-2040), newbuild ships will principally rely on gas and alcohols as marine fuel, including Methane (green CH4) or Methanol (Green MeOH). For the longer term (2040-2050 and beyond), green hydrogen and bio-based feedstocks derived from renewable energy and electrolysis will be needed to meet net zero ambitions.

The entire maritime sector, including cruise, will need sustainable alternative fuels in volumes to meet targets such as the European Union's Fit for 55, which mandates 2% use of alternative fuels in 2025 and 6% in 2030.

The IMO Revised Strategy includes a target of 5% (striving for 10%) uptake of alternative fuels across the maritime industry by 2030. The global community of governments and broader stakeholders, including engine manufacturers and fuel suppliers, will play a critical role in providing necessary technologies and available fuels.

The Revised Strategy agreed at the IMO sends a strong signal to markets and fuel suppliers that should provide the advanced technologies and alternative fuels needed for the maritime sector to do its part in achieving the Revised Strategy's ambition for net zero GHG emissions by or around 2050.

A detailed breakdown of current utilisation of alternative fuels is provided at **appendix A.**

To address specific fuels raised:

o LNG – Anticipating the IMO emissions limits standard on SOx and NOx, cruise lines have invested significantly in vessels powered by Liquified Natural Gas (LNG) for the last ten years. By 2028 there will be 41 ships with engines designed for fossil LNG, all easily adaptable for use of bioLNG or synthetic LNG when these fuels become more widely available. Based on analyses by SeaLNG and others, LNG is currently the fossil fuel available at scale that has the best performance in reducing atmospheric emissions. LNG has virtually zero sulphur emissions and particulate emissions, reduces NOx emissions by approximately 85%, and achieves up to a 20% reduction in greenhouse gas emissions. Yielding benefits now in eliminating PMs and SOx emissions, LNG technology offers a pathway to future fuels and propulsion technologies being developed for use at scale. Ships designed with LNG engines and fuel supply systems will be able to switch to more sustainable alternative fuels such as bio or synthetic LNG in the future, with little or no modifications. The LNG engine technology and infrastructure of today offers a clear pathway to sustainable cruising in the future. In the Australasian region there are no appropriate LNG bunkering facilities that can be used by cruise vessels.

o Biofuels (HVO, FAME) o E-Hydrogen o E-ammonia – 24 ships are currently trialling the use of biofuels, while others are considering hydrogen or ammonia technology. All have the potential to be long-term solutions for decarbonisation, though E-Hydrogen and E-Ammonia would be used specifically in fuel cells.

o E-Methanol – Methanol has the potential to be a long-term solution for decarbonisation. Many of the safety considerations for bunkering and operations with methanol are already known, and once available at scale, green methanol – such as biomethanol and e-methanol – will make operations almost climate neutral. Construction on the first methanol-ready cruise ship began in 2022. Seven ships, either methanol ready on delivery or methanol capable, and representing 15% of the current order book through 2028, will make their debut from TUI Cruises, Celebrity Cruises and Disney Cruise Line and Norwegian Cruise Line.

o Battery – More than 15% of cruise ships entering service in the next five years will be equipped with battery storage to allow for hybrid power generation once the technology is more readily available. Energy density remains a key issue in battery technology, considering the size of many cruise ships and their power needs.

Low Emission Energy Provision Availability in Australia

When considering alternate energy sources, how has your organisation engaged with ports and marinas?

When considering alternate energy sources, the cruise industry engages with ports in several ways. Outside Australia, this collaboration involves coordinating the development and implementation of necessary infrastructure for new energy sources, such as LNG bunkering facilities or shoreside power connections. Cruise lines work with port authorities to ensure the availability of alternative fuels and the compatibility of their ships with the port's facilities. This partnership is vital for the successful adoption of new energy sources, requiring

significant planning, investment, and cooperation between the cruise lines and port operators.

Is there a mismatch between available energy sources for bunkering and your vessels' fuel needs?

Internationally, there is often a mismatch between the available energy sources for bunkering and the fuel needs of our members' vessels. This mismatch can be attributed to the varying availability of alternative fuels like LNG, biofuels, or electrification infrastructure at different ports globally. Many ports may not yet be equipped to provide the newer, more sustainable fuel options that cruise lines are increasingly looking to use. This situation necessitates strategic planning and collaboration between cruise lines and port authorities to align fuel availability with the evolving fuel requirements of modern fleets. Locally, there simply isn't the current access or availability to bunkering to meet the needs of the cruise industry. Today, zero-emission fuels are not yet mature, scalable, market ready or commercially viable for the maritime industry. Without policies driving investments in sustainable maritime fuel development, to provide the fuel at reasonable cost, current progress towards reducing carbon emissions will decelerate.

Do opportunities exist to pool the demand for alternate energy sources across vessel owners?

Yes, opportunities exist to pool the demand for alternate energy sources across broader maritime. This collaborative approach can facilitate the development of necessary infrastructure for alternative fuels at ports, drive down costs through economies of scale, and create a more consistent demand that encourages fuel suppliers to invest in and provide these new energy options. By working together, vessel operators can more effectively influence and accelerate the transition to sustainable energy sources in the maritime industry.

Case study

The Case Studies represent a regionalised view of the challenges and opportunities of maritime decarbonisation. From your own region are there collective efforts being undertaken to address energy source pooled demand? If not, are there opportunities to work across operators?

Yes, considerable efforts are currently being undertaken around the world, especially in key destinations across Europe and North America.

How do the local factors, such as vessel type, energy production and business structures impact how you are planning future decarbonisation activities?

The actions undertaken in each destination play a key role in planning of future decarbonisation activities. These include, but are not limited to, access to shore side electricity and the availability of alternative fuels. Local factors such as vessel type, energy production,

and business structures significantly impact how the cruise industry is planning future decarbonisation activities. The type of vessels determines the suitability of different energy sources and technologies. To achieve our shared global emissions reducing goals, it will take focus and short-term incentives to boost the production and availability of sustainable maritime fuels. Partnerships with energy providers and ports, are crucial for implementing new technologies. These factors collectively shape the strategic approach to decarbonisation, necessitating tailored solutions for different regions and fleet types. Our cruise lines are ready to partner and ask for the government's support to help us in this critical initiative.

Energy Consumption Scenarios

Do you foresee a slow, or a steady, uptake of low and zero emission energy provision in the maritime sector? What are major factors that will drive demand for alternate energy sources?

The cruise sector is increasing its use of energy sources that have low or zero emissions, with companies demonstrating initiative and establishing and meeting challenging goals. Major factors driving demand for alternate energy sources include increasing regulatory pressures for environmental compliance, advancements in green technology, the economic feasibility of new technologies as they mature and growing consumer awareness and demand for sustainable travel options. Additionally, global initiatives for reducing carbon emissions, such as the IMO Strategy on Reduction of GHG Emissions from Ships, and the maritime industry's commitment to meet these targets will further accelerate the shift towards alternative energy sources. Complying with various IMO and industry goals will drive demand for alternate energy sources, supported by subsidies or incentives put forward by Governments around the world. Complying with various IMO and industry goals will drive demand for alternate energy sources. With the right subsidies or incentives from the Government, there are enough operators ready to use the fuel that we could witness a significant shift to lower carbon energy in this region.

Given the evidence in relation to potential shortfalls for biofuels and methanol availability, as well as competition from other sectors, what impact is this likely to have on energy source prices into the future?

The potential shortfalls in biofuels and methanol availability, coupled with competition from other sectors, are likely to impact energy source prices in the future. Increased demand and limited supply could lead to higher prices for these alternative fuels, making them less economically competitive compared to conventional fuels. Significant investment is needed to increase the production capacities of these alternative fuels, with a domestic reserve framework to ensure that biofuels and methanol are accessible for maritime.

How can the Australian Government support the timely adoption of alternative fuels in the domestic maritime sector?

The Australian Government can support the timely adoption of alternative fuels in the domestic maritime sector by investing in infrastructure development for alternative fuel supply, providing incentives and subsidies to offset the higher costs of these fuels, fostering research and development in clean energy technologies, and implementing supportive regulatory frameworks, as well as supporting a global approach.

Additionally, collaborations between the government, maritime industry, and energy providers could be pivotal in ensuring a coordinated approach towards sustainable maritime operations.

CLIA member lines actively collaborate with governments, fuel suppliers and technology companies around the world, and count on all to do their part to support a net zero carbon future. This includes faster access to funding for sustainable shipbuilding, maritime equipment manufacturing and for the development and supply of affordable sustainable fuels at scale.

While the maritime sector is making significant strides in reducing carbon intensity through its own investments in energy efficiency technologies and solutions, we need alternative, low- to zero-emission carbon fuels at commercial scale and competitive cost to further reduce our greenhouse gas emissions and ultimately reach carbon neutrality.

To achieve our shared global emissions reducing goals, it will take focus and short-term incentives to boost the production and availability of sustainable maritime fuels. Cruise operators are ready to partner and ask for the government's support to help us in this critical initiative.

APPENDIX A: Uptake of alternative fuels as of August 2023

The below table is taken from CLIA's published sustainability data set, and can be found online at https://cruising.org/en/Sustainability-Data

The same page also provides aggregated data across CLIA's global oceangoing cruise line membership which reflects the number of ships equipped with certain technologies, corresponding passenger capacities and the percentage of the entire fleet represented.

	# of Ships		
	In Use	**Trial/Pilot**	**Newbuild**
Alternative Fossil Fuels			
Methanol[i]			7
Fossil Liquified Natural Gas (LNG)	12		34
Biofuels[i]			
Renewable Diesel (Hydrotreated Vegetable Oil (HVO)) from 1st generation feedstock [iii]	4	6	1
Renewable Diesel (HVO) from 2d generation feedstock		2	
Methanol from 2nd and 3rd generation feedstocks		1	3
Dimethyl Ether (DME) from mixed generation feedstock		1	

Diesel (FAME) from 1st generation feedstock		2	
Diesel (FAME) from 2nd generation feedstock		8	
Liquid Biogas (LBG)		4	
Synthetic Carbon Fuels [iv]			
E-Diesel (Fischer-Tropsch Diesel)		1	
E-Methanol		1	2
E-LNG			3
Zero Carbon / Green Fuels [v]			
Green Methanol			5
Green Hydrogen			2
Energy Source/Technology			
Hydrogen Fuel Cells		2	6
Methanol Fuel Cells		1	
LNG Fuel Cells [vi]	1		4

Dual Fuel Engines	10		13
Efficiency Tracking Systems / Software	171	2	22
Wind (including solid sail technology)	3		
Battery Storage (Power Shaving)	1	1	2
Photovoltaic / Solar	5		

[i] Methanol (CH_3OH) is a clear, colorless liquid that is soluble in water and is composed of carbon, hydrogen, and oxygen. Liquid methanol can be toxic to humans. It is most commonly produced on a commercial scale from natural gas, but it can also be produced from renewable sources such as biomass, or by means of electrolysis powered by renewable power and supported with carbon capture technology.

[ii] Biofuels are liquid fuels produced from biomass. Biomass means the biodegradable fraction of products, waste, and residues from biological origin from agriculture, including plants, vegetables, and animal substances, from forestry and related industries, including fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and municipal waste of biological origin. Biofuels are widely recognized as a necessary component of the decarbonization pathway for the cruise sector and the broader maritime industry. Cruise operators remain focused on biofuels which are sustainably produced or processed using renewable resources. In this context, the criteria in the European Renewable Energy Directive (RED) provides a helpful starting point for what is allowable for use while cruise lines also recognize that guidance on global lifecycle assessment of marine fuels and emissions factors will be particularly relevant and remain under development at the IMO.

[iii] Feedstocks can be 1st generation (edible oil—sunflower, palm, corn, rapeseed, and soybean), 2nd generation (non-edible oil—Jatropha and castor bean, plant waste biomass, and animal fat), and 3rd generation (microalgae).

[iv] Synthetic fuel is a generic term applied to any manufactured fuel with the approximate composition and comparable specific energy of a natural fuel. It is primarily used to refer to carbon-based liquid or gaseous fuels manufactured, via chemical conversion processes, from a carbon source such as coal, carbon dioxide (CO_2), natural gas, biogas, or biomass. This includes using established conventional fossil-based processes. Electrofuels (eFuels) are advanced gaseous and liquid fuels normally produced from hydrogen and often captured carbon dioxide (CO_2) and which use sustainable electricity as the principal power source for the generation of the fuel. The “e” refers to the method of production of the fuel.

[v] Green fuels are those where the production employs electrolysis—the separation of hydrogen and oxygen molecules by applying electrical energy to water. To be a green fuel, renewable sources such as wind and solar power

are used to generate the electricity for the separation process. When applied to fuels such as methanol, it normally means that the hydrogen is produced in this way and the carbon dioxide (CO_2) used has been captured from the air.

[vi] LNG Fuel Cells include Sulfur Oxide (SOFC) or Proton Exchange Membrane (PEM) systems; some applications include an LNG SOFC demonstrator for electricity production from LNG.

GLOBAL MARITIME FORUM

Global Maritime Forum

Consultation: MERNAP Issues Paper – Energy Sources and Technologies

Background

The Global Maritime Forum (GMF) is committed to shaping the future of global seaborne trade to increase sustainable long-term economic development and human wellbeing and works closely with industry to facilitate the acceleration of shipping decarbonisation.

GMF has independently inputted on a few selected questions we find relevant to answer in this second consultation round and is open to elaborate on or answer follow-up questions on the responses provided.

For your background, an Australia-East Asia Iron Ore Green Shipping Corridor was announced by the Global Maritime Forum in 2022 following the identification[1] of the corridor as a high-potential candidate for establishing clean ammonia-powered shipping of iron ore from the Pilbara region to importing countries in East Asia. Since then, 15 industry members[2] with operations on the trade route (the taskforce) are under the Getting to Zero Coalition[3] exploring its implementation and undertaking various activities to support its development.

Questions and answers

Section 4.1 Energy Efficiency Measures

- What energy efficiency measures would your / is your organisation considering utilising to reduce emissions?
- Is there sufficient information available to maritime industry stakeholders about energy efficiency measures? What are the barriers to accessing this information?
- How do the energy efficiency technologies suitable for international shipping differ in their applicability to domestic vessels?
- What are the barriers your organisation faces in investing in energy efficiency technologies or measures?

1 The Next Wave: Green Corridors

2 BHP, Bureau Veritas, Cargill, ClassNK, Fortescue Future Industries, Intercontinental Energy, K Line, Lloyd's Register, NYK Line, Oldendorff Carriers, Pilbara Ports Authority, Rio Tinto, Star Bulk, Woodside Energy, Yara Clean Ammonia.

3 Getting to Zero Coalition

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Section 4.2 Alternative Low Emission Energy Provision

- The differing properties of each energy source means that, given current technologies, they are not appropriate for all vessel types. What are key technical considerations that your organisation considers when exploring alternate energy sources?
- **From the following list, what are the primary barriers to investing in low emission energy sources in the maritime sector? Can you comment on what your organisation thinks about each of these factors?**

- Cost: The significant cost difference between conventional fossil-based marine fuels like HFO and zero-emission options like clean ammonia is recognised as one of the biggest barriers to decarbonising shipping in the run up to 2030. Fuel is already the largest operational cost of running a ship, and the higher cost and lower energy density of zero-emission fuels (requiring higher consumption levels) make clean marine fuel options economically challenging. To drive investment in this sector, it's crucial for policymakers to de-risk private sector investments by providing financial incentives that address both the supply and demand cost gap of zero- emission marine fuels. In other words, policy needs to stimulate fuel production at scale, for example through Australia's Hydrogen Headstart Programme (see further comment on this under Fuel availability/infrastructure). As a complement to supply-side support, analyses (e.g., Global Hydrogen Review 2023) indicates that demand-side incentives are important to the realisation of hydrogen value chains and would support the uptake of clean fuels in sectors such as shipping. A Contracts for Difference (CfD) scheme for clean fuels is one way to implement demand side support and may provide cost efficiency for the government without sacrificing the effective demand stimulus. Such a scheme could potentially be shipping-specific or multi-sector. Although the Government plays a critical role in providing support to first movers' that will be the first ones operating on zero-emission fuels, The International Maritime Organization's (IMO) Marine Environment Protection Committee (MEPC80) decisions in July 2023 have defined a timeline in which national action such as these incentives are needed. In effect, this provides an exit strategy for national subsidisation, after which economic measures would come through IMO regulations.

- Technology choice: Technology choice is considered a relatively small barrier. The fuel production technology for zero-emission energy sources exists and the ship technology required for running ships on zero-emission fuels are, if not finalised (e.g., green methanol engines) well under development (e.g., clean ammonia engines). The type of ship technology that is suitable for different zero-emission energy sources, and, in turn, for different shipping segments and routes, has also been established. Some of these technologies (e.g., clean ammonia engines) are still to be tested on water, revealing more information about how they will function in practice. Governments play a critical role here, providing support to first movers' that will be the first ones operating on a specific zero-emission fuel/ship technology, e.g., via innovation funds, CAPEX support and by incentivising zero-emission fuel production and uptake.

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- Fuel availability/infrastructure: Scaled availability of affordable zero-emission fuels vis-à-vis other sectors is a concern to the maritime sector. Although supply-side mechanisms may narrow the fuel cost gap and some cargo owners in the container segment are showing willingness to temporarily cover the first mover cost gap, the comparatively low cost of currently used conventional fossil-based marine fuels leaves the overall market's willingness to pay for zero-emission maritime solutions comparatively low. This complicates the sector's ability to compete for fuel offtakes with other industries. This should be considered when designing supply and demand-side mechanisms to incentivise investments in zero-emission energy sources in the maritime sector. **Please read more about national and regional policy support for shipping decarbonisation here: LINK1 and LINK2.**

  The maturity level of energy projects, where many hydrogen fuel production projects are currently in early development phase, is another concern to the shipping industry. The Hydrogen HeadStart Programme has promise to address this, however, the current $2 billion investment is not comparable with other nations with similar ambitions who are moving more aggressively on hydrogen support. This serves as a disincentive to unsuccessful applicants whose projects are likely to see costly delays. This may delay shipping and other sector's decarbonisation. The Government should revisit the Hydrogen Headstart Programme's incentive structure to ensure that a higher share of the 73 announced clean hydrogen projects currently 'under development' in Australia receive support and make sure it targets projects with a wider range of end users to maximise its impact on market creation and investments.

- Regulations and standards: The regulatory environment surrounding maritime fuels are key to incentivise and support the uptake of zero-emission fuels, see sections above. This includes regulations on the safe operation of specific zero-emission fuels (e.g., clean ammonia) as well as bunkering standards. Global regulation for operating on zero-emission fuels like that of clean ammonia is already under development at the IMO.

- Safety: In the view of building confidence in the use of zero-emission marine fuels and accelerate investments in these new energy sources in the maritime sector, it is important to coordinate safety studies and risk assessments. Government and industry need to actively work together to develop safety standards and invest in the upskilling of crew and onshore workers, to ensure the safe operation of new fuels.

  - What are the specific barriers to using each potential energy source in your organisation?
    - LNG
    - Biofuels (HVO, FAME)
    - E-Hydrogen
    - E-ammonia
    - E-Methanol o Battery
  - Given many low/zero emission propulsion systems are still in the early stages of development, how is your organisation considering its medium and long-term investments in low emission energy sources?

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5. Energy Provision Availability in Australia

- **When considering alternate energy sources, how has your organisation engaged with ports and marinas?**

Pilbara Ports Authority (PPA) are members of the Australia-East Asia Green Shipping Corridor taskforce (see Background). Their active involvement and guidance in the taskforce are critical for the successful uptake of alternate energy sources on the route and the potential development of a future bunkering ecosystem in the region.

- For ports and marinas are the major factors that ports and marinas consider when investigating alternate energy sources for bunkering?
- For regional ports and vessel operators, are there specific supply issues that may hinder the ability to bunker alternate energy sources?
- Is there a mismatch between available energy sources for bunkering and your vessels' fuel needs?
- **Do opportunities exist to pool the demand for alternate energy sources across vessel owners**?

GMF is currently investigating opportunities for aggregating demand for alternate energy sources in its work on green shipping corridors, and specifically for the Australia to East Asia Iron Ore Green Corridor (see Background). This will be discussed in detail between the participants of the corridor project and the Department of Infrastructure, Transport, Regional Development, Communications, and the Arts. A broader knowledge piece on demand aggregation options for zero-emission marine fuels will also be launched by GMF later this year. Theoretically, a fuel buyers alliance between vessel owners and/or charterers is a possibility. A real-world example from container shipping is Zero-Emission Maritime Buyers Alliance (ZEMBA); from aviation Sustainable Aviation Buyers Alliance (SABA). Another interesting option is to have a third-party help pooling the demand, such as H2Global Foundation or EU Energy Platform, the to coordinate and act on behalf of different sources of demand for zero-emission fuels.

6. Bass Strait Case Studies

- From your own region are there collective efforts being undertaken to address energy source pooled demand? If not, are there opportunities to work across operators?
- How do the local factors, such as vessel type, energy production and business structures impact how you are planning future decarbonisation activities?
- What further information about decarbonisation activities would be useful to inform other regions and operators investment decisions?

7. Energy Consumption Scenarios

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- **Do you foresee a slow, or a steady, uptake of low and zero emission energy provision in the maritime sector? What are major factors that will drive demand for alternate energy sources?**

The major factor that will drive demand for alternate energy sources are financial incentives for first movers that can help bridge the fuel cost gap and disincentivise demand for fossil fuel-based energy sources. The uptake is expected to be incremental leading up to 2030, depending on the level of progress for national and regional policy support, with some first movers expected to start operating on clean maritime fuels between 2025-2028. Post 2030, zero emission energy provision in the maritime sector is expected to face a steady uptake, given the IMO's revised GHG strategy. The pace at which Australia's maritime industry is expected to uptake zero emission fuels depends on the timing and level of policy support that incentivises this development in the run up to 2030.

- **Given the evidence in relation to potential shortfalls for biofuels and methanol availability, as well as competition from other sectors, what impact is this likely to have on energy source prices into the future?**

- **How can the Australian Government support the timely adoption of alternative fuels in the domestic maritime sector?**

- For both domestic and international shipping: Facilitate close collaboration between the energy-shipping-port nexus; recognise shipping's role as an important offtaker; and incentivise the uptake of clean fuels. **Please read more about national and regional policy support for shipping decarbonisation here: LINK1 and LINK2.**

For any questions, please contact s 47F Project Manager, GMF:
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Department of Infrastructure, Transport, Regional Development, Communications and the Arts

Response to 'MERNAP Issues Paper: Energy Sources and Technologies'

Submission by CSL Australia

February 2024

1. CSL Australia

CSL Australia (CSL) is the largest dry bulk shipowner/operator on the Australian coast. A subsidiary of Canadian owned CSL Group, CSL own and operate a fleet of up to twelve self-unloading bulk carriers, pneumatic cement carriers, standard bulk carriers and transhipment vessels in the Australian coastal region. Over 27 million tonnes of dry bulk cargoes, including cement, clinker, sugar, iron ore, gypsum, mineral sands, magnetite and coal are shipped and transhipped on CSL vessels for major industry participants on an annual basis. The CSL coastal vessel footprint operates in the federal regulatory regime and consists of four General Licence (Australian flag and crew) vessels and a flexible number of vessels operating under a Temporary Licence.

The CSL Group core business is owning and operating self-unloading bulk carrier vessels. In Australia, this also extends to fully enclosed pneumatic cement vessels and transhipment operations. Pneumatic cement vessels eliminate air-borne dust from cement that is discharged into shore side cement facilities. Our transhipment operations in Whyalla and Cape Preston provide economies of scale for bulk cargo exporters by providing a small feeder vessel to load panamax and capesize vessels within the naturally deeper waters of a port.

2. General comments

CSL is committed to decarbonising our global fleet to meet national, international and our own internal emissions reduction goals. The rapidly changing landscape of low carbon fuel options and decarbonisation solutions are being tracked by every shipowner around the world. If these options were economically and operationally feasible, we would all switch tomorrow. The challenge is to facilitate this transition in a way that incentivises infrastructure investment and reduces the cost of alternative fuel supply chains, while ensuring that any operational hurdles are addressed.

Greenhouse gas (GHG) emissions from shipping is a global issue that can only be addressed effectively if national regulation supports and complements international regulation. Any incentives or regulation cannot be implemented in isolation, without acknowledgment of International Maritime Organisation (IMO) regulations and guidelines. Many IMO member countries are further advanced than Australia and we should learn from what has been implemented elsewhere while acknowledging and aligning with future IMO pathways. It has been demonstrated that regulation is accelerates the decarbonisation transition. The impact of the European Union Emissions Trading Scheme and FuelEU regulations have triggered a significant pace of alternative fuel development and growth in decarbonisation and efficiency options that is spreading beyond Europe into the global fleet. Without a regulatory impetus or incentive in Australia, change will not happen fast enough to keep up with international requirements.

One alternative fuel and decarbonisation solution will not fit all vessels. Vessel types, trade patterns, availability of fuel and shore infrastructure will contribute to the decarbonisation solution of choice for each vessel and shipowner. CSL has over 4 years experience with B100 biofuel in our Canadian operations. Throughout this time we have conducted rigorous testing on our engines and on the air emissions. In 2023, over a 6 month trading season, eight vessels consumed over 16,300t (18,500,000 litres) of biofuel and eliminated over 40,000t of GHG emissions. CSL strongly believe that biofuel will be a significant part of this fuel mix, not only as a transition fuel but as a long-term option to 2050 and beyond.

3. Energy Efficiency Measures

What energy efficiency measures would your / is your organisation considering utilising to reduce emissions?

CSL has installed engine power limitation (EPL) devices or shaft power limitation (ShaPoLi) on our vessels. EPL devices use physical or electronic means to limit the power to the main engine, whereas ShaPoLi devices measure power at the propeller shaft and stop the main engine from producing additional power once the EEXI-determined limit has been reached.

We have also installed propeller boss fin caps, which eliminate the bud vortex generated by rotating propellers and reduce the amount of power required for a vessel to maintain a given speed.

Our proprietary energy management system, Operational Optimiser (O2) allows our crews to have access to accurate and real time vessel performance data. The system uses onboard sensors and fuel flow meters to gather data and provide the crew with information about speed and fuel efficiency. The crew can then make informed decisions to adjust the vessels power and optimise speed and fuel usage.

Low friction paint has been applied to our global fleet, however the efficacy varies according to trades and location.

Is there sufficient information available to maritime industry stakeholders about energy efficiency measures? What are the barriers to accessing this information?

There is significant information available about energy efficiency measures in the market. This is due to the need for compliance with international energy efficiency measures such as EEXI and CII.

How do the energy efficiency technologies suitable for international shipping differ in their applicability to domestic vessels?

The value benefit for most energy efficiency technologies is greater for international shipping routes travelling on long voyages. International vessels have the advantage of a longer voyage (10-15 days+) in a straighter direction, whereas domestic Australian port-to-port shipping involves short voyages of around 2-4 days. This short voyage duration significantly limits the effectiveness of engine efficiency devices and low-friction paint. Over the course of a year, a domestic port-to-port vessel will sail at maximum/optimal speed for considerably less time than an international vessel.

What are the barriers your organisation faces in investing in energy efficiency technologies or measures?

Cost is the main driver in investment in energy efficiency measures. New, small-scale technologies are often cost prohibitive for the value gained. If there is no cost of carbon penalty and no support for the technology provider to lower the cost, the business case will not justify investment.

4. Alternative Low Emission Energy Provision

The differing properties of each energy source means that, given current technologies, they are not appropriate for all vessel types. What are key technical considerations that your organisation considers when exploring alternate energy sources?

CSL operates a fleet of self-unloader and pneumatic vessels. This type of vessel replaces/reduces shore side infrastructure requirements, which enhances the cost effectiveness of the supply chain. To reduce shore side infrastructure, the discharging operation on the vessel is more sophisticated, capital intensive and ultimately, carbon intensive. As an example, a pneumatic cement carrier will consume over 10 mt of fossil fuel when discharging and therefore emit 32 t more CO2 than a standard bulk carrier operating onboard cranes.

When considering alternate energy sources, we examine the emissions reduction value for our operation vs the lowest cost. Renewable shore power is an alternate energy provision that we consider for our SUL and pneumatic vessels, due to the vessel type. Despite this, shore power still has a lower emissions value benefit compared to renewable fuels. This is due to the proportion of time spent connected to shore power being significantly less than the time spent at sea (2 days vs 6-8 days).

Renewable fuels are the preferred alternative energy source if the cost is readily comparable to existing fossil fuels. From a technical and operational perspective, CSL examines the following parameters:

- availability in ports where the vessels load/discharge on current trades (no deviation).
- if engine retrofit is required - CAPEX requirements, time out of service, life of vessel, location of dry dock.
- crew requirements including expertise, training, additional crew numbers.
- safety when handling the fuel
- onboard storage/tank requirements – reduction in cargo carrying capacity

CSL have successfully consumed biofuel on our vessels in Canada for the last 4 years. Biofuel is a drop-in fuel, therefore no retrofit is required. During the initial years of the program, we consulted with our Original Engine Manufacturers (OEM's) who confirmed that biofuel was appropriate to use in our existing engines. Our Canadian fleet covers OEM's Wartsila, MAN and Caterpillar. The operational handling, safety and crew requirements for biofuel are comparable to diesel so there was minimal interruption to crew procedures and normal operation. The benefits of biofuel from an operational, safety and capital cost perspective are significant.

From the following list, what are the primary barriers to investing in low emission energy sources in the maritime sector? Can you comment on what your organisation thinks about each of these factors?

Cost and availability are the primary barriers to investment, although these are closely linked to regulation. Safety is a key concern with some fuels and must be proven to be considered in CSL's fuel mix.

Cost

From the perspective of biofuel, cost of the fuel itself (not the investment) is the primary driver, however this gap could be closed significantly if supported by regulation. Cost could also be reduced if there was a strong supply from local production, that was supported by government.

Availability

The potential availability of alternate zero carbon fuels such as green hydrogen, ammonia and methanol is driving vessel design decision making, along with CAPEX requirements and forecasts of fuel cost. Dual fuel vessels that are 'ready' for an alternate fuel are being built to allow for flexibility to minimise cost over the vessel life and the impact of switching to an alternate fuel in the future.

Regulation

Regulation is key to driving the switch to biofuel the short term, and capital investment in newbuilds capable of handling future fuels in the long term. If biofuel is supported by regulation, this reduces the need to retrofit an existing vessel or scrap a vessel earlier than planned. Cost effective biofuel on existing vessels allows owners to invest in, and focus on, designing new, efficient, future fuel vessels that will replace existing vessels at their optimal end of life.

What are the specific barriers to using each potential energy source in your organisation?

- **LNG**

CSL are not investing in LNG vessels as it is derived from fossil fuels and does not provide a high emissions saving for the long term.

- **Biofuels (HVO, FAME)**

There are no technical or operational barriers to biofuel. The only barrier is cost, which remains at a premium to VLSFO and MDO. Biofuel can be made available in Australia by importing from Asia, however local production is preferred to enhance the life cycle emissions savings. Life cycle emissions savings of 70-80% can be achieved with local production and at least 60% with imported biofuel.

- **E-Hydrogen**

Cost and volume displacement/reduction in cargo carrying capacity for onboard storage due to reduced energy intensity. Certainty in timeline and operational application are also hurdles.

- **E-ammonia**

Cost and volume displacement/reduction in cargo carrying capacity for onboard storage due to reduced energy intensity. Toxicity and safe handling concerns during bunkering operations and while onboard. Certainty in timeline and operational application are also hurdles.

- **E-Methanol**

Cost and volume displacement/reduction in cargo carrying capacity for onboard storage due to reduced energy intensity.

- **Battery**

CSL are currently building the largest battery capable self-unloading dry bulk vessel. The nature of the trade, short voyage time, renewable electricity availability ashore and affordable battery technology favour a battery capable vessel. The main barriers to electrification for most vessels include shore side charging capability, technology scalability and the nature of the vessel trade route (long sea voyages with no network of charging stations).

Given many low/zero emission propulsion systems are still in the early stages of development, how is your organisation considering its medium and long-term investments in low emission energy sources?

CSL's short term decarbonisation pathway is centred around biofuel, however we also see this as being a key component in our long term fuel mix due to the long asset life of our existing global fleet. Retrofit to enable shore power is a short-term solution, primarily due to the high energy intensity of our specialised pneumatic cement carriers and self-unloading vessels.

CSL's medium and long term planning considers asset end-of-life, maturity of new fuel types, location and availability of alternate fuels and the voyage/trade requirements. We recognise that our global fleet in 2050 will be a considerable mix of biofuel, shore power capable, battery and one or more alternative fuels including ammonia, methanol and hydrogen.

5. Low Emission Energy Provision Availability in Australia

When considering alternate energy sources, how has your organisation engaged with ports and marinas?

CSL have strong relationships with various Australian ports and engaged with these ports on shore power and methanol. CSL are partnered with Port Authority of New South Wales to bring shore power to the Bays West Precinct, specifically the Glebe Island cement berth.

The corporate structures of Australian ports create a varied approach to investment in low emission fuels and infrastructure. A strong business case is often required by ports that is difficult to formulate, given cost of infrastructure and cost of fuel. Ports are currently willing to engage however the capital investment remains a significant hurdle.

Is there a mismatch between available energy sources for bunkering and your vessels' fuel needs?

Australia cannot currently provide the required amount of biofuel in the required ports at a reasonable cost. Biofuel can be imported into Melbourne and Brisbane at a lower cost than local supply.

Do opportunities exist to pool the demand for alternate energy sources across vessel owners?

There is an opportunity to pool biofuel demand on the east coast with other vessel owners (port vessels + ocean going), primarily in Melbourne and Brisbane.

6. Bass Strait Case Studies

The Case Studies represent a regionalised view of the challenges and opportunities of maritime decarbonisation. From your own region are there collective efforts being undertaken to address energy source pooled demand? If not, are there opportunities to work across operators?

There are opportunities to pool demand for biofuel on the east coast with other vessel operators. Some vessel operators are able to adjust their traditional bunkering ports to others if required, however this requires commitment and certainty of supply at a cost that is comparable to VLSFO and/or MDO. These opportunities can be facilitated via organisations such as MIAL, independently between companies or facilitated by government. CSL has engaged with the Queensland government to seek out pooled demand opportunities for biofuel in Brisbane and/or Gladstone.

How do the local factors, such as vessel type, energy production and business structures impact how you are planning future decarbonisation activities?

Western Australia has significant potential for alternate energy sources, however the vast distance between the ports in which CSL has remote operations creates difficulties in creating and pooling demand. A potential biofuel plant in Esperance could assist CSL's east-west coastal route, however the cost to transport the biofuel to the mid-north coast of Western Australia would be significant. The significant supply of LNG in Western Australia also creates a competitive barrier to other alternate energy sources in the region.

What further information about decarbonisation activities would be useful to inform other regions and operators investment decisions?

A centralised platform that consolidates Australia's alternate energy sources that can be used within the marine industry would assist in future planning and decision making. Potential alternate energy projects, closest ports, supply to and from those ports, port planning for future energy sources and regular users of those ports (vessel owners/operators) would assist in gaining clarity on future opportunities.

7. Energy Consumption Scenarios

Do you foresee a slow, or a steady, uptake of low and zero emission energy provision in the maritime sector?

Uptake of low and zero emission energy will be slow in the maritime sector globally, particularly in the blue water/ocean going segment. Ocean going vessels have an asset life of over 20 years and up to 40 years on some trading routes and within natural environments such as freshwater lakes. Some larger shipping companies are able to fund ongoing and large-scale fleet replacement to zero carbon fuelled vessels, however the business case is not viable for many shipping organisations to recycle vessels early and replace them with a higher cost asset (both operationally and higher capital cost).

The dry bulk fleet may be slower to move towards low and zero energy due to the nature of the cargo and cargo owners. Many dry bulk cargoes are a feedstock to a highly carbon intensive production process. The Scope 1 carbon emissions of the production process significantly exceed the

emissions by vessels in the cargo owners (Scope 3) supply chain. There is therefore less incentive for cargo owners to pay a premium for carbon reduction in their shipping supply chain, as it is a very low proportion of their overall emissions (approx. 1-2%). The business case for alternate energy fuelled ships becomes less viable if the customer/cargo owner cannot contribute to the premium on capital and operating costs.

What are major factors that will drive demand for alternate energy sources?

Regulation through a cost of carbon mechanism will drive demand for alternate energy sources. Externally driven financial impetus through government or IMO regulation is required to incentivise all parts of a supply chain, particularly a supply chain that spans international borders and waters. A cost of carbon for non-compliance creates a business case for investment in efficiency and alternate fuels and incentivises a quicker phase out of inefficient fossil fuel based vessels.

Given the evidence in relation to potential shortfalls for biofuels and methanol availability, as well as competition from other sectors, what impact is this likely to have on energy source prices into the future?

Potential shortfalls of biofuel will only occur if the Australian government does not incentivise local supply and retain Australian feedstock to be refined within Australia. The vast majority of feedstock in Australia is exported. If a competitive local industry can be created then maritime, road and aviation will not need to compete and will be able to source a local, more sustainable biofuel product from a life cycle perspective.

The volume of biofuel required for vessels trading in Australia is small in proportion to aviation and trucking requirements. If the Australian government can incentivise a specified amount of biofuel volume to cover the maritime sector then this could maintain a competitive price point.

How can the Australian Government support the timely adoption of alternative fuels in the domestic maritime sector?

The Australian Government can promote the use of biofuel through incentives and regulation to establish a competitive market in the immediate term that is price comparable to the fossil fuel bunker market. Unlike aviation, there are no operational barriers to biofuel consumption and no trials or testing that are required for the maritime sector. In the next 3 months, CSL could switch to a B100 biofuel on 8 of our vessels operating on the east coast of Australia and reduce CO2 emissions by approximately ~70,000t per year, however the current price premium cannot be borne by Australia's domestic industrial supply chains. We need a locally produced competitive biofuel market to reduce emissions while maintaining the financial viability of Australian coastal shipping and domestic manufacturing industries.

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MARITIME EMISSIONS REDUCTION NATIONAL ACTION PLAN
ISSUES PAPER: ENERGY SOURCES AND TECHNOLOGIES

Department of Infrastructure, Transport, Regional Development, Communications, and the Arts

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Ports Australia continues to welcome engagement by the Department of Infrastructure, Transport, Regional Development, Communications, and the Arts in its development of the Maritime Emissions Reduction National Action Plan (MERNAP). Decarbonisation of the industry is a critical matter to the port sector, with sustainability and decarbonisation being one of Ports Australia's strategic priorities. The *Maritime Emissions Reduction National Action Plan (MERNAP)* has the opportunity to be a substantial support to Australia's decarbonisation efforts and the maritime industry, and Ports Australia is appreciative of the consultation to date by the Department of Infrastructure, Transport, Regional Development, Communications, and the Arts (the Department).

Ports Australia is the peak industry body representing both publicly and privately owned port authorities and corporations across Australia. Ports Australia is governed by a Board of Directors comprising the Chief Executive Officers of 14 port corporations from across Australia.

Ports Australia members are actively engaged in decarbonisation of their own operations in addition to supporting the broader supply chain's decarbonisation efforts, particularly on the marine side. As ports in Australia are unique in their ownership, operating structure, types and amount of trade and vessels that they service, it is appropriate that each will differ in their approach to supporting decarbonisation of the maritime sector. Given the MERNAP will be aimed at addressing decarbonisation of the maritime industry and ports are the key interface between maritime and landside trade, port knowledge and experience will be essential to shaping a suitable and practical plan for decarbonisation of the industry.

To assist in the development of the MERNAP, Ports Australia has made recommendations informed by research on the international and national landscape and understanding of the port and maritime sector across Australia. Continued engagement by the Department with individual ports across Australia is necessary to understand the nature and experience of each port.

Set out below is a summary of the key recommendations, with these and additional points expanded on within the submission. The submission has been structured to mirror the Issues Paper layout, responding broadly to the questions set out in each part. Should the Department require further information on any of the information provided, please do not hesitate to contact Ports Australia.

It is highly recommended that in order for the MERNAP to be useful and long-standing that it is developed as a strategic document, enabling flexibility as energy sources, technologies and supply chain environments evolve over the coming years.

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Recommendations Overview

The following recommendations are provided to the Department, with the intention that they inform the development of the MERNAP. Details on each recommendation is provided in the submission below. Under each recommendation sit specific actions to achieve the broader recommendation with these proposed to be included in MERNAP.

1. **Recommendation 1 – Alignment with International Direction**

   Given the global nature of the shipping industry, Australia should have a consistent position with the international direction and standards related to maritime decarbonisation and alternative fuels, including that from the International Maritime Organization.

2. **Recommendation 2 – Regulatory Certainty is Necessary**

   Regulatory certainty at a national level is necessary to facilitate maritime decarbonisation investment led by the market, rather than through dictating or mandating specific initiatives, fuels or mechanisms.

3. **Recommendation 3 – Alternative Fuel Supply Chains Need to Be Understood**

   Mapping the supply chain of each feasible alternative fuel is required to understand the extent to which each alternative fuel is viable for shipping and to understand the opportunities for production and supply in Australia and the region, thereby enabling measured and effective investment.

4. **Recommendation 4 – Mechanisms to Support Investment in Decarbonisation are Required**

   Government provision of financial assurance will encourage industries to invest in alternative fuels and maritime decarbonisation initiatives, where the market does not yet exist. Regulatory certainty will encourage this, however, direct measures can also be taken such as but not limited to government underwriting initial offtake agreements for alternative fuels and tax incentives for decarbonisation initiatives.

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Recommendation 1 – Alignment with International Direction

Given the global nature of the shipping industry, Australia should have a consistent position with the international direction and standards related to maritime decarbonisation and alternative fuels, including that from the International Maritime Organization.

1a. Strengthen and leverage Australian government relations with international entities to advance Australia's preparedness in the adoption of alternative fuels for maritime decarbonisation, with input and assistance from industry.

The Australian government is already undertaking significant informal engagement and formal partnerships around low and zero emission technologies, green shipping corridors, maritime single windows, and the sustainable ocean economy.[1] These should be highlighted in MERNAP, with an intention to continue to have coordinated and targeted engagement between Australia and international entities, both government and non-government, with the specific aim of advancing Australia's preparedness to adopt alternative fuels for maritime decarbonisation.

International relationships are critical. By establishing and strengthening these connections, Australia will be in a better position to utilise research and work undertaken internationally which is described in recommendation 1b. Maritime decarbonisation expertise lies within industry and thus it is necessary to establish an industry-government committee to develop a targeted approach to this international engagement that will fulfil the intended outcome.

1b. Utilise research and cases and align with standards that exist internationally to inform an accelerated adoption of alternative fuels and technologies for maritime decarbonisation in Australia.

A substantial amount of research, including pilots and trials, as well as standards development and implementation of alternative fuels and technologies has already been undertaken internationally. For example, methanol has been used to fuel bulk vessels, and in 2023 the Stena Germanica, a roll-on/roll-off passenger vessel, was the first non-tanker vessel in the world to have ship to ship methanol bunkering which occurred at the port of Gothenburg.[2],[3] The Port of Gothenburg was the first port in the world to offer methanol bunkering and as part of this published general methanol operating guidelines.[4]

Australia should draw upon and use research and such models to accelerate its decarbonisation efforts. Shipping is an international industry, and therefore it is imperative to align and adopt where possible with international work.

It is in Australia's and global best interests for Australia to align with the international direction and standards for alternative fuels and technologies to:

- Accelerate decarbonisation of the maritime industry both in Australia and internationally;
- Prevent unnecessary resource and time expenditure for Australian industry and government;
- Assure international consistency, given the global nature of maritime trade;
- Enable infrastructure, asset and fuel compatibility, and thereby efficiency and flexibility for international shipping and the Australian ports industry; and
- Sustain Australia as a competitive market for international trade.

[1] Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) 2023, MERNAP Background Presentation.
[2] Marquez C. 2023, MARINE METHANOL Future-Proof Shipping Fuel.
[3] Port of Gothenburg 2023, World-unique methanol bunkering carried out in the Port of Gothenburg.
[4] Port of Gothenburg 2023, Liquid Bulk.

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1c. Map guidelines and standards that are necessary for alternative fuels and technologies, identifying those that already exist internationally, those that have been endorsed globally and those that have not yet been developed and/or endorsed globally.

Determining the guidelines and standards that are necessary to enable alternative fuel and technology uptake in the maritime industry is a critical step. Feedback received by the Department in response to *MERNAP Issues Paper 1: Regulation and Standards*, would likely be able to contribute to this. Examples of areas where future fuel guidelines and standards are necessary include but are not limited to safety, production, storage, handling, bunkering, usage, disposing, risk and hazard management. Part of this mapping should include the identification of:

- Necessary guidelines and standards that have been developed internationally
- Necessary guidelines and standards that have been endorsed globally

Understanding what guidance materials are available and endorsed, will allow Australia to determine what should be adopted in Australia to enable national and international consistency; and better target its resources to adopt and/or develop future fuel and technology guidance and standards.

1d. Advocate for the development and/or adoption of alternative fuel and technology standards by international bodies where they are determined to be necessary and do not exist internationally.

With a similar rationale to recommendation 1c., if there are future fuel and technology guidelines and standards that are necessary and have not yet been developed or endorsed internationally then it is important for Australia to progress these. As alternative fuel production progresses and alternative fuel vessels commence their visits to Australia, alternative fuel guidance that enables port readiness for speedy implementation should be prioritised.

Uniformity of standards is imperative, and as stated, consistency with an international approach due to the international nature of the shipping industry. Thus, to ensure future fuels and technologies are set to international standards that enable sector security and compatibility internationally, the Australia Government and relevant Departments and Agencies should aim to progress any necessary standards through the International Maritime Organization and/or other relevant international entities.

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Recommendation 2 – Regulatory Certainty is Necessary

Regulatory certainty at a national level is necessary to facilitate maritime decarbonisation investment led by the market, rather than through dictating or mandating specific initiatives, fuels or mechanisms.

2a. Establish regulatory certainty for Australia at a national level.

Australia nationally has an emission reduction target net zero emissions by 2050, and a 43% reduction in emission levels from 2005 levels by 2030. A number of states and territories have set their own more ambitious emission reduction timelines.

It is important that these long-term commitments are supported by effective policies that are aligned with international commitments and direction which create stability for industry to make informed and secure investments. Throughout these recommendations are suggestion of policies that will assist in establishing regulatory certainty for Australia and the maritime industry. Such measures include:

- Proactive engagement and support of industry and government collaboration within Australia, across Oceania and internationally;
- Endorsement of international guidelines and standards; and
- Implementation of incentive programs that encourage investment in research, development and rollout of greener fuels and/or technologies by the market.

2b. Support for maritime decarbonisation efforts should be alternative fuel agnostic until alternative fuels and their supply chains are further understood.

As recently as 18 months ago, there was a significant focus on hydrogen as the leading future fuel for international shipping, however this has changed to a focus on methanol with a potential for transitionary fuels being biofuels and liquified natural gas. Changes in future fuel emphasis observed in recent years may occur again as further is understood about these fuels and industry requirements. Hence, it is strongly recommended that support provided for alternative fuels should be outcomes focused, and not preference certain fuels until alternative fuels and their supply chains are further understood.

Global decarbonisation has and continues to increase alternative fuel demand across industries. Some hard to abate sectors may be limited in the types of alternative fuels and technologies that they are able to utilise. Some sectors may also have a stronger demand and purchasing power of certain alternative fuels. One example being the aviation industry. These emerging factors and the diversity across shipping including but not limited to vessel types, cargo, and routes, means that the shipping industry may need to adopt multiple alternative fuel types.

Given the above, the Australian Government needs to create an environment of regulatory certainty around alternative fuels without preferencing an alternative fuel at present, as for different industries this will be different. This leads into recommendation 3 which is about supply chain mapping of fuels to allow for a concrete understanding of the fuel availability (volume and location), and the extent to which different industries will demand a certain fuel. This will highlight the supply chains that need to be reinforced or established to support supply and demand, and enable industries to determine potential fuel type availability and cost.

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2c. Align MERNAP and integrate MERNAP where appropriate with Australia's alternative fuel and technology strategies.

Australia has and is developing numerous alternative fuel and technology strategies, from a national hydrogen strategy to the digital trade strategy. MERNAP needs to be aligned with existing strategies, and there should be a clear action within MERNAP for collaboration with the Department and with other government departments to ensure that future strategies developed in this area will support the advancement of Australia's maritime decarbonisation efforts.

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Recommendation 3 – Alternative Fuel Supply Chains Need to be Understood

Mapping the supply chain of each feasible alternative fuel is required to understand the extent to which each alternative fuel is viable for shipping and to understand the opportunities for production and supply in Australia and the region, thereby enabling measured and effective investment.

3a. Map the supply chain of each feasible alternative fuel across the region, including projections of supply amounts and demand across industries.

It is necessary to firstly understand the supply and demand of alternative fuels to then understand the extent to which each alternative fuel is viable for shipping. It is necessary to not only understand the opportunities for production and supply in Australia, but in the region as well thereby enabling a regional approach, and in turn measured and effective investment. It is suggested that this mapping considers what alternative fuels will be offered and required across the region including New Zealand and the Pacific Islands.

3b. Develop a national fuel plan that considers all fuels and sectors.

A national fuel plan should be developed following supply chain mapping to enable greater fuel certainty in Australia for governments and industry. Future fuel certainty is key to having confidence to invest in measures that will further improve our nation's decarbonisation efforts. To significantly invest before fuel options are better understood runs a risk of investing in initiatives that could quickly be overtaken by international developments and decisions.

3c. Determine the projected alternative fuel types and volumes that will available for shipping and bunkering opportunities across Australia and internationally.

As stated in recommendation 3a., the availability of fuel for the shipping industry does not only depend on the suitability of a certain fuel for shipping but on supply volumes and locations and demand from other industries. Once the initial supply chain mapping has occurred, the maritime industry can then reflect on the future fuel requirements of the shipping sector and determine potential fuel type suitability and availability.

Once certainty of fuel type/s is determined, investment in further initiatives and other infrastructure to compliment decarbonisation goals can be achieved.

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Recommendation 4 – Mechanisms to Support Investment in Decarbonisation are Required

Government provision of financial assurance will encourage industries to invest in alternative fuels and maritime decarbonisation initiatives, where the market does not yet exist. Regulatory certainty will encourage this, however, direct measures can also be taken such as but not limited to government underwriting initial offtake

4a. Implement mechanisms that will encourage investment in or adoption of greener fuels and/or technologies by the market.

Mechanisms that provide greater financial assurance to investors and industry should be explored by Government with the intention to implement those which preference decarbonisation outcomes. Mechanisms include but are not limited to government underwriting initial offtake agreements for alternative fuels and tax incentives for decarbonisation initiatives. It will be important to evaluate approaches taken internationally including the cost and outcomes obtained. There are many overseas experiences which demonstrate government investment is critical in many maritime supply chain decarbonisation efforts. For example, it is understood that all cases of onshore power supply implementation at ports has occurred with significant government investment.

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16 February 2024

MARITIME EMISSIONS REDUCTION NATIONAL ACTION PLAN

Issues Paper 2: Energy Sources and Technologies

Department of Infrastructure, Transport, Regional Development, Communications, and the Arts

Port of Melbourne

Port of Melbourne acknowledges the Bunurong, Wadawurrung and Wurundjeri Peoples of the Kulin Nation as the Traditional Custodians of the land and waters on which our business operates.

We recognise and value their unique cultural heritage, customs, spiritual beliefs and relationship with the land. We pay our respects to their Elders past, present and emerging, and to all Aboriginal and Torres Strait Islander peoples across the communities in which we work.

Contents

1. Introduction

1.1 About Port of Melbourne

As Australia's largest general cargo and container port, Port of Melbourne is a vital trading gateway for south-eastern Australia, facilitating more than one-third of the nation's container trade and playing a critical role as a key driver of economic activity. Port of Melbourne services the south-east of Australia, including Tasmania, and occupies a central position in Australia's maritime freight and logistics industry.

As the landlord manager of the port, Port of Melbourne Operations Pty Ltd (PoM) is responsible for the strategic planning, development and management of the port's operations under a 50-year lease from the Victorian Government.

Port of Melbourne Group is owned by some of the largest and most experienced global infrastructure investors with wide-ranging expertise in managing significant infrastructure assets. They are QIC, on behalf of its managed funds and clients, Future Fund, Global Infrastructure Partners, and OMERS Infrastructure.

The shareholders are long-term investors and, as such, make investment decisions in the strategic interests of the port and its place in the national supply chain.

PoM is focused on providing world-class port facilities and services, and we are committed to investing in infrastructure at Port of Melbourne to drive efficiencies and productivity that support the state's economic growth, job creation and social prosperity. The port contributes 30,000 jobs and $11 billion[1] to the Australian economy each year and is committed to servicing the Australian economy.

1.2 Port of Melbourne's Previous Response

Port of Melbourne has previously submitted our response to MERNAP Issues Paper 1 (A2897284), dated 22 September 2022, outlining our decarbonisation strategy, support for MERNAP, industry trends on which the recommendations are based, and the role of ports.

Please refer to Port of Melbourne's Maritime Emissions Reduction National Action Plan Issues Paper 1: Regulation and Standards submission for details.

2. General MERNAP Recommendations

PoM recommends that the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) considers the following recommendations in its development of MERNAP. Supportive information on each recommendation is provided in the submission below. Under each recommendation sit specific actions to achieve the broader recommendation with these proposed to be included in MERNAP. General recommendations align with those advocated for by the rest of the sector, being advocated by Ports Australia of which PoM is a member.

Recommendations specifically in relation to *Issues Paper 2: Energy Sources and Technologies* are contained in Section 3. MERNAP Issues Paper 2 Recommendations.

General MERNAP Recommendations

RECOMMENDATION 1 – ALIGNMENT WITH INTERNATIONAL DIRECTION

- Given the global nature of the shipping industry, Australia should have a consistent position with the international direction and standards related to maritime decarbonisation and alternative fuels, including that from the International Maritime Organization.

RECOMMENDATION 2 – REGULATORY CERTAINTY IS NECESSARY

- Regulatory certainty at a national level is necessary to facilitate maritime decarbonisation investment led by the market, rather than through dictating or mandating specific initiatives, fuels or mechanisms.

RECOMMENDATION 3 – ALTERNATIVE FUEL SUPPLY CHAINS NEED TO BE UNDERSTOOD

- Mapping the supply chain of each feasible alternative fuel is required to understand the extent to which each alternative fuel is viable for shipping and to understand the opportunities for production and supply in Australia and the region, thereby enabling measured and effective investment.

RECOMMENDATION 4 – MECHANISMS TO SUPPORT INVESTMENT IN DECARBONISATION ARE REQUIRED

- Government provision of financial assurance will encourage industries to invest in alternative fuels and maritime decarbonisation initiatives, where the market does not yet exist. Regulatory certainty will encourage this; however, direct measures can also be taken such as but not limited to government underwriting initial offtake agreements for alternative fuels and tax incentives for decarbonisation initiatives.

2.1 General Recommendation 1 – Alignment with International Direction

- Given the global nature of the shipping industry, Australia should have a consistent position with the international direction and standards related to maritime decarbonisation and alternative fuels, including that from the International Maritime Organization.

1a. Strengthen and leverage Australian government relations with international entities to advance Australia's preparedness in the adoption of alternative fuels for maritime decarbonisation, with input and assistance from industry.

The Australian government is already undertaking significant informal engagement and formal partnerships around low and zero emission technologies, green shipping corridors, maritime single windows, and the sustainable ocean economy.[1] These should be highlighted in MERNAP, with an intention to continue to have coordinated and targeted engagement between Australia and international entities, both government and non-government, with the specific aim of advancing Australia's preparedness to adopt alternative fuels for maritime decarbonisation.

International relationships are critical. By establishing and strengthening these connections, Australia will be in a better position to utilise research and work undertaken internationally which is described in recommendation 1b. Maritime decarbonisation expertise lies within industry and thus it is necessary to establish an industry-government committee to develop a targeted approach to this international engagement that will fulfil the intended outcome.

1b. Utilise research and cases and align with standards that exist internationally to inform an accelerated adoption of alternative fuels and technologies for maritime decarbonisation in Australia.

A substantial amount of research, including pilots and trials, as well as standards development and implementation of alternative fuels and technologies has already been undertaken internationally. For example, methanol has been used to fuel bulk vessels, and in 2023 the Stena Germanica, a roll-on/roll-off passenger vessel, was the first non-tanker vessel in the world to have ship to ship methanol bunkering which occurred at the port of Gothenburg.[2],[3] The Port of Gothenburg was the first port in the world to offer methanol bunkering and as part of this published general methanol operating guidelines.[4]

Another example is Maersk Laura, the world's first ship-to-containership (2,100 TEU container feeder vessel) methanol bunkering operation. Conducted in Singapore in July 2023, this represents the country's first methanol bunkering operation, successfully completed with the support of the Maritime and Port Authority of Singapore (MPA), government agencies, and research institutes.[5]

Australia should draw upon and use research and such models to accelerate its decarbonisation efforts. Shipping is an international industry, and therefore it is imperative to align with, and adopt where possible, international efforts.

[1] Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) 2023, MERNAP Background Presentation.
[2] Marquez C. 2023, MARINE METHANOL Future-Proof Shipping Fuel.
[3] Port of Gothenburg 2023, World-unique methanol bunkering carried out in the Port of Gothenburg.
[4] Port of Gothenburg 2023, Liquid Bulk.
[5] MPA Singapore 2023, Successful First Methanol Bunkering Operations in the Port of Singapore.

It is in Australia's and global best interests for Australia to align with the international direction and standards for alternative fuels and technologies to:

- Accelerate decarbonisation of the maritime industry both in Australia and internationally;
- Prevent unnecessary resource and time expenditure for Australian industry and government;
- Assure international consistency, given the global nature of maritime trade;
- Enable infrastructure, asset and fuel compatibility, and thereby efficiency and flexibility for international shipping and the Australian ports industry; and
- Sustain Australia as a competitive market for international trade.

1c. Map guidelines and standards that are necessary for alternative fuels and technologies, identifying those that already exist internationally, those that have been endorsed globally and those that have not yet been developed and/or endorsed globally.

Determining the guidelines and standards that are necessary to enable alternative fuel and technology uptake in the maritime industry is a critical step. Feedback received by the Department in response to *MERNAP Issues Paper 1: Regulation and Standards*, would likely be able to contribute to this. Examples of areas where future fuel guidelines and standards are necessary include but are not limited to safety, production, storage, handling, bunkering, usage, disposing, risk and hazard management, and environmental impact. Part of this mapping should include the identification of:

- Necessary guidelines and standards that have been developed internationally
- Necessary guidelines and standards that have been endorsed globally

Understanding what guidance materials are available and endorsed will allow Australia to determine what should be adopted in Australia to enable national and international consistency; and better target its resources to adopt and/or develop future fuel and technology guidance and standards.

1d. Advocate for the development and/or adoption of alternative fuel and technology standards by international bodies where they are determined to be necessary and do not exist internationally.

With a similar rationale to recommendation 1c., if there are future fuel and technology guidelines and standards that are necessary and have not yet been developed or endorsed internationally, then it is important for Australia to progress these. As alternative fuel production progresses and alternative fuel vessels commence their visits to Australia, alternative fuel guidance that enables port readiness for speedy implementation should be prioritised.

Uniformity of standards is imperative, and as stated, consistency with an international approach due to the international nature of the shipping industry. Thus, to ensure future fuels and technologies are set to international standards that enable sector security and compatibility internationally, the Australia Government and relevant Departments and Agencies should aim to progress any necessary standards through the International Maritime Organization and/or other relevant international entities.

2.2 General Recommendation 2 – Regulatory Certainty is Necessary

- Regulatory certainty at a national level is necessary to facilitate maritime decarbonisation investment led by the market, rather than through dictating or mandating specific initiatives, fuels or mechanisms.

2a. Establish regulatory certainty for Australia at a national level.

Australia nationally has an emission reduction target net zero emissions by 2050, and a 43% reduction in emission levels from 2005 levels by 2030. A number of states and territories have set their own more ambitious emission reduction timelines.

It is important that these long-term commitments are supported by effective policies that are aligned with international commitments and direction which create stability for industry to make informed and secure investments. Throughout these recommendations are suggestion of policies that will assist in establishing regulatory certainty for Australia and the maritime industry. Such measures include:

- Proactive engagement and support of industry and government collaboration within Australia, across Oceania and internationally;
- Endorsement of international guidelines and standards; and
- Implementation of incentive programs that encourage investment in research, development and rollout of greener fuels and/or technologies by the market.

On the last page of Section 2.2, PoM's experiences developing a business case for decarbonisation are shared. This example demonstrates the challenges in estimating business impacts without regulatory certainty. Specifically clearer regulations are needed to enable more accurate carbon price estimations which impact on cost-benefit analyses. Regulations that would aid this include regulation and/or legislation on emissions trading or other decarbonisation pathways, and regulations regarding marine emissions, freight emissions and construction.

2b. Support for maritime decarbonisation efforts should be alternative-fuel-agnostic until alternative fuels and their supply chains are further understood.

As recently as 18 months ago, there was a significant focus on hydrogen as the leading future fuel for international shipping, however this has changed to a focus on methanol with a potential for transitionary fuels being biofuels and liquified natural gas. Changes in future fuel emphasis observed in recent years may occur again as further is understood about these fuels and industry requirements. Hence, it is strongly recommended that support provided for alternative fuels should be outcomes focused, and not preference certain fuels until alternative fuels and their supply chains are further understood.

Global decarbonisation has and continues to increase alternative fuel demand across industries. Some hard-to-abate sectors may be limited in the types of alternative fuels and technologies that they are able to utilise. Some sectors may also have a stronger demand and purchasing power of certain alternative fuels. One example being the aviation industry. These emerging factors and the diversity across shipping including but not limited to vessel types, cargo, and routes, means that the shipping industry may need to adopt multiple alternative fuel types.

Given the above, the Australian Government needs to create an environment of regulatory certainty around alternative fuels without preferencing an alternative fuel at present, as for different industries this will be different. This leads into recommendation 3 which is about supply chain mapping of fuels to allow for a concrete understanding of the fuel availability (volume and location), and the extent to which different industries will demand a certain fuel. This will

highlight the supply chains that need to be reinforced or established to support supply and demand, and enable industries to determine potential fuel type availability and cost.

2c. Align MERNAP and integrate MERNAP where appropriate with Australia's alternative fuel and technology strategies.

Australia has and is developing numerous alternative fuel and technology strategies, from a national hydrogen strategy to the digital trade strategy. MERNAP needs to be aligned with existing strategies, and there should be a clear action within MERNAP for collaboration with the Department and with other government departments to ensure that future strategies developed in this area will support the advancement of Australia's maritime decarbonisation efforts.

Initiative 1: Developing a business case for decarbonisation	
Scope	In developing its Net Zero Plan for Scope 1 and 2 emissions, PoM developed a strategic business case for the specific initiatives that form part of this plan. PoM also developed a strategic business case for a number of Scope 3 decarbonisation initiatives.
Status	Implemented
Learnings	• PoM incorporated a price on carbon into the business case and undertook sensitivity analysis over the anticipated range of future carbon prices. In presenting the final business case, we assumed a zero price on carbon given the lack of certainty over a future carbon price in Australia. • More certainty over a price on carbon, related to clear regulations and/or legislation on emissions trading or other decarbonisation pathways, would greatly assist PoM in developing business cases for future decarbonisation initiatives we wish to assess. • Regulations regarding marine emissions, freight emissions and construction would also assist PoM in factoring in an anticipated carbon price to business cases developed in future.

2.3 General Recommendation 3 – Alternative Fuel Supply Chains Need to be Understood

- Mapping the supply chain of each feasible alternative fuel is required to understand the extent to which each alternative fuel is viable for shipping and to understand the opportunities for production and supply in Australia and the region, thereby enabling measured and effective investment.

3a. Map the supply chain of each feasible alternative fuel across the region, including projections of supply amounts and demand across industries.

It is necessary to firstly understand the supply and demand of alternative fuels to then understand the extent to which each alternative fuel is viable for shipping. It is necessary to not only understand the opportunities for production and supply in Australia, but in the region as well thereby enabling a regional approach, and in turn measured and effective investment. It is suggested that this mapping considers what alternative fuels will be offered and required across the region including New Zealand and the Pacific Islands.

3b. Develop a national fuel plan that considers all fuels and sectors.

A national fuel plan should be developed following supply chain mapping to enable greater fuel certainty in Australia for governments and industry. Future fuel certainty is key to having confidence to invest in measures that will further improve our nation's decarbonisation efforts. To significantly invest before fuel options are better understood runs a risk of investing in initiatives that could quickly be overtaken by international developments and decisions.

3c. Determine the projected alternative fuel types and volumes that will be available for shipping and bunkering opportunities across Australia and internationally.

As stated in recommendation 3a., the availability of fuel for the shipping industry does not only depend on the suitability of a certain fuel for shipping but on supply volumes and locations and demand from other industries.

Although the types of future fuels suitable for shipping remains agnostic, fuel and technology production stakeholders require ambitious policies and timeline certainty for investment in fuel production, scale, and uptake. This is in order for Australia to focus on supply volumes to meet future demand.

Once the initial supply chain mapping has occurred, the maritime industry can then reflect on the future fuel requirements of the shipping sector and determine potential fuel type suitability and availability.

2.4 General Recommendation 4 – Mechanisms to Support Investment in Decarbonisation are Required

- Government provision of financial assurance will encourage industries to invest in alternative fuels and maritime decarbonisation initiatives, where the market does not yet exist. Regulatory certainty will encourage this; however, direct measures can also be taken such as but not limited to government underwriting initial offtake agreements for alternative fuels and tax incentives for decarbonisation initiatives.

4a. Implement mechanisms that will encourage investment in or adoption of greener fuels and/or technologies by the market.

Mechanisms that provide greater financial assurance to investors and industry should be explored by Government with the intention to implement those which preference decarbonisation outcomes. Mechanisms include but are not limited to government underwriting initial offtake agreements for alternative fuels and tax incentives for decarbonisation initiatives. It will be important to evaluate approaches taken internationally including the cost and outcomes obtained. There are many overseas experiences which demonstrate government investment is critical in many maritime supply chain decarbonisation efforts. For example, it is understood that all cases of onshore power supply implementation at ports has occurred with significant government investment.

3. MERNAP Issues Paper 2 Requests for Clarification

PoM queries and comments relating to the information within *MERNAP Issues Paper 2: Energy Sources and Technologies*, and these are listed below. It is requested that clarification, on these items and any other items identified in other stakeholder submissions, be provided to all stakeholders via an email update and an update to the Department's *Charting Australia's Maritime Emissions Reductions* webpage.

CLARIFICATION REQUEST 1

- In *Figure 1: GHG Reduction Potential of Energy Efficiency Technologies*, the greenhouse gas emissions reduction potential of energy efficiency technologies is outlined, and in the related section a statement is included that the widest emissions reductions potential sits with digitalisation. The chart and statement have no references, therefore can the Department advise on where the baseline data has been drawn?

CLARIFICATION REQUEST 2

- In *Table 1: Map Key – Locations of Maritime Alternative Energy Source Supply*, Port of Melbourne's Green Methanol Bunkering is listed in the last row. At this point, the project consists of a feasibility study and this needs to be reflected in the table and the timeline removed to read TBC like other bunker ports named. Whilst a few projects within the table indicate whether a location is only being assessed for feasibility or used as a demonstration site, a column should be added to the table to indicate the stage of each site as the title may not readily reveal this.

CLARIFICATION REQUEST 3

- In *Figure 9: Fuel Demand According to Different Projected Scenarios*, it is understood that this is a modelling exercise, however there is no indication of what data has been used to inform this modelling. The chart and statement have no references, therefore can the Department advise on where the baseline data has been drawn?

4. MERNAP Issues Paper 2 Recommendations

MERNAP Issues 2 Paper Recommendations

RECOMMENDATION 1 – REGULATION MUST FACILITATE MARKET INVESTMENT

- Regulation must achieve certainty for, and facilitate investment led by the market, rather than dictate or mandate specific initiatives, fuels or mechanisms.

RECOMMENDATION 2 – CONTINUE TO PROGRESS AND EXPEDITE SUPPLY CHAIN DIGITALISATION

- Digitalisation can have a significant impact on understanding and reducing emissions efficiency, and therefore should continue to be pursued at an international and national level.

RECOMMENDATION 3 – ONSHORE POWER SUPPLY FEASIBILITY SHOULD BE EXPLORED BY PORTS ON A CASE-BY-CASE BASIS

- Given a number of ports are undertaking onshore power feasibility assessments and business cases of their own accord, mandating shore power feasibility assessments and/or shore power is *not* recommended.

RECOMMENDATION 4 – ALTERNATIVE FUEL SUPPLY CHAINS NEED TO BE UNDERSTOOD

- As per the General MERNAP Recommendation 3: Alternative Fuel Supply Chains Need to be Understood, mapping the supply chain of each feasible alternative fuel is required to understand the extent to which each alternative fuel is viable for shipping and to understand the opportunities for production and supply in Australia and the region, thereby enabling measured and effective investment.

4.1 Energy Sources and Technologies Recommendation 1 – Regulation Must Facilitate Market Investment

- **Regulation must achieve certainty for, and facilitate investment led by the market, rather than dictate or mandate specific initiatives, fuels or mechanisms.**

As stated in response to *MERNAP Issues Paper 1*: *Regulation and Standards*, the aim of any regulation must be to achieve certainty for, and facilitate investment led by the market, rather than dictate or mandate specific initiatives, fuels or mechanisms. This aim is important to reiterate particularly as *MERNAP Issues Paper 2: Energy Sources and Technologies* seeks to explore specific energy sources and technologies, and the role that each will play in decarbonisation of the maritime sector.

Transport is leading the global demand for zero emissions fuels but will be reliant on investors to unlock the potential business cases at the company, national and regional level to effectively respond to this demand. Therefore, a regulatory approach that encourages private participation in exploration of and development of sustainable production, transport, storage and bunkering to support maritime industry decarbonisation is necessary. In this regard, PoM also encourages the Government to consider the role of cross-industry collaboration, open access and multi-user infrastructure where there is common demand across modes (that is, across ships, road and rail).

For more detail on the importance of regulation and regulatory commendations to facilitate market investment refer to Section 2.2 General Recommendation 2 – Regulatory Certainty is Necessary.

4.2 Energy Sources and Technologies Recommendation 2 – Continue to Progress and Expedite Supply Chain Digitalisation

- **Digitalisation can have a significant impact on understanding and reducing emissions efficiency, and therefore should continue to be pursued at an international and national level.**

PoM is in agreement that energy efficiency measures very much need to be considered, especially as alternative fuels are potentially a significant ongoing investment and reduction in reliance on their volume is ideal. There are many energy efficiency technologies that can be adopted with many already underway, including the maritime single window and simplified trade system both of which PoM is contributing.

The benefits of maritime single window and simplified trade system are not only found in the reduction of manual processes, but the ability to access and utilise more current data to improve supply chain efficiencies. The ability of system digitalisation coupled with data sharing could enhance maritime emission estimations and targeting these, with this demonstrated through PoM's initiative, measuring maritime emissions which is detailed at the end of Section 4.2. It was a challenge to accurately measure greenhouse gas emissions from fuel burnt by marine vessels due to the lack of fuel data from individual vessels and the inability to accurately disaggregate this by sectors of the voyage made between bunkering stops and the specific activities of the vessel.

Whilst the maritime single window and simplified trade system are large projects, they have extensive potential benefits and have already been successfully implemented in other countries. Thus, Australia should expedite these projects leaning on learnings from other countries that have implemented these, including Singapore with which it has a Memorandum of Understanding. Maritime single window and simplified trade system are national projects and need to continue to be led at this level, given the interconnectedness of Australia's supply chain across states and territories, public and private organisations.

Initiative 2: Measuring maritime emissions	
Scope	In 2022, PoM engaged Rightship to assist in modelling greenhouse gas emissions from marine vessels in Port of Melbourne waters through Rightship's Marine Emissions Portal (MEP). Rightship has developed the MEP using data on each marine vessel's specific engine specifications and detailed vessel movement data accessed through the automatic identification system (AIS) to model emissions for individual vessels. The MEP enables PoM to break down emissions calculation by individual vessel, shipping line, by berth and by activity (that is, alongside a berth, at anchor or steaming).
Status	Implemented
Learnings	• Accurate measurement of greenhouse gas emissions from fuel burnt by marine vessels is challenging due to the lack of fuel data from individual vessels and the inability to accurately disaggregate this by sectors of the voyage made between bunkering stops and the specific activities of the vessel, that is, steaming or idling. • PoM initially estimated maritime emissions within Port of Melbourne waters using a "top down" approach drawing on information on vessel calls and standard maritime emissions factors. This approach did not enable PoM to understand emissions by vessel activity. • s 47G [redacted] • The image below demonstrates a heat map of emissions in Port of Melbourne waters produced by the MEP. The red areas show greater emissions intensity aggregated over all vessel movements within the 2022 financial year.

4.3 Energy Sources and Technologies Recommendation 3 – Onshore Power Supply Feasibility Should be Explored by Ports on a Case-by-Case Basis

- Given a number of ports are undertaking onshore power feasibility assessments and business cases of their own accord, mandating shore power feasibility assessments and/or shore power is *not* recommended.

Shore power is an alternative energy measure that provides vessels the ability to use grid electricity whilst at berth. It is a measure implemented for its potential benefits related to emissions, noise and air particulate reduction.

Depending on the vessel types that a shore power system is intended to support, it is either setup as a high- or low-voltage system. Low-voltage is suitable for smaller vessels such as inland ferries, domestic and auxiliary vessels such as tugs and are fairly inexpensive installations due to often being able to utilise the existing grid voltage and frequency. High-voltage OPS is suitable for seagoing vessels. Where high-voltage shore power is unable to use the existing grid frequency, frequency converters can be installed. In addition, where multiple onshore power connections are sought, network systems can be implemented.

s 47G [redacted]

High-voltage shore power needs to be considered within an individual port's context including the broader energy supply. Barriers and limitations that should be examined in assessing the value of shore power installation include:

- Initial capital investment and ongoing operational expenditure required;
- Return on investment;
- Potential electricity grid capacity limitations and/or upgrades required;
- Competitiveness of electricity pricing compared to marine fuels;
- Demand for shore power, particularly for areas where air quality is not a concern and/or the electricity grid has a low proportion of connected renewable energy supply;
- Time and effort required by vessels to switch to shore power and back to main engines for short duration port calls;
- Whether vessels are required to be shore power compatible;
- Rate of visiting vessel uptake of shore power; and
- Rate at which hydrogen fuel cell auxiliary engines or low-emissions auxiliary power technologies enter the market and compete with shore power.

It is understood that a number of ports across Australia have conducted shore power feasibility assessments with the only high-voltage systems being implemented are that by the Port Authority of NSW and for the Devonport TT-Line which have been supported by government investment. Given ports are undertaking feasibility assessments and business cases of their own accord, mandating shore power feasibility assessments and/or shore power is *not* recommended.

[6] Royal Haskoning DHV 2021, Environmental landscape analysis: Policies, regulations, and initiatives in the maritime industry.

Shore power: Port of Melbourne Feasibility Assessment

s 47G

Initiative 3: Feasibility assessment of shore power	
Scope	PoM has recently undertaken a feasibility assessment to understand the technical and commercial implications of the provision of shore power in the context of sustainability and future port development.
Status	Implemented
Learnings	• s 47G

4.4 Energy Sources and Technologies Recommendation 4 – Alternative Fuel Supply Chains Need to be Understood

- As per the General MERNAP Recommendation 3: Alternative Fuel Supply Chains Need to be Understood, mapping the supply chain of each feasible alternative fuel is required to understand the extent to which each alternative fuel is viable for shipping and to understand the opportunities for production and supply in Australia and the region, thereby enabling measured and effective investment.

PoM has engaged with the Department sharing its sustainability strategy and plan, including details on its Memorandum of Understanding with Maersk, ANL (a subsidiary of CMA-CGM), Svitzer, Stolthaven Terminals, HAMR Energy and ABEL Energy to explore the feasibility of green methanol bunkering. The Department's focus on industry case studies within MERNAP Issues Paper 2 is important to continue with sharing lessons learnt imperative to accelerating the successful provision of alternative fuels within the maritime industry. Given the exponential scale of alternative fuel demand across many sectors, there needs to close coordination with the broader energy market transition and capacity.

For more detail on mapping the supply chain of each feasible alternative fuel view Section 2.3 General MERNAP Recommendation 3 – Alternative Fuel Supply Chains Need to be Understood.

Initiative 4: Green methanol bunkering	
Scope	In April 2022, a Memorandum of Understanding (MoU) was signed between Port of Melbourne, Maersk, ANL (a subsidiary of CMA-CGM), Svitzer, Stolthaven Terminals, HAMR Energy and ABEL Energy to explore the commercial feasibility of establishing a green methanol bunkering hub at Port of Melbourne. The MOU partners have commenced the first phase of this feasibility study which will assess the technical requirements associated with bunkering including regulatory, environment and safety issues.
Status	Phase 1 of feasibility study in progress

Learnings	• PoM's involvement in this study is driven by demand from global shipping lines (and PoM customers) for alternate fuels to help them meet IMO decarbonisation targets. • Emergent production of alternate fuels is complex and requires multiple stakeholder involvement to facilitate the uptake and ability to scale of these fuels. • Commercial uptake of alternate fuels will require regulation that specifies measurement of well-to-wake emissions. We understand that potential producers in Australia will be required to meet stringent regulations set by the EU ETS for the whole of supply chain carbon intensity. This type of regulatory certainty for Australia can incentivise further investment. • s 47G , so the ability for Australia to capture and implement global learnings around the safe and efficient transport, storage and bunkering of green methanol to ensure a smooth transition on the availability of zero emissions fuels when demand grows will be critical to ensure existing port infrastructure can be utilised or repurposed in the near term, while future planning and investment in new infrastructure can be captured for a growing demand on zero emissions fuels over the coming decades. • While this document is in response to *Issues Paper 1*, Port of Melbourne also wishes to nominate the green methanol bunkering program as a case study under *Issues Paper 2*. This would ensure the policy development process under MERNAP does not become fragmented and the learnings of such a strong collaboration are maximised.

Reference List

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Port of Gothenburg 2023, Liquid Bulk, Port of Gothenburg, Gothenburg, viewed 06 February 2024, <https://www.portofgothenburg.com/services/cargo/liquid-bulk/#:~:text=First%20in%20the%20world%20to,bunkering%20and%20storage%20of%20methanol>.

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MARITIME INDUSTRY AUSTRALIA LIMITED

MIAL Submission
MERNAP Issues Paper 3
Skills and Training

About MIAL

Maritime Industry Australia Ltd (MIAL) is the voice and advocate for the Australian maritime industry. MIAL is at the center of industry transformation; coordinating and unifying the industry and providing a cohesive voice for change.

MIAL represents Australian companies which own or operate a diverse range of maritime assets from international and domestic trading ships; floating production storage and offloading units; cruise ships; offshore oil and gas support vessels; domestic towage and salvage tugs; scientific research vessels; dredges; workboats; construction and utility vessels and ferries. MIAL also represents the industries that support these maritime operators – finance, training, equipment, services, insurance and more. MIAL provides a full suite of maritime knowledge and expertise from local settings to global frameworks. This gives us a unique perspective.

We work with all levels of government, local and international stakeholders ensuring that the Australian maritime industry is heard. We provide leadership, advice and assistance to our members spanning topics that include workforce, environment, safety, operations, fiscal and industry structural policy.

Response to Issues Paper

General commentary on the domestic context

How much of the current government skills and training support for the decarbonisation transition are you aware of – more broadly and specifically in relation to the maritime sector?

While Issues Paper 3 is clearly focused on the skills needs of the future workforce required to facilitate the maritime energy transition, it is important to recognise the current maritime skills crisis the industry faces and the existing focus on accessing crew for deployment on vessels today.

Its also important to understand the different qualification and training frameworks that are relevant to the national maritime energy transition – STCW Vs Near Coastal – because each face unique challenges that may require quite separate approaches to overcome.

The Government skills and training initiatives as listed in the issues paper are not specific to maritime, however may provide some linkages to training outcomes for the current pool of trained mariners that could be adapted and utilised in a new energy environment.

The uncertainty relating to how the new fuel mix will play out (hydrogen, ammonia, methanol) leads to questions around the capabilities and competence required and the potential for training and handling practices to be adapted from existing industries. This makes planning for training requirements in some sectors of the maritime industry difficult at this stage.

On the other hand, while the related skills will be in high demand across the economy, where electrification is likely to be viable, it is easier to see a clear pathway for skills adaptation from existing electro technical qualifications and careers.

Are there specific impediments for maritime sector employers / employees to access government skills and training programs?

Maritime training in Australia (Near Coastal and STCW qualifications) is delivered across the VET and university sector (UTAS). There are only three institutions providing STCW pathways – Southern Metropolitan TAFE in WA, TAFE NSW in Newcastle and the Australian Maritime College (UTAS) in Launceston – but many more RTO's that provide the Near Coastal qualifications and specialised upskilling and endorsements.

As much of the government focus and funding has been towards VET sector reform, we are now finding when looking closely at maritime training frameworks to address the critical skills shortage of STCW qualified seafarers, there are significant limitations in the training capacity for a whole range of complex reasons. It will no doubt be important that when considering the capacity within the higher education sector for upskilling or retraining seafarers on new energy technology, to consider the limitations of the existing Australian maritime training capability.

How can government skills and industry effectively prepare a skilled workforce for a decarbonised maritime sector? What specific skills differentiate the maritime workforce from the other sectors in decarbonising?

Preparing the workforce for the energy transition must consider the following:

- The maritime sector is diverse, and mechanisms required to prepare the skilled workforce for the transition will vary between operations and between trade types, i.e. domestic training and qualifications and training and qualifications that follow international standards (i.e., STCW)
- The maritime energy transition will require skills relevant to land-based handling but also training that accounts for the specific characteristics of the on water environment (moving platform etc)

When will you need access to a workforce possessing relevant skills to design, implement and work safely in your decarbonised operations (Now, 3, 5, 10 years)?

While it is difficult to predict given the uncertainty relating to the multifuel landscape for maritime decarbonisation, elements of upskilling, particularly with respect to digitalisation and in some sectors, electrification is necessary now.

Skills challenges for a Decarbonised Maritime Sector

What are the major skills shortages that are impacting the maritime sector's decarbonisation transition?

As ships operating systems have become more sophisticated over time the industry is experiencing a shortage of electro technical officers. As the industry decarbonises and the demand for this skill set is likely to grow.

How are existing skills shortages being impacted by the need for new skill sets to transition the maritime sector towards net zero?

The acute maritime skills shortage is the result of many and varied complex issues including the decline in Australian shipping over decades which was exacerbated by COVID. In recent years, training of Australian STCW certified seafarers has virtually ground to a halt, with some green shoots appearing only now. Consequently, we have an ageing workforce, and, with dedicated effort, we hope to have a surge of new entrants over the next few years. However, the magnitude of this surge is limited by the capacity of the industry to absorb new entrants by providing the qualifying sea service.

Importantly, maritime will also be competing with other sectors for the same pool of new entrants.

On the other hand, as land-based skills relating to the production and handling (and likely shipping) of new energy are developed over time, some of these skills will be able to be adapted to the seagoing environment, providing those technically trained transition to maritime with some upskilling.

Future Needs

What are the essential components that should be considered in the development of training for your segment (eg port services, fishing, tourism, coastal shipping, international seafaring) of a decarbonised maritime sector?

Where possible, amendments to existing codes and standards (e.g., Australian standards, IGF Code) through international bodies such as IMO for STCW qualification, and the international standards or local standards as appropriate.

Components must include technical safety, safety culture and emergency response.

DNV, in collaboration with stakeholders engaged in the Maritime Just Transition Task Force and its Global Industry Peer Learning Group have developed an insightful report, Insights into Seafarer Training and Skills Needed to Support a Decarbonized Shipping Industry, which provides an initial assessment of the impacts on seafarers of the decarbonisation of the international shipping industry.

To what extent do you think skills in the clean energy sector are transferable to maritime decarbonisation initiatives and what level of comfort would you have in deploying those skills directly in your operations?

On the shipboard side relevant addition training required is dictated by legislation/regulations so while skills acquired working in the clean energy sectors (electro technical, land side low and zero carbon fuels handling) could be adapted to seafaring roles, further upskilling would be required.

How do you see your maritime energy transition providing opportunities for attracting talent from other clean energy sectors and also increasing female participation in the maritime sector?

Attraction and retention of seafarers is a significant issue today. The decarbonisation of the maritime industry creates an opportunity to change the frame through which we discuss and promote maritime career to being a highly specialized, technical and sophisticated and sustainable industry to be involved in.

ACVOA
Australian Commercial Vessel Operators Association

MERNAP Issues Paper 3 – Skills and Training

February 2024

The responses provided by ACVOA relate to commercial vessel operators and the mariners they employ in operational roles at sea.

Section 4 Questions:

- *How much of the current government skills and training support for the decarbonisation transition are you aware of – more broadly and specifically in relation to the maritime sector?*

There is awareness of some of the methods of Government support, though the extent of this is not widely known by mariners or operators.

- *Are there specific impediments for maritime sector employers / employees to access government skills and training programs?*

Navigating the eligibility and processes involved, as the training programs are all different and have different pre-requisites.

- *How can government skills and industry effectively prepare a skilled workforce for a decarbonised maritime sector? What specific skills differentiate the maritime workforce from the other sectors in decarbonising?*

Continue down the ISA pathway of identifying future industry skill needs and ensure this planning encompasses upskilling the current workforce as well as the future workforce.

The skills differentiating the maritime workforce involve implications in maritime environment when away from shoreside support, the interaction of equipment in an engine room and maintenance of equipment and surrounding hull in a safe manner. In addition, preparation is needed for damage control and emergency management.

- *When will you need access to a workforce possessing relevant skills to design, implement and work safely in your decarbonised operations (Now, 3, 5, 10 years)?*

In the three- plus year timeframe. Current initiatives are predominantly focused on operational means of limiting emissions and offsets.

Section 6 Questions:

- *What are the major skills shortages that are impacting the maritime sector's decarbonisation transition?*

Skills shortages in the maritime industry in general are not yet the major impact to the domestic sectors' decarbonisation transition.

- *In developing your sustainability plans / planning your decarbonisation pathway, what strategies have you considered for accessing critical skills that you may need?*

Critical skills will be accessed as available via classification societies, consultants with subject matter expertise, equipment manufactures and recognised training organisations. Noting while many alternative fuels and methodologies around usage will be new to Australia, there are already international maritime businesses with some experience in the handling of these fuels.

- *How are existing skills shortages being impacted by the need for new skill sets to transition the maritime sector towards net zero?*

There is currently no impact on existing skills shortages.

ACVOA
Australian Commercial Vessel Operators Association

Section 7 Questions:

- *What are the essential components that should be considered in the development of training for your segment (eg port services, fishing, tourism, coastal shipping, international seafaring) of a decarbonised maritime sector?*

Essential components of training for decarbonisation in the maritime sector are in the safe use, storage and refuelling of alternative fuels, conducting hull and equipment maintenance safely when storing and using alternative fuels, as well as implications for managing onboard emergencies.

- *How do skill shortages for decarbonisation initiatives vary between regional and city areas within Australia?*

Currently not noticeable for the DCV sector.

- *What new or emerging platforms can strengthen training delivery reach in your segment of the maritime sector?*

Online or blended delivery of training can be utilised, however the online component must be 'live' delivery with facilitator interaction (as opposed to a self-paced online only course). Existing seafarers will need upskilling in all processes equipment and systems changed due to decarbonisation, that are relevant to the qualification they hold. This is not the same as familiarisation on systems used on the vessel a seafarer is on at the time.

- *To what extent do you think skills in the clean energy sector are transferable to maritime decarbonisation initiatives and what level of comfort would you have in deploying those skills directly in your operations?*

An individual with skills in the clean energy sector may be able to assist in some aspects of training for seafarers however information ultimately needs to be applicable to the maritime context, so skills are not directly transferrable to the maritime operations. Training packages units do not align for engineering subjects on land versus at sea. Marine engineering qualifications may include thermodynamics, fluid dynamics, metals and materials in engineering, electrolysis effects, electromagnetism and damage control that apply to the marine environmental conditions that equipment is exposed to. These are inherent parts of engineering training and are the reason engineering units within the VET maritime training package continually refer to 'marine' engines or 'marine' electrotechnology. Industry specialities mean someone with similar skills will find the transition simpler due to their prior learning and experience but cannot directly shift to a different industry without the required qualifications or training.

- *As an employer, what would you need to be confident that training programs are keeping up with the latest advancements in low and zero carbon technology developments and industry needs given the uncertainty around fuel and technology choices?*

Employers need ready access to training programmes for the different alternative fuels being considered. This requires a baseline content for training to a national or international standard.

- *How do you see your maritime energy transition providing opportunities for attracting talent from other clean energy sectors and also increasing female participation in the maritime sector?*

Talent from other clean energy sectors may be useful in specific aspects of training or consultative roles, unless they undertake the maritime training required to work in an operation role at sea.

Increasing female participation in the maritime sector will provide benefits in diversifying the perspective applied to all aspects of operations. Maritime energy transition is another means to demonstrate the opportunities and appeal of the maritime sector. In itself, decarbonisation will not suddenly increase female participation in the maritime industry, as is not one of the main barriers to female participation.

From: s 47F @aimpe.asn.au>
Sent: Monday, 11 March 2024 11:20 AM
To: MERNAP
Subject: Skills and Training issues paper
Attachments: 2024 Maritime Workforce POSITION PAPER.pdf

Dear MERNEP team,

I've had a look at the Skills and Training paper that you released last month for comment.
Unfortunately in the time frame I have not been able to prepare a set of specific responses to your questions.
The short answer is that the training required will depend on the alternative fuel or propulsion method chosen.
Each alternative internal combustion engine fuel has different properties and different risks for seafarers who are responsible for the engines.
There will need to be system design issues addressed and then there will be operational consequences of those system design decisions.
Also the specific hazards of each alternative fuel will need tailored instruction.
However the fundamental qualifications will remain that Marine Engineer's Certificate of Competency (Motor).

Future propulsion alternatives which do not involve internal combustion technology may need different approaches.
One of the major alternatives in this area are electric vessels.
So far fully electric vessels are limited in duration and therefore range.
They are very limited in the cargo ship part of the maritime industry.
This means the application will be restricted.
Hybrid diesel/electric vessels are far more likely to emerge are a means towards decarbonisation.
CSL is in the process of designing & building a hybrid electric ship to replace the Accolade II which operates in South Australia.
Electro Technical Officers (ETOs) will be in greater demand in the electric/hybrid electric vessel sector however Marine Engineers with Motor CoC will still be required for hybrids.

The maritime workforce problem in Australia for Australian flag vessels is outlined in the attached Maritime Workforce Position Paper commissioned by INPEX and endorsed by the major maritime employer associations and the three maritime unions.
Other parties may have provided this to the MERNAP team and apologies for duplication if that is the case.
But as far as the Australian maritime workforce is concerned the basic problem is that there are far too few new entrants going through our STCW level colleges.
This has been the case since the demise of the National Maritime Industry Training Committee (NMITC) in the 1990s.
New courses do not matter if there are no students undertaking those courses.

Regards,

s 47F
Federal Secretary
AIMPE
s 47F

Rebuild Australian Shipping

Association of Marine Park Tourism Operators

7th March 2024

Via email: MERNAP@infrasture.gov.au

MERNAP Issues Paper 3: Skills and Training

Please see below the Association of Marine Park Tourism Operators ltd (AMPTO) input to MERNAP Issues Paper 3: Skills and Training

Yours sincerely,

s 47F

s 47F
Chief Executive Officer
Association of Marine Park Tourism Operators

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Association of Marine Park Tourism Operators

General Introduction to AMPTO and our industry:

AMPTO is a not-for-profit membership association that has been the peak industry body for marine park tourism operators since 1989. AMPTO members carry more than 4 million people each year, 95 per cent of all visitations, to the Great Barrier Reef (GBR). Members range from single vessel operations, small and large island resorts, to publicly listed multi-operational companies. AMPTO's primary objective is to ensure the economic and ecological viability of marine tourism.

Australian tourism is the fourth largest export for our Country and is in fact the largest non-consumptive industry in all of Australia. In 2019 the tourism industry contributed $166 billions to the Australian GDP (Thrive 2030). Adding to that, marine tourism has an economic output $30.7 billion in 2017-18, which is nearly 40% of the entire marine industry economic output[1]. Further to this, marine tourism output has both a direct and indirect value add of $42.4 billion and $26.8 billion (total $69.2 billion or 3.7% of GDP in value add), respectively[1]. Within Queensland, the economic output of domestic and international marine tourism totalled $12.3 billion in 2017-18[1]. This is larger than any other State.

It is clear how significant tourism and marine tourism are to both the National and Queensland State economy.

The Great Barrier Reef tourism industry is an important sector, and its role in both the National and Queensland State economic can't be overstate. As the number one reason for all nature-based travel and one of the top three reasons for all other visitors travelling to and within Australia, the Great Barrier Reef and its tourism industry is a tourism industry driver and amplifier (keystone sector). Visitors come to Australia to see the Great Barrier Reef and end up doing other tourism experiences.

Please note I have referenced Aims Index of Marine Industry 2020 report and not the 2023 report, as the figures in the 2023 report highlight the significant impact COVID had on the industry and does not reflect the true role our sector plays in the marine industry economy.

As an industry the marine tourism industry in the Great Barrier Reef has a strong history of positive environmental outcomes. These include but not limited to:

- Legacy founders and delivering contractors for the Crown of Thorns Starfish control program. This program is the strongest action one can take to protect live coral on the Great Barrier Reef. The industry delivered this program until the industry was shut down in 2020 due to COVID– nearly 2 decades. The COTS control program continues still today and is recognized globally as a platinum standard reef protection.
- Founders of the Eye on the Reef coral reef monitoring program, back in 1984. This is now a flagship monitoring program within the Great Barrier Reef Marine Park Authority and is a key source of the Authorities reef data that guides its management decisions.
- Co-founders and partners in the Master Reef Guide program. Delivering stronger, accurate education and information for vessel crew and guests.
- The concept creator and drivers of Tourism Reef Protection Initiative.

More pertinent to this issue paper, our industry has been looking at transitioning to more renewal fuel source for over 10 years. This has led AMPTO investing three years of effort, time, and resources to create a holistic industry-wide feasibility study to develop a roadmap to guide industries transitions. AMPTO has engaged a contractor and specialist engineer to deliver this work. A partnership with Government is key to the success of this work.

1. The Aims Index of Marine Industry 2020.

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Two critical area of the partnership with Government are necessary, 1) Government knowledge and 2) funding, to deliver this study and roadmap successfully and to the standard needed.

AMPTO has been in discussions with both levels of Government (Federal and Qld State) for over a year with a formal proposal submitted to multiple portfolios in both Governments early in 2023. To date no decision has been made and discussions continue.

The industry is committed to this process and is hoping for a positive outcome to be able to deliver our feasibility study and roadmap. Such an approach will enable our sector to provide evidence-based information and technical solutions to technical, logistical, and economic challenges to the industry.

As a sector that operators in the World Heritage Great Barrier Reef, the now "poster child" for climate change, a targeted and structured approach like AMPTO's will not only be positive for the Great Barrier Reef but will add significantly to Australia and our Industry's reputation as being serious about climate change and a green energy super-power.

General Feedback with regards to Skills and Training:

AMPTO sits on the Industry Skills Australia Strategic Workforce Planning Committee. This committee has met twice. From the near coastal DCV tourism sector point of view the maritime training sector has a lot of work to do to train mariners now to ensure a strong and resilient maritime sector even before decarbonising technologies training is considered

From the outset it must be highlighted that the Australian maritime sector and in particular the near coastal DCV sector has many constraints outside of their control. The one overarching constraint is the fact that we don't have the market economy like international or foreign going operations. Our market is much smaller and very price sensitive. This leads to the question – Who pays for the training of this emerging technology? There is no ability to pass on costs to our customers, regardless of any finds from surveys that say there is a willingness to pay. The reality is the public is not willing to pay. Vessel operators are not in a position financially to support that training and I am sure the workforce would find it difficult too to fund upgrading/updating certificates of competency too. I acknowledge that this transition will be stepped, most likely, and so there will not be a need for a mass re-training all at once, however, the question remains, who will pay for it?

Other factors to consider, those who are already trained mariners will have to take time off work to upgrade to the emerging technologies, leading to the question who will replace that person at work to ensure operations continue. This in essence doubles the cost of training and will highlight the shortage of mariners coming through the training system. Additionally, what technologies do they get trained in. It can already be seen that emissions reduction is going to come in the form of multiple different technologies. Caution must be taken not to limit what technologies are used as different operations will need different technologies that are suitable for an operations and vessel. This level of complexity needed to be understood before any recommendations are considered. A complexity that I believe the MERNAP will not adequately cover.

Further consideration is that the maritime regulator is challenged with providing certificates of competency now, although some short-term changes have recently happened to improve the situation, they are mostly not long-term solution. This raises the issue that the regulator is currently experiencing challenges with resourcing and funding. Any additional activity will only

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further challenge the regulator and put increasing concern for operator on what additional costs will be imposed on them through cost recovery models. With the National Law Review phase 2 being shelved and the cost recovery review for transport still incomplete, there is increasing uncertainty within the industry and really concern what those cost recovery cost will be and what further financial pressure will that put on the maritime sector, and particularly the near coastal DVC sector. With regards to skill and training for emissions reduction, the unknow answer to -What will this cost the industry and who will pay for it, is a significant concern? And with all the other fees, charges, and cost of operating climbing there is the real risk of the industry contracting.

It is important, at this stage to stress that the near coastal DCV sector is very keen to transition, but it must be done right so that we can actually transition and not have regulations and policy that we cannot comply with.

With that been said once again there seems to be a focus on the large vessels sector and little consideration for the small or near coastal sector in this MERNAP.

The near coastal DCV sector is a “training ground” for the maritime industry. Our tourism sector is no different, and in fact we are proud of that role we play. However, the other sectors that absorb our mariners don’t contribute to that training. As part of this consideration, more must be done to support near coastal maritime sector and reviews like this must considered not only the larger vessel and strategic vessel sector but the near coastal DCV sector more closely and openly.

One way to work more closely with near coastal sector is to support sectors perform feasibility studies so that research-based answers to technical and complex challenges can be understood.

4. Domestic Context:

How much of the current government skills and training support for the decarbonisation transition are you aware of – more broadly and specifically in relation to the maritime sector?

Not very aware. Many of what is in the discussion papers don’t appear applicable to maritime sector.

Are there specific impediments for maritime sector employers / employees to access government skills and training programs?

For the near coastal tourism sector there are many. In no particular order:

- They don’t seem to fit maritime sector. As well as where are these programs advertised.
- What technology/s must mariners train in- eclectic, hydrogen, ammonia, methane, biofuels and so on? Without know what the technologies are and how they will be used plus what regulations will be governing them it is hard to say what training is needed.
- Who is going to cover the cost? Will the businesses be responsible for fund this? If so, how? If the mariner is supposed to fund this, again how and who will cover their job while getting trained?
- There is already a shortage of certified mariners.

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How can government skills and industry effectively prepare a skilled workforce for a decarbonised maritime sector? What specific skills differentiate the maritime workforce from the other sectors in decarbonising?

Firstly, the industry needs to know what technologies are going to be in use. These technologies must also have the associated infrastructure and supply chain reliability. Once that is known we will know what training to provided. There will need to be government funded training support for both the operators and the employee.

Without doing detailed feasibility studies it is hard to provide a comprehensive answer to what specific skills differentiate the maritime workforce. At a broad level the first is the mariner must be trained in multiple types of technologies. Many mariners work across a number of different types of vessels that operate in many different areas of operations. This means there may be multiple types of decarbonising technologies the mariner must be competent in. Secondly, it must be said that many mariners work remotely, either in remote areas, but also out at sea. Training must be able to keep up with technology and ensure mariners are competent to work with new technology in these remote situations.

When will you need access to a workforce possessing relevant skills to design, implement and work safely in your decarbonised operations (Now, 3, 5, 10 years)?

Again, this is a difficult question. The tourism sector is very interested in adopting decarbonising technology; however, the technology does not appear ready or reliable and affordable. Despite all the uncertainty we believe the maritime sector needs to start now to avoid the situation in the future when technology does become viable, we have the workforce to use it. However, this is complicated by the question what technology will be used, or do we start developing VET accredited training for all possible technologies? We don't know the answer, as there is a lack to research to inform us. With the MERNAP seemly more focused on the large vessel side of Australian maritime sector, the near coastal sector will remain with high level of uncertainty and lack of knowledge.

5. Workforce, Skills and Training

5.2 Certification for Domestic Maritime Sector

A brief comment regarding Fee-Free TAFE: In our sector Fee-Free TAFE has added pressure in training as there is very limited locations, in fact I think there is just one. This has resulted in potential mariners and current mariners who wanting to upskill deciding to hold off or not train at all. Limited locations mean want-to-be students would have to move to, say Cairns, for a course. This adds further costs and constraints, particularly with the housing crises and so often resulting in the training becoming unviable. Other RTO's cost, like all business are rapidly increase and so they can't complete with Fee TAFE. Students are therefore deciding to wait or not proceed with training as they can't get to locations that offer fee free TAFE, or the course offered both other RTO's are too expensive or even psychologically, when compared to free TAFE, seems even more expense. From our perspective fee-free TAFE has put more pressure on maritime training rather than promote it.

There must be a change in Governments perception of the Maritime industry. The maritime, and in particular, the near coastal sector must be seen as a critical industry for national and state economies as a whole. Once that perception is changed government must invest in the maritime sector more strongly, like supporting the workforce and the industry with training. Providing funding for all level of maritime training is key through all RTO's not just TAFE.

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6. Skills Challenges for Decarbonised Maritime Sector

6.2 Maritime Sector decarbonisation Challenges

What are the major skills shortages that are impacting the maritime sector's decarbonisation transition?

Not to sound cheeky, all of them. There is a general shortage of masters and engineers. Currently in our sector there are no clear pathway for training our workforce in low or zero-emissions technologies. However, the lack of research on what technologies are or will be available for our sector means we don't even know what technologies we will need training in.

In developing your sustainability plans / planning your decarbonisation pathway, what strategies have you considered for accessing critical skills that you may need?

Unfortunately, cost is preventing our industry proceed with our decarbonising pathway. Our industry has developed a proposal to formulate a plan to decarbonise but requires Government support to deliver that plan.

How are existing skills shortages being impacted by the need for new skill sets to transition the maritime sector towards net zero?

Current skill shortage, from our industry's perspective, is not impact by new skills demand but rather from lack of clear career pathways in the maritime, cost to achieve certificate of competencies. This question highlights a lack of understanding of the near coastal DCV sector.

7. Future Needs

This section is clearly referencing large vessel sector and shows very little consideration of what near coastal and in particular maritime tourism industry will need.

What are the essential components that should be considered in the development of training for your segment (e.g. port services, fishing, tourism, coastal shipping, international seafaring) of a decarbonised maritime sector?

Industry fit-for-purpose feasibility studies need to be conducted. Without knowing the types of technologies that will be adopted we can't say what training looks like.

All challenges faced know will need to be consider still, plus providing appropriate training for ever evolving technologies.

How do skill shortages for decarbonisation initiatives vary between regional and city areas within Australia?

There are just no decarbonising initiatives for near coastal marine tourism industry.

What new or emerging platforms can strengthen training delivery reach in your segment of the maritime sector?

Maybe these are not new or emerging platforms, but providing an equal playing field for RTO's; if there is fee free TAFE, provide other RTO's with the same support. Harmonisation between State Governments training subsidies as well as subsidise all maritime training and not just some certificates. Develop an apprenticeship style program that supports operators and

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students training. Unlike other sectors it is hard to have another job while getting sea time. Financial support is need for sea time for both operators and students.

To what extent do you think skills in the clean energy sector are transferable to maritime decarbonisation initiatives and what level of comfort would you have in deploying those skills directly in your operations?

As I am not a clean energy expert it would be hard to say how transferable those skills would be. I would suspect there is a level of transferability, however that would depend largely on the type of energy, the type of operations, type of vessel, area/s or operation and even the employee.

Currently the level of comfort is very low as the technology is still in the development stage and has not been proven to work reliably and cost effectively.

As an employer, what would you need to be confident that training programs are keeping up with the latest advancements in low and zero carbon technology developments and industry needs given the uncertainty around fuel and technology choices?

It must be tried, tested, and proven to be working.

How do you see your maritime energy transition providing opportunities for attracting talent from other clean energy sectors and also increasing female participation in the maritime sector?

Our industry has always been used as a “training ground” and will continue to play that role. Our industry already has equal opportunity for both male and female.

There is an opportunity now to review and develop a robust maritime training plan that clear demonstrate a career pathway. The risk is if the review of transitioning is not resourced appropriately and leads to patch work solutions that will fail.

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Submission

MERNAP Issues Paper: Skills and Training

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Introduction

Gas Energy Australia (GEA) welcomes the opportunity to provide a submission to the *MERNAP Issue Papers: Skills and Training* consultation.

GEA is engaged in discussions with the Australian Department of Infrastructure Transport, Regional Development, Communications and the Arts regarding opportunities for LPG to be a fuel of choice for the maritime sector – especially in light of the transition to net zero bioLPG in the short to medium terms, and actual zero bioLPG and renewable synthetic LPG from the mid-2030s.

As such, the maintenance of a skilled workforce to drive the adoption of sustainable fuel alternatives, like bioLPG and rLPG, within Australia's maritime sector, is vital. Collaboration between government, industry and educational institutions is emphasised as crucial for cultivating a workforce equipped with the specialised skills required now and part of the transition to a low-carbon maritime industry.

Uniquely and importantly, the transition from conventional LPG to bioLPG and/or rLPG is seamless and comes with no additional capital outlays as they are one-for-one blendable replacements for traditional LPG. It is the exact same molecule, just derived from renewable sources.

This characteristic ensures minimal disruption to existing operations and low costs, highlighting the ease of transition and the continuity of expertise in handling LPG. Stressing the importance of research, development, and knowledge sharing, GEA members aim to prepare the workforce for sustainable fuel adoption while maintaining operational efficiency.

Additionally, GEA recognises the opportunities presented by the maritime energy transition for attracting talent from other clean energy sectors, ultimately contributing to a more sustainable and environmentally conscious industry.

There is global momentum towards gas-fuelled ships. In fact, a decade ago there were just 10 gas-fuelled cargo vessels worldwide. Today there are 936, with another 876 on order (Clarkson's Research).

Australia has been a slow adopter of the inherent immediate and longer-term advantages gas – and, in particular, LPG – provides. That said, three of the most recent acquisitions to Australia's coastal shipping fleet are powered by LPG. And for good reason.

The benefits of running shipping on LPG include:

1. LPG yields an immediate 20% reduction in emissions compared to marine diesel. But, as renewable gases are developed over the next few years, those emissions can plummet to net zero using bioLPG and, ultimately, actual zero synthetic renewable LPG (rLPG).

2. Adopting LPG now avoids future costs. Ships are acquired with a view to many decades service. BioLPG and rLPG are one-for-one replacements for conventional LPG. This means no changes are required to ship engines or components in order to swap-in bioLPG or rLPG.

3. Adopting LPG prevents the prevailing dangers posed by marine diesel ships. If a diesel ship were to run aground, collide with another vessel or sink in Australian waters it would be an ecological disaster without parallel for our pristine beaches, waters and the sea life they support.

Such an incident would have far-reaching and long-term ramifications for local businesses, fisheries, tourism operators, hospitality venues and a host of associated impacts. This scenario is entirely avoidable. In the event of an incident at sea, LPG ships can simply release the gas, dissipating without environmental impact as it neither slicks nor sediments.

4. Energy security is emerging as a key issue globally. Using LPG as a fuel of choice would solve our national reliance on imported diesel-oil, replaced by domestically produced LPG, bioLPG and/or rLPG. This would assist greatly in delivering genuine fuel security and self-sufficiency, which underpins the point of having a sovereign fleet.

Net zero bioLPG will be available in Australia from as soon as 2025-26. As a by-product of biodiesel and sustainable aviation fuel production using the hydrotreated vegetable oil process, the first three plants slated for operation in the next few years have the capacity to initially displace 11% of conventional LPG demand almost immediately, seeing up to 160,000 tonnes of CO2-e abated per year.

The exponential growth of this sector has the potential to replace all conventional LPG. Indeed, as the CSIRO's Sustainable Aviation Fuel Roadmap (released August 2023) makes clear, from 2025 Australia will have sufficient feedstock to produce 5 billion litres of SAF every year from approximately 15 biorefineries with bioLPG as a by-product. This would abate up to 1.5 million tonnes of CO2-e each year.

However, the advent of renewable synthetic LPG (rLPG), derived from green Hydrogen and CO2 from the atmosphere, is an actual zero emitting gas. That is, the only CO2 expelled when it is burned is what was captured when it was made – meaning it has a zero impact on the environment and, as such, requires no offsets. It is expected rLPG will be available in Australia from the mid-2030s.

Based on current domestic demand, replacing all conventional LPG with synthetic actual zero rLPG by 2050 would reduce CO2-e emissions by up to 1.94 million tonnes every year.

About GEA

GEA is the national peak body representing the downstream gas fuels industry, encompassing Liquefied Petroleum Gas (LPG) and associated gases – including a raft of new renewable gases such as bioLPG, synthetic renewable LPG (rLPG) and renewable Dimethyl Ether (rDME). The industry comprises major companies, medium and small businesses across the gas fuels supply chain including producers, refiners, fuel marketers, equipment manufacturers, gas transporters, consultants and service providers.

Having engaged directly with the Australian Government Department of Industry, Science and Resources, Department Climate Change and Energy, relevant Ministers and Shadow Ministers, as well as state and territory governments, GEA has provided seminal research undertaken by Frontier Economics on LPG's path to zero emissions.

LPG supply can begin this transition as soon as 2025-26, offering governments, industries and household consumers another important string in their bow to deliver on 2030 targets and beyond. We see these developments as complementary to government objectives in shifting to renewable energy, while offering customers diversity in choosing the zero energy sources that suit their needs.

Importantly, we have made it clear to all governments – and do so again here – that the LPG sector is not seeking any government funding to aid its transition. That is, we require no subsidies, seed or joint project funding or the like to facilitate the transition.

We simply seek a level playing field. That is, recognition and inclusion of bioLPG, rLPG and rDME technologies in the array of government considerations, programs and mechanisms so homeowners, businesses and industries can choose the path to zero best for them.

Examples for LPG to Achieve Net Zero & Actual Zero Emissions

BioLPG:

- Derived from plant and vegetable waste.
- Derived as a by-product from biodiesel and/or Sustainable Aviation Fuel production using the Hydrotreated Vegetable Oil process.
- Identical to LPG. A simple 'drop in' replacement.
- Same storage, transport infrastructure and appliances. No change. No additional capital costs.
- Net zero as an 80% renewable gas.
- Potential to be actual zero as related sectors (i.e. farming and transport) reduce their emissions.

rLPG:

- Synthetically produced from green hydrogen and CO2 taken from the atmosphere.
- Identical to LPG. A simple 'drop in' replacement.
- Same storage, transport infrastructure and appliances. No change. No additional capital costs.
- Is an actual zero gas – that is, the only CO2 expended in its use is what was captured in its creation. No offsets are required.

rDME:

- Derived from methanol.
- Chemically similar to LPG (propane and butane).
- Can be blended with rLPG up to 20% with no change to appliances or equipment.
- It can fully replace LPG, however, would require minor changes to existing appliances.
- Derived from gasification and catalytic synthesis or electrolysis (i.e. green H2) and catalytic synthesis.
- It is net zero, but can be actual zero as related sectors (i.e. transport) reduce their emissions.

Consultation Questions

Question 1: How can government skills and industry effectively prepare a skilled workforce for a decarbonised maritime sector? What specific skills differentiate the maritime workforce from the other sectors in decarbonising?

Given LPG, bioLPG and rLPG are the same molecule, it is important for policy makers to appreciate that existing skills, knowledge and training will be required as part of a decarbonising economy. This also underscores the need for transferability of existing skills within and across energy sectors, including the maritime sector.

It is important to note that the LPG industry can seamlessly continue its current operations as bioLPG and rLPG are chemically identical to conventional LPG, allowing for a one-for-one replacement without requiring infrastructure changes. By investing in research and development of these technologies and promoting knowledge sharing among stakeholders,

GEA members can play a pivotal role in equipping the maritime workforce with the expertise needed to drive the successful adoption of bioLPG and rLPG in maritime operations, contributing to a more sustainable and low-carbon maritime industry.

To effectively prepare a skilled workforce for the integration of bioLPG and rLPG in the decarbonised maritime sector, collaboration between GEA, its members, government, industry, and educational institutions, is essential. Specialised training programs should be developed to educate maritime professionals on the production, handling, and utilisation of these sustainable fuel sources, emphasising skills in environmental compliance, maintenance, and supply chain management specific to bioLPG and rLPG applications.

Question 2: When will you need access to a workforce possessing relevant skills to design, implement and work safely in your decarbonised operations (Now, 3, 5, 10 years)?

The transition towards decarbonised operations in the LPG industry, particularly the adoption of bioLPG and renewable synthetic LPG (rLPG), is expected to gain momentum in the coming years. To effectively design, implement, and operate decarbonised operations, a workforce possessing relevant skills will be crucial. Here is an estimation of when such a workforce will be needed:

- **Now**: Immediate access to a skilled workforce is essential to kickstart the transition towards decarbonised operations in the LPG industry. As bioLPG is set to be available in Australia from as soon as 2025-26, and the industry is already making strides in adopting LPG-powered vessels, the need and opportunity for skilled professionals who can design, implement, and operate these decarbonised systems is pressing.
- **3 years**: In the next three years, as the industry continues to scale up its use of bioLPG the demand for a skilled workforce with expertise in sustainable energy technologies, emissions reduction strategies, and safe operational practices will increase. By this time, the industry will require a workforce that can effectively manage and optimise decarbonised operations.
- **5 years**: By the five-year mark, the LPG industry is likely to have significantly expanded its use of bioLPG into its operations. This period will necessitate a well-trained workforce capable of designing, implementing, and maintaining complex decarbonised systems. Skills related to renewable energy, green hydrogen production, carbon capture technologies, and sustainable shipping practices will be in high demand.
- **10 years**: Looking ahead to the next decade, the LPG industry is expected to have fully integrated decarbonised operations, with bioLPG and rLPG playing a central role in emissions reduction efforts. By this time, a workforce with advanced skills in renewable energy technologies, carbon-neutral fuel production, and sustainable maritime operations will be indispensable for maintaining and optimising decarbonised processes.

Question 3: What new or emerging platforms can strengthen training delivery reach in your segment of the maritime sector?

In the context of bioLPG serving as a one-for-one replacement for traditional LPG in the maritime sector, the existing training and knowledge base within the industry can significantly streamline the transition process. Since bioLPG shares the same molecular structure and operational characteristics as LPG, some maritime professionals are already well-versed in handling and utilising this fuel source. Therefore, the need for extensive

training through new platforms may be minimised, as the industry can seamlessly integrate bioLPG into existing practices without significant additional training requirements.

Here it is important to note that the adoption of new skills and training modes must not be at the expense of existing knowledge-based training. Ships will not run on hydrogen, batteries or the like, so it is incumbent on those developing program for skills and training in the maritime sector to recognise what technologies will service the sector.

This inherent familiarity with LPG and the similarity of bioLPG ensure that maritime stakeholders can readily adopt and implement bioLPG without the necessity for extensive retraining, allowing the industry to smoothly transition to this sustainable fuel option and continue operations efficiently.

Question 4: To what extent do you think skills in the clean energy sector are transferable to maritime decarbonisation initiatives and what level of comfort would you have in deploying those skills directly in your operations?

The seamless transition from LPG to bioLPG as a one-for-one replacement indicates that skills in the clean energy sector, particularly those related to handling, storing, and utilising LPG, are highly transferable to the maritime sector with the introduction of bioLPG.

Since the skills and knowledge required for working with LPG are directly applicable to bioLPG due to their identical molecular composition and operational characteristics, maritime professionals can leverage their existing expertise without the need for significant retraining. This transferability of skills underscores the compatibility and continuity in operational practices between LPG and bioLPG, enabling a smooth integration of bioLPG into maritime operations.

Question 5: How do you see your maritime energy transition providing opportunities for attracting talent from other clean energy sectors and also increasing female participation in the maritime sector?

The maritime energy transition, particularly the shift towards sustainable fuel options like bioLPG, presents significant energy opportunities for attracting talent from other clean energy sources and increasing diversity in the maritime sector.

Flexibility is the key and inherent in the ability for LPG, bioLPG and rLPG to be a pathway to achieving lower emissions in maritime operations. By embracing bioLPG as a renewable and environmentally friendly fuel alternative, the maritime industry can position itself as an attractive destination for professionals with expertise in clean energy technologies and practices. The compatibility of skills between LPG and bioLPG ensures a smooth transition for individuals from the clean energy sector, offering them new avenues to apply their knowledge and contribute to sustainable maritime operations.

Conclusion

Gas Energy Australia (GEA) recognises the pivotal role of skilled workforce development and training in driving the successful adoption of renewable energy solutions like bioLPG and rLPG into maritime operations.

The seamless integration of bioLPG and rLPG into existing practices highlights the potential for minimal additional training requirements, thus streamlining the transition process. However, collaboration between GEA, its members, government, industry, and educational institutions remains essential to ensure the effective implementation of specialised training programs tailored to the maritime sector's unique needs.

The timeline for workforce readiness outlined in Question 2 emphasises the urgency of immediate action to address the opportunities for skilled professionals in the decarbonised maritime industry. Furthermore, the transferability of skills from the clean energy sector to maritime decarbonisation initiatives underscores the compatibility and continuity in operational practices between conventional LPG and its renewable alternatives.

Looking ahead, the maritime energy transition offers significant opportunities for talent attraction from other clean energy sectors in maritime operations. By embracing sustainable fuel alternatives like bioLPG and, ultimately rLPG, the maritime industry can position itself as a leader in environmental stewardship and contribute to a greener, more resilient future.

In conclusion, Gas Energy Australia is committed to driving positive change and shaping a sustainable maritime industry through collaboration, innovation, and proactive workforce development initiatives.

For More Information

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Maritime Emissions Reduction National Action Plan (MERNAP)

Maritime Union of Australia (MUA) submission in response to the Department of Infrastructure and Transport MERNAP Issues Paper 3: Skills and Training - of February 2024

12 March 2024

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Introduction

This submission has been prepared by the Maritime Union of Australia (MUA).

The MUA represents approximately 14,000 workers in the shipping, offshore oil and gas, stevedoring, port services and commercial diving sectors of the Australian maritime industry. This includes coal export terminals and port and shipping services to many emissions-intensive industries, such as aluminium smelters and steel manufacturing facilities. The MUA is also part of the Offshore Alliance (with the Australian Workers' Union) which represents workers on offshore oil and gas facilities.

The MUA is a Division of the 120,000-member Construction, Forestry and Maritime Union, an affiliate of the 2 million member Australian Council of Trade Unions (ACTU) and an affiliate of the 20-million-member International Transport Workers' Federation (ITF).

The MUA supports the government taking action to address climate change. We are working hard to prepare our membership and industries for the necessary transition to a zero-net emissions economy and society. We recognise the need to urgently reduce emissions globally and in Australia to prevent global heating from exceeding 1.5°C, but this will have a significant impact on the jobs held by many of our members.

Our ability to provide climate leadership in these industries depends on the ability of governments and of our union to deliver a just transition to our members currently relying on fossil fuels in their work, and their communities. If we cannot provide such a transition, we risk significant reductions to workers' living standards, deepening inequality, and a very significant political backlash which could stall the transition we need.

The position of the International Transport Workers Federation on the impact of the decarbonisation transition of the seafaring workforce

For the maritime industry, the visions and strategies for environmental protection are being developed at an increasing pace and include the use of alternative energy sources for vessels. Taking into account the fact that there is more than one type of energy source on a vessel for safeguarding propulsion and manoeuvring, especially during emergency operations, it is an urgent safety matter to have a clear understanding of the differences amongst energy sources used. This is a historic transition where numerous uncertainties and risk may emerge.

These developments require further consideration for the safety of the workforce who are involved and affected across the whole sector in this transition. The need for safety assurances, proper training, and vessel familiarisation must be recognised and implemented to guarantee that all personnel are able to return back home safe after work on a vessel. All new maritime energy sources under consideration have new and very serious hazards which must be addressed in vessel and equipment design, safety processes, as well as workforce training and experience.

Seafarers, firefighting personnel, search and rescue personnel, pilots, dockers, bunkering handling personnel and tugboat personnel are directly and indirectly affected and involved in on-the-job operations throughout this transition.

Companies, authorities, suppliers, protection and indemnity insurance providers, and recognised organisations including unions are to ensure the safety of those mentioned above.

Maritime education and training institutes, medical practitioners, and security enforcing bodies are to ensure safety and security culture is firmly embedded in the whole system.

For all stakeholders, appropriate competencies and establishing a safety culture are essential for health and safety for both the workforce and the environment.

Introducing a new type of maritime energy source encompasses the entire life cycle from manufacturing, transporting, bunkering, storage, and energy processing onboard vessels and in ports.

To protect human lives in this transition, and to ensure vessels are operated in a safe manner it is necessary to have a clear vision of the safety dynamics associated with each energy source. This can be accomplished by acquiring the correct knowledge about the energy sources being used and obtaining the appropriate competencies necessary for the whole operation, including emergency circumstances. Competencies must therefore include knowledge of operations that may include, inter alia, extreme temperatures and pressures, toxicity, corrosiveness and high voltage, all of which can inflict harm and/or accidents.

When introducing alternative energy sources, the following are crucial:

- A robust training system that guarantees the highest level of safety culture;
- Appropriate training that covers communication, risk analysis, operation and emergency management;
- Knowledge about construction and design and relevant regulations;
- Adequate fire detection and fire-fighting equipment;
- Availability of proper lifesaving appliances; and
- Provision of adequate personal protection equipment for all personnel.

MUA response to the Issues Paper stakeholder questions

Domestic Context

1. How much of the current government skills and training support for the decarbonisation transition are you aware of – more broadly and specifically in relation to the maritime sector?

The MUA is active in the Australian skills policy and strategy architecture. For example, it has a representative on the board of Industry Skills Australia (ISA), the Jobs and Skills Council (JSC) for the transport and logistics sector, and is represented on ISAs Maritime Strategic Workforce Planning Committee.

The MUA is an active member of the ACTU Skills Committee.

The MUA works closely with the two major industry associations whose members are involved in all aspects of Australian maritime transport supply chains, Maritime Industry Australia Ltd (MIAL) and the Australian Resources and Energy Employer Association (AREEA) as well as with the other Australian maritime unions, the Australian Institute of Marine and Power Engineers (AIMPE) and Australian Maritime Officers Union (AMOU) and other transport unions, namely the Transport Workers Union (TWU) and Rail Tram and Bus Union (RTBU).

The MUA has a close working relationship with Ports Australia and many of the ports that form its membership as well as with stevedoring companies involved in the loading and discharge of a range of bulk, break bulk and containerised products.

The MUA works closely with the Australin Maritime Safety Authority (AMSA) as the national maritime safety regulator with custodianship of the ILO International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978.

The MUA also has a strong working relationship with each of the Registered Training Organisations (RTOs) delivering STCW qualifications and skills sets derived from the Maritime Training Package (MTP). It should be noted that for the core Rating occupation in Australia, the Integrated Rating (still designated in the outdated ANZSCO occupational nomenclature as 'Deck Hand') which along with ships masters and ships engineers, form the three principal occupations groupings on vessels across all sectors. There are only four RTOs delivering STCW Ratings qualifications.

Maritime Qualifications

It is important that the Department clearly understand the distinction between and application of STCW qualifications and occupations with non STCW qualifications and occupations when analysing and developing strategies regarding future skill requirements of seafarers that will form the workforce for future net zero emissions shipping. These two streams of qualifications are regulated by AMSA under two separate regulatory systems – the STCW grouping under the *Navigation Act 2012* (Navigation Act)/AMSA Marime Orders 70-73 and the non-STCW grouping under the *Marine safety (Domestic Commercial Vessel) National Law Act 2012* (National Law Act)/AMSA Marine Orders 504, 505 and 74.

It should be noted that the consultation paper (p.8) makes incorrect statements about the application of these two streams of qualifications, stating that the STCW-compliant qualifications are only used in international waters and that vessels operating domestically use domestic/near coastal. National Law qualifications. STCW compliant qualifications are routinely used domestically on larger and higher risk vessels, and it is the view of the MUA, broadly supported by the recent Review of the National Law (see below), that the use of STCW-compliant qualifications should be expanded because they provide a much better level of training. This is particularly the case for managing the risks of new types of fuels and energy sources and novel vessels.

It is also important that the Department be aware that because STCW seafarers are regulated under an international convention standard, any changes to the safety requirements and job roles that may adjust with the introduction of alternative propulsion fuels and electrification (using non fossil fuels) of auxiliary equipment will need to be introduced under an international IMO process.

That means the content and mix of Units of Competency for seafarer qualifications on vessels requiring STCW qualifications, and the associated Registered Training Organisation (RTO) courses that deliver those qualifications will need to follow the IMO international standards. In the end, we do not envision dramatic changes to seafarer skills on decarbonised vessels in the larger vessel space.

Technologies to support port electrification are available now, covering smaller Domestic Commercial Vessels (DCVs) such as ferries, mooring vessels, port workboats and tugs. Likewise, significant cargo handling equipment in ports could also be electrified, along with port vehicles. These transition impacts will need to be considered in the training and skill development transition necessary for the safe operation of those smaller DCV vessels and onshore equipment.

We refer MERNAP to AMSAs *Novel vessel policy statement* of June 2022.[1] This is a helpful statement

It refers to DCVs powered by hydrogen, ammonia, or with electric propulsion and an installed battery power.

[1] Australian Maritime Safety Authority (AMSA), *Novel vessel policy statement*, June 2022, https://www.amsa.gov.au/vessels-operators/national-standard-commercial-vessels-nscv/novel-vessels-f3

The gap we see with this policy is that it does not address the training requirements for crew of these vessels. Our view is that at present the National Law Act provides a wholly inadequate framework for the safe regulation even of conventional vessels and training of their crew.[2]

Hydrogen is highly explosive. Ammonia is highly toxic to people and the environment – it is classified as 'Hazardous' by Safe Work Australia, as toxic by inhalation, and causing burns. At high concentrations, it can cause death by inhalation.[3]

Any vessels powered by hydrogen or ammonia or carrying these energy sources as cargo should be required to be Regulated Australian Vessels (RAVs) under the Navigation Act. Crew must have Navigation Act qualifications i.e. STCW qualifications and vessels must have clear Minimum Safe Manning Documents (MSMD) that specify the qualifications and licenses of the safe crewing complement to reflect the risks and properties of the energy source and/or cargo.

This would ensure much higher standards for vessel construction, including Class standards, but also an appropriate number of crew trained to a higher standard to reflect the increased risks, possibly necessitating additional seagoing experience on appropriate vessel types. Entry level qualifications under the DCV National Law generally require no or only limited seagoing experience. Dangerous goods training under the National Law Act is not at all sufficient.

The inadequate regulation of higher-risk vessels under the National Law Act has been acknowledged in the recent review of that Act, which says that 'there are DCVs that pose a higher risk that is not currently appropriately managed under the applicable National Standards for Commercial Vessels (NSCV) standards,' including vessels that carry 'dangerous goods or hazardous and noxious substances' and 'novel' vessels. The review suggests that AMSA should identify requirements to apply to higher risk DCVs, including relevant Marine Orders under the Navigation Act.[4]

Seafarer qualifications will need to be updated to address all aspects of safe storage, transport and handling of these materials. Similar training updates will need to occur for workers in port terminals loading these materials.

Trading vessels carrying large volumes of hydrogen and ammonia within Australia and from Australia to international ports should also be Australian flagged and crewed vessels, governed by Australian WHS and fatigue standards and regulated under the Navigation Act. Australia needs to take international leadership like the leadership shown in singing the Singapore-Australia Memorandum of Understanding (MoU) to establish the Singapore-Australia Green and Digital Shipping Corridor (GDSC) arising from a side meeting at the recent ASEAN meetings in Australia.[5]

The strategic partnership will delve into creating zero or near-zero greenhouse gas (GHG) emission fuel supply chains for the maritime industry, encompassing infrastructure development, standardization, and training programs.

Overview of the current maritime (seafarer) labour market and training system

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[2] Maritime Union of Australia, *Stopping the Race to the Botton on Maritime Safety in Australia*, May 2021.
[3] IMAP – Accelerated assessment of industrial chemicals in Australia, Ammonia and Ammonium hydroxide: Human health tier II assessment, 4 July 2014.
[4] Independent Review of Domestic Commercial Vessel Safety Legislation and Costs and Charging Safety Report—Phase 1 ,September 2023, p.29-30.
[5] Minister Catherine King, *Singapore and Australia formalise collaboration to establish green and digital shipping corridor*, 6 March 2024, https://minister.infrastructure.gov.au/c-king/media-release/singapore-and-australia-formalise-collaboration-establish-green-and-digital-shipping-corridor

The maritime or sea transportation aspect of all industry sectors relying on vessels and STCW qualified seafarers for their marine transportation needs is currently experiencing an acute shortage of seafarers across all occupational groupings – Ratings, Engineers and Deck Officers. This is impacting on:

- The existing domestic Australian coastal trading fleet transporting products such as construction materials e.g. cement;
- The offshore oil and gas sector, particularly new offshore facility construction; and
- Defence support vessels crewed by civilian seafarers as well as other 'government' vessels like the Antarctic supply vessel.

Additionally, the ability to crew vessels for the emerging offshore wind energy sector and the commencement of offshore oil and gas facility decommissioning is being impacted by the STCW seafarer shortage.

There are also shortages of DCV Deck Hands, Masters and Coxswains in some sectors and regions. This is impacting on:

- Some aspects of the towage (tug) sector where non-STCW qualifications are permitted under FWC approved EBAs;
- Some segments of the fishing sector; and
- The Australian expedition cruise vessel sector.

Participation in broader decarbonisation initiatives

The MUA also participates in broader government initiatives around decarbonisation. In general in these areas there is a lack of awareness of the role of the maritime sector and vessels in decarbonisation. The MERNAP initiative has been positive in assisting in raising this profile, but much more work needs to be done.

In this context it was heartening to see that Jobs and Skills Australia report *The Clean Energy Generation: Workforce needs for a net zero economy* identified 'Marine Transport Professionals' as critical occupations that Australia will need to grow and develop to support the energy transition. It would be good to refer to that in the final MERNAP report.

2. Are there specific impediments for maritime sector employers / employees to access government skills and training programs?

In relation to employers of STCW seafarers the main impediments are:

- Lack of access to TAFE fee-free places to reduce training costs. The lack of access has arisen due to inadequate seafarer demand advice that flowed to State VET agencies in the lead up to settlement of the Commonwealth-State funding agreements over 2022 and 2023. Seafarer STCW qualifications (where the most critical seafarer skills shortages exist) in the MTP were not placed on state/NT skills lists, a step necessary to ensure that TAFE fee-free places were offered by RTOs with seafarer STCW qualifications on scope. This also means that in many cases state/NT training assistance measures are also not available for STCW training.
- Lack of incentivisation to make surplus berths (cabins) available for mandatory sea time. For employers of STCW seafarers that either do not own or operate vessels, or where the vessels they do own or operate do not have sufficient berths (cabins) for trainees and cadets to undertake mandatory sea time to gain an AMSA Certificate (occupational licence), there is no Commonwealth or State program or assistance measures that incentivises a vessel owner or operator that does have surplus and available vessel berths in excess of those needed for their own skills replenishment requirements, to offer those berths to other vessel owners or

operators. Vessel owner/operator companies which agree to provide access to berths for Trainee Ratings from another company incurs costs such as food and accommodation for Trainees/Cadets, the likely additional catering crew required to support the additional onboard crewing complement, work/training supervision, and performance of VET assessment functions (completion of AMSA Task recording books).

- The high costs of accommodation at or near the RTOs that offer STCW training and the high costs of air travel to transport Trainees and Cadets to those RTOs for off-the-job training.

In relation to employees, the main impediments are:

- The cost of revalidation of their AMSA Certificate for unemployed STCW qualified seafarers who wish to return to seagoing employment, which involves an RTO cost, a travel cost to attend one of the RTOs offering STCW seafarer revalidation programs and accommodation at the RTO (which for most seafarers are not close to their home location).
- The lack of any Recognition of Prior Learning (RPL)/Recognition of Current Competency processes to enable partially qualified (typically non STCW) seafarers (some of whom may be STCW qualified in another nation or former Navy Able seafarers, but do not meet the Australian Integrated Rating qualification requirements) to be assessed and have access to a training program to be upskilled to an STCW qualification.

The Government's response the recommendations in the Strategic Fleet Taskforce report on 8 November 2023 is providing the framework for addressing in these impediments – see in particular recommendation 9, 11 and 12.

In the context of the focus of this submission, the Government's response to recommendation 15(c) *Links to decarbonisation efforts and use of green fuels* is significant. The Government agreed with the Taskforce recommendation that the Government explore where government investment in reducing greenhouse gas emissions might extend to reducing or eliminating emissions from strategic fleet vessels. We could therefore expect that the selected operators of strategic fleet vessels will adopt exemplary policies and strategies to ensure that their seafaring workforces are trained and skilled to work safely with new renewable vessels fuels as they are introduced on strategic fleet vessels, or transported on strategic fleet vessels.

3. How can government skills and industry effectively prepare a skilled workforce for a decarbonised maritime sector? What specific skills differentiate the maritime workforce from the other sectors in decarbonising?

The skills of the maritime workforce will in large part be existing skills that workers in the shipping and stevedoring sectors are already required to hold, adapted to be used in a new context.

For example, the seafaring skills and qualifications involved in working on vessels installing offshore wind energy projects are almost identical to those required on vessels constructing offshore oil and gas projects, as well as many other vessels, so seafaring is not a skill specific to clean energy production.

The transition will nevertheless involve some new skills, but largely draw on established skills (although aspects of training and qualifications will need to be updated). For example, stevedoring workers currently handle components for onshore renewable energy in ports. This involves bulk and general stevedoring workers handling large and delicate components for wind turbines, such as blades, towers and nacelles. Solar panels are transported in containers, which may go through specialised container terminals in the capital cities, or bulk and general terminals in smaller ports.

There is currently no licencing or VET training for the crane skills currently used for handling onshore renewable energy components in ports, including vessels' crane, mobile harbour cranes, and dual lifting. Crane licencing is currently being reviewed by Safe Work Australia, which provides a route to developing licencing and training in these areas Developing new High Risk Work Licences for vessels' cranes, mobile harbour cranes and dual lifting and ensuring that the competencies/experience are integrated into existing qualifications or becomes a recognised skill set is important to secure the skills currently needed to install offshore wind projects.

4. When will you need access to a workforce possessing relevant skills to design, implement and work safely in your decarbonised operations (Now, 3, 5, 10 years)?
As a labour union we do not employ seafarers. However as an organisation representing seafarers and involved in the dialogue around introduction of new vessel's fuels and energy systems, we note that many vessel owners and operators are already engaged in operational trials of vessels using new fuels and energy systems. For example, on 20 December 2023, CSL announced a 20-year strategic partnership with Adelaide Brighton Cement Ltd. (Adbri) to build and operate the world's first fully electric battery capable self-unloading vessel for use in Australia.[6]

Additionally, wind energy project installation could begin in Australia as early as 2025 or 2026.

That suggests that access to a workforce possessing relevant skills to design, implement and work safely in decarbonised operations and in new decarbonised industries requiring specialist skills is imminent, and that planning for adjustments to qualifications and training to supply the skilled workforce for these vessels and vessel operations must begin immediately, given the lag time in upskilling existing workers or training new entrants to meet emerging requirements.

We refer the Department to a research paper on *Seafarer training and skills for decarbonized shipping* produced by DNV for the Maritime Just Transition Task Force[7] for further consideration of the issues.

Maritime Sector Decarbonisation Challenges
5. What are the major skills shortages that are impacting the maritime sector's decarbonisation transition?
The MUA covers Ratings occupations (AIMPE and AMOU cover engineers and deck officers respectively). Ratings occupations include Integrated Rating (VET Certificate Level III), Chief Integrated Rating (Certificate Level IV), Marine Cook (Certificate Level III) and Caterer (Certificate Level III).

Among those, the occupation in critical short supply is Integrated Rating (at 12 March 2024 there is not a single Integrated Rating available in Australia). There is also a shortage of Chief Integrated Ratings.

While there is a shortage of Marine Cooks and Marine Caterers, there are qualified cooks and caterers available in the wider workforce who could potentially undertake the Certificate of Safety Training (COST) Skills Set to achieve the relevant AMSA Certificate to add to their cook and caterer qualifications to be ready for work on vessels as Marine Cooks and Marine Caterers.

[6] Canadian Chamber of Shipping, *CSL signs agreement to build fully-electric self-unloading bulker*, 22 December 2023, https://shippingmatters.ca/canada-steamship-lines-signs-agreement-to-build-fully-electric-self-unloading-bulker/
[7] DNV, *Seafarer training and skills for decarbonized shipping*, https://www.dnv.com/Publications/seafarer-training-and-skills-for-decarbonized-vesselping-235124

Because these seafaring occupations are in crucial short supply for the whole maritime industry, that will flow through to the industry decarbonisation transition unless addressed.

6. In developing your sustainability plans / planning your decarbonisation pathway, what strategies have you considered for accessing critical skills that you may need?
NA

7. How are existing skills shortages being impacted by the need for new skill sets to transition the maritime sector towards net zero?
From our perspective, existing skills shortages are not being currently impacted by the need for new skill sets to transition the maritime sector towards net zero, but as we state in response to Q4 above, the impact is imminent and will inevitably be realised in the next five years.

Future Needs
8. What are the essential components that should be considered in the development of training for your segment (e.g. port services, fishing, tourism, coastal shipping, international seafaring) of a decarbonised maritime sector?
We make the following points. First, as far as shipping is concerned, the critical issues that policy makers, program managers and regulators need to appreciate and grasp is that, as explained in detail above, there are two components to the shipping sector's workforce skills requirements: (i) those whose qualifications and Certificates (occupational licences) are determined by the international STCW standards regulated under the Navigation Act/AMSA Marine Orders 70-73, and those whose qualifications and Certificates are regulated under the National Law Act/AMSA Marine Orders 504, 505 and 74.

That means there is no substantial differences in the core qualifications and skills needed by the various subsectors in the examples in Q8 such as coastal shipping, international shipping, cruise shipping, offshore energy marine transportation, fishing and aquaculture – all those sectors (with the exception of international shipping which exclusively operates under STCW standards) may have a mix of STCW and non-STCW vessels/seafarers. It will depend on the type of vessel (often determined by vessel length, vessel power and vessel operating conditions/operating area). That fundamental delineation will not change with the decarbonisation transition.

Having said that, the core qualifications in the STCW segment already need to be supplemented by MTP Skill Sets that lead to the awarding of additional Certificates by AMSA for certain types of vessels e.g. tankers carrying oil and oil based products, LNG tankers, chemical tankers etc.

What will change is the particular skills and training needed to address the risks from the emergence of new vessel propulsion and energy systems, as the current fossil fuel propulsion fuels and energy systems are phased out.

Second, that new decarbonised industries are resulting in new vessel cargoes such as hydrogen (irrespective of the vessels' own propulsion systems) that create risks for the workforce for which modified skills and training will be required. Additionally, the installation of offshore wind energy towers requires specialist heavy lift craneage requiring specialist skills, which requires new Skills Sets and Certificates, yet to be designed and implemented.

9. How do skill shortages for decarbonisation initiatives vary between regional and city areas within Australia?

As described above, seafarers are a national workforce, who are generally required to travel to the small number of RTOs delivering the relevant qualifications. They work all over the country and internationally.

Consideration must be given to the training required to support the development of a significant offshore wind industry across Australia, potentially beginning with construction in Victoria in 2026. This will require a large number of seafarers to crew construction vessels. Given there are already four RTOs with the core STCW Integrated Rating qualification on scope (or about to be placed on scope) for what is a thin market relative to many other industries, our view is that any other State that wants to provide TAFE fee free places for Integrated Ratings training needs to deliver it under the auspices of one of those four existing RTOs, as part of the National Maritime Skills Network, that will serve as a foundation for a National Maritime Centre of Excellence, being developed by the Jobs and Skills Council for maritime.

Having a spread of delivery sites for training for STCW qualifications but a limited number of RTOs with the core Integrated Rating qualification (and other STCW qualifications/skill sets on scope) is important not just for seafarers but also for the technical crew on board wind turbine installation vessels (such as electricians, riggers, and crane operators), who will be required to hold a Certificate of Safety Training (COST), an STCW-compliant Skill Set necessary to achieve a COST certificate issued by AMSA (as per AMSA's draft Marine Order 55).

The final MERNAP should support the establishment of STCW-compliant maritime skills training in Victoria under the arrnagements we propose

10. What new or emerging platforms can strengthen training delivery reach in your segment of the maritime sector?
The JSC for the transport and logistics sector, ISA and its Maritime Strategic Workforce Planning Committee has already foreshadowed establishment of a National Maritime Skills Network that will serve as a foundation for a Maritime Centre of Excellence.

The MUA supports this proposal and considers it will be an important platform to strengthen training delivery in the shipping sector, principally through enhancing collaboration between the relatively small number of STCW RTOs delivering STCW qualifications and altering the competitive training delivery model and culture which emerged, with detrimental impacts, over the last decade.

11. To what extent do you think skills in the clean energy sector are transferable to maritime decarbonisation initiatives and what level of comfort would you have in deploying those skills directly in your operations?
As we have submitted above, existing qualifications and Licences (Certificates) are highly transferable to maritime decarbonisation initiatives.

12. As an employer, what would you need to be confident that training programs are keeping up with the latest advancements in low and zero carbon technology developments and industry needs given the uncertainty around fuel and technology choices?
NA

13. How do you see your maritime energy transition providing opportunities for attracting talent from other clean energy sectors and also increasing female participation in the maritime sector?
We see that there could be significant opportunities as part of just transition planning for offshore oil and gas sector seafarers to transition to the offshore wind energy sector.

We refer the Department to a study of those opportunities undertaken by the Blue Economy CRC, particularly Chapter 5: *Offshore Wind Employment: What Role can it Play in a Just Transition for the Coal, Oil and Gas Workforce?*[8]

[8] Blue Economy CRC, *Offshore Wind Energy in Australia: Final Project Report*, July 2021, https://blueeconomycrc.com.au/wp-content/uploads/2022/05/BECRC_OWE-in-Aus-Project-Report_P.3.20.007_V2_e190721.pdf

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SAL 2024-011

12 March 2024

Maritime Emissions & Environment - Surface Transport Emissions & Policy
Department of Infrastructure, Transport, Regional Development, Communications and the Arts
Canberra

Submitted by email: (MERNAP@infrastructure.gov.au)

Dear Maritime Emissions & Environment - Surface Transport Emissions & Policy Team,

Shipping Australia Ltd.'s (SAL) comments to MERNAP Issues Paper 3: Skills and Training

A) About Shipping Australia

1. Shipping Australia is the principal Australian peak body that represents organisations that are locally owned and/or locally active in the ocean freight shipping industry. We are recognised as an Australian national shipping association by the World Shipping Council, the Global Federation of National Associations of Ship Brokers and Agents, and by the International Chamber of Shipping.
2. Shipping Australia provides policy input to Australian State, Territory, and Commonwealth government bodies. We are consulted by the national, regional, and international media for our expert commentary on shipping and trade.
3. Collectively, our members employ about 3,000 Australians. Our membership includes Australian ports, the local arms of global shipping and domestic shipping agents, the local arms of global and domestic towage companies, the local arms of ocean shipping lines, and a wide variety of Australian-owned and operated maritime service providers.
4. Our members provide services in ocean freight, local seaport cargo handling, domestic harbour towage, Australian marine surveying, and domestic pilotage, among other services. Our members handle nearly all Australian containerised seaborne cargo, along with a large volume of our car and bulk commodity trades.

B) Below is our feedback in relation to the MERNAP Issues Paper 3: Skills and Training

5. The majority of Shipping Australia's members are engaged in the international ocean freight shipping industry. In terms of skills and training relating to decarbonisation, digitalisation, and other emerging industries, these international members will be aligned with the training framework established by the International Maritime Organization (IMO).
6. Shipping Australia recommends that any proposed national maritime educational rules, laws, systems, and standards related to decarbonisation and digitisation should be consistent with, and aligned to global maritime education frameworks, IMO. Some of the reasons for this recommendation are listed below:

a) Given the importance of ocean-going trade to Australia and Australians, establishing inconsistent training standards creates inefficiencies and operational difficulties in Australia's trade.

b) International maritime training policy regarding decarbonisation and digitisation is under development by the IMO. This presents an opportune moment for Australian government officials, who focus on international affairs, to collaborate with their overseas counterparts. Together, they can help shape international maritime education policy concerning decarbonisation and digitisation in a manner that aligns with Australia's needs.

c) Pilot projects for training aligned with the IMO, set within the Australian context, with clear objectives and transparency, will pave the way for managing adaptability in response to strategic shifts and technological maturity.

d) Alignment with the IMO in terms of workforce training will promote sustainability, efficiency, and safety in maritime operations as they transition to new fuels, technologies, and evolving port systems. Regarding ports, international consistency is crucial, as Australian ports predominantly serve international shipping lines operating under the IMO framework.

e) Aligning maritime education with international standards presents an excellent opportunity to remain an attractive destination for maritime education. This alignment maximises benefits for both international and domestic students, ensuring Australia continues to be a preferred choice for maritime education.

7. The funding design for training the national maritime workforce as it relates to decarbonisation and digitalisation and other related initiatives should be proportionally distributed across the national supply chain benefactors.

8. SAL Secretariat would welcome the opportunity to participate in any working groups aimed at addressing aspects of the MERNAP Strategy and implementation plans.

Authorised by:

s 47F

Chief Executive Officer

Seafood Industry Australia
The Voice of Australian Seafood

SEAFOOD INDUSTRY AUSTRALIA

Seafood Industry Australia submission to the Maritime Emissions Reduction National Action Plan (MERNAP) Issues Paper: Skills and Training

12 March 2024

Submitted to MERNAP@infrastructure.gov.au 12 March 2024.

About SIA

Seafood Industry Australia (SIA) is the national peak-body representing the Australian seafood industry as a whole. With members from the wild catch, aquaculture and post-harvest sector, including state, territory and sectorial associations, along with seafood businesses and producers. We are the voice of Australian seafood.

Currently valued at more than $3.5 billion and directly supporting more than 17,000 Australian families (ABARES, 2021) and thousands more downstream in logistics and sales, the Australian seafood industry plays a key role securing Australia's food base, creating and maintaining jobs, boosting economic activity, and generating valuable export income for Australia and our rural and regional communities.

Growth of our industry delivers increased jobs and investment in rural and remote Australia, and puts more than 1.5 billion meals of quality, healthy, sustainable seafood for Australian families and our international neighbours.

SIA provides consumers, Government and other stakeholders with confident and united representation.

Our mission is to Promote, Protect and Develop the Australian seafood industry on the national and international level. Our unity indicates that we love what we do, we stand by our products, and that our products are the best in the world.

Our Pledge

We are the Australian seafood industry, and we are committed to putting the best Australian seafood on your table now and for generations to come.

- To ensure we do this in ways we are all proud of, we promise to:
- Actively care for Australia's oceans and environment and work with others to do the same;
- Value our people, look after them and keep them safe;
- Respect the seafood we harvest and the wildlife we interact with;
- Be transparent and accountable for our actions;
- Engage with the community and listen to their concerns; and,
- Continually improve our practices.

This is our pledge to you.

Submission recommendations

SIA recommends that:

1. The National Agricultural Workforce Strategy's recommendations be implemented as a matter of priority to supercharge agricultural sectors growth and prosperity.
2. The Skilling Australians Fund[2] needs urgent review and reform to support businesses and industry to direct and improve localised, regional training and to increase the accessibility and capabilities of RTO's. Challenges regarding training accessibility in regional areas must be addressed.
3. The Jobs and Skills Councils (JSCs) must drive implementation of improvements to the VET sector benefiting the seafood industry.
4. A reset of Australia's migration policy be prioritised to increase access to skilled and unskilled labour, transferring the priority setting around skills and experience required to industry and businesses (a key recommendation from the National Agricultural Workforce Strategy).
5. Training be provided to all visa holders and their families regarding their rights and entitlements as migrant workers in Australian workplaces, and what action can be taken if they are not being treated ethically and lawfully.
6. A review and reform to the current visa framework to provide longer terms, greater access to a wider variety of migrant workers be prioritised.

Introduction

SIA welcomes the opportunity to provide feedback on the *Maritime Emissions Reduction National Action Plan (MERNAP) Issues Paper: Skills and Training*. This submission covers some of the questions outlined in the MERNAP issues paper, and some additional points that SIA believes are important.

SIA notes that the Australian wild catch and aquaculture sectors already have a number of early adopters who are well advanced in transitioning to decarbonised operations. SIA partnered on the project 'Climate Resilient Wild Catch Fisheries', based on the key question "how can the fishing industry demonstrate rapid and practical progress to achieve climate resilience by the fisheries, aquaculture & supply chain by 2030?"

Additionally, Alternate energy solutions for aquaculture, was recently contracted and will provide a wholistic decarbonisation decision platform as the aquaculture industry. The project offers both a 'one stop shop' approach for viable available options, as well as emerging solutions that are forecast.

Fishing and aquaculture support vessels play a vital role in the Australian food supply chain and comprise around 10,000 active vessels – around one third of the total Australian fleet of approximately 31,000 Domestic Commercial Vessels (DCV).

The average age of Australian fishing vessels is +30 years, with many currently relying on outdated engines and equipment, making the integration of fuel-efficient engines or alternate fuels a complex and costly endeavour. Many Australian fishing and aquaculture support vessels operate in unpredictable and dynamic environments and are required to travel long distances and operate for extended periods, requiring substantial fuel consumption. Reducing emissions whilst maintaining productivity will necessitate a carefully planned process. Designing new vessels or retrofitting existing ones will require significant investment and technological expertise.

Effective emissions reduction in fishing and aquaculture support vessels will require innovative solutions and collaborative efforts between the industry and governments. Emission reduction targets must be balanced with the socio-economic interests of the Australian seafood industry, particularly within regional and coastal communities.

This issue is compounded by the current labour market as the Australian seafood industry continues to compete with other sectors for people. This issue crosses multiple government jurisdictions and departments including migration and education, and the direct financial, productivity and sustainability consequences of the current labour shortage cannot be understated.

The lack of access to on-water crews has many fishing vessels tied up at the wharf and unable to operate. Without a skilled workforce, aquaculture farms are unable to meet productivity targets and manage growth sustainably. The post-harvest sector is similarly feeling the labour pinch.

SIA notes that migration is a central element to the Australian seafood industry's identity. The current Australian workforce cannot fulfil the ongoing requirements of the wild-catch, aquaculture and post-harvest sectors. There is also an opportunity for the industry to better engage with people already living in these remote areas, such as First Nations to meet growing labour requirements. The expansion rates of the aquaculture and post-harvest sectors forecast in the short to medium term will worsen the already tough labour situation. As it grows the seafood industry requires both unskilled and professionally skilled personnel.

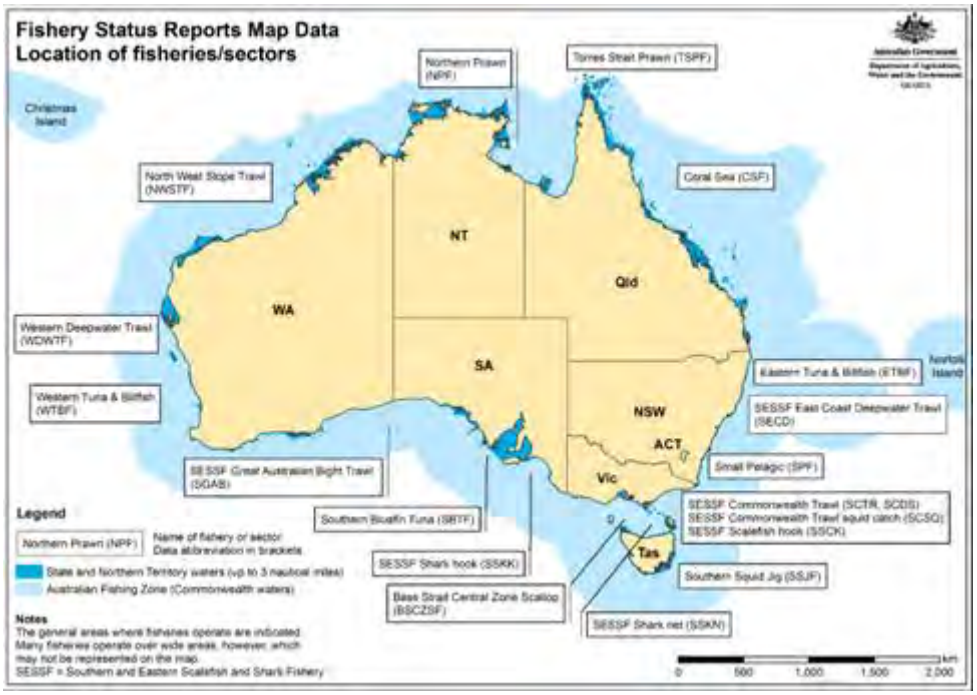
Gaps in skills and training support

A lack of standardised training programs, both nationally and internationally, has the potential to create barriers to the safe and effective use of alternative fuels in terms of where further analysis of standards, regulations and communications requirements to build confidence in the use of biofuels as an emissions reduction strategy, SIA believes the seafood industry would benefit from greater knowledge of, and engagement in:

- Fuel quality testing.
- Emissions standards and testing will be essential to assess the environmental benefits and emissions reduction associated with the use of biofuels, ensuring that they genuinely align with emission reduction goals.
- Safety guidelines.
- Feedstock sourcing and sustainability criteria will be critical to avoid negative environmental and social impacts such as deforestation and food crop displacement. In particular this will need to be communicated to consumers to inform perceptions as to the benefits, safety and environmental impact of biofuels.
- Modelling, information and guidance on the risk of biofuel feedstock pricing volatility.

The seafood industry faces an uphill battle to appropriately upskill its people with limited or no access to training providers across most states and territories. The RTO funding model is flawed and out of date, struggling to maintain fisheries and aquaculture related programs.

Regional engagement and access to training is particularly important. Below is a map of the fishing sector which shows the national spread of activity. Most of the fishing and aquaculture operations are in regional and remote areas of Australia.



[Fishery status reports map data - DAFF (agriculture.gov.au)]

Futures of Seafood

The Australian seafood industry faces continued, increasing economic pressure from a variety of sources including competition for ocean access, increasing compliance obligations, climate change and the cumulative impacts of government policy.

Industry, governments and the community need to collectively understand the social, economic, environmental and governance values associated with the industry to understand the impact of decisions that change ocean access, what the breaking points are as well as what can drive growth opportunities and business certainty.

Recognizing these challenges, SIA has successfully campaigned for initiation of the *Futures of Seafood* study. This program is a novel study that will describe, map and model the spatial, economic and social impacts of government targets and decisions, including but not limited to:

- offshore energy zones and proposals,
- marine parks and environmental regulation,
- oil and gas,
- desalination plants,
- tourism and recreational use and rocket launch pads.

With this knowledge, the people and businesses that support Australian seafood can make decisions and plans around the potential impacts to their future. This is also what government needs to make informed policy that achieves an inclusive and sustainable future.

SIA was extremely excited to secure a funding commitment from Australian Government's Department of Agriculture, Fisheries and Forestry (DAFF) and Department of Climate Change, Energy, the Environment and Water (DCEEW) toward the ground-breaking *Futures of Seafood* study.

The federal government, through its support of the *Futures of Seafood* study, has acknowledged the industry plays a crucial role in Australia's long term food security and the current cumulative economic, social and regulatory impacts on Australia's seafood suppliers is not well understood.

Industry programs

Industry is already taking practical steps to address the strain around workforce development.

With support from the Department of Agriculture Fisheries and Forestry (DAFF) and FRDC, SIA is in the process of developing an online platform specifically for the seafood industry where employees (prospective and current) will be able to build their skills and knowledge of the industry, identify career progression and mentoring opportunities. The core purpose of SeafoodCareers.com.au is to increase participation (employment) within the Australian seafood industry (commercial including indigenous and rec commercial). The primary target is working age individuals (16+). SeafoodCareers.com.au will be launched in 2024.

In 2022 it was announced that Jobs and Skills Councils (JSCs) are being established to provide industry with a stronger voice to ensure Australia's vocational education and training (VET) sector delivers better outcomes for learners and employers. SIA is engaged in this process to ensure the seafood industry's needs are represented.

Mental health is one of SIA's main priorities. Not all fishers are okay – and that's not okay. SIA's mental health program Stay Afloat is now being rolled out nationally. Delivering on a commitment from the 2022 Federal election, the Stay Afloat Program is receiving $1.5 million over two years to support the Australian seafood community build resilience and manage mental health challenges. This follows a successful pilot program in Newcastle (NSW), Lakes Entrance (Victoria) and Darwin (NT). The National Stay Afloat Program is being rolled out to 50 seafood communities around the country to help break the stigma associated with poor mental health and build community resilience.

The safety and wellbeing of our industry and its people is paramount. We need to do everything we can to ensure our people and our operations are the safest they can be. SIA's safety project, Sea Safe, is now being rolled out nationally. This is a program by industry, for industry. It picks up on the great research already done by FRDC and their stakeholders under the National Seafood Safety Initiative (SISI), along with the work of SeSafe and Fish Safe, transitioning them into one integrated, national program.

WISA is the only national organisation representing women working in the seafood industry and champions inclusive and diverse voices within the sector. WISA's Turn the Tide national mentoring program is designed to connect, enable, support and champion all women working in the industry.

Thank you

SIA, on behalf of our members and the entire Australian seafood industry, would like to thank you for taking the time to review our submission. I welcome the opportunity to discuss any of our requests with you further and can provide more details if needed. Finally, I would like to thank you in advance for your support of the future of Australia's seafood industry.

Yours sincerely,

s 47F

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Maritime Emissions Reduction National Action Plan Issues Paper: Green Shipping Corridors and Partnerships

Response from the Maritime Union of Australia

5 April 2024

Department of Infrastructure and Transport

Submitted via: MERNAP@infrastructure.gov.au

s 47F **, National Secretary,**

Maritime Union of Australia

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Background

This submission has been prepared by the Maritime Union of Australia (MUA).

The MUA represents approximately 14,000 workers in the shipping, offshore oil and gas, stevedoring, port services and commercial diving sectors of the Australian maritime industry.

This includes coal export terminals and port and shipping services to many emissions-intensive industries, such as aluminium smelters and steel manufacturing facilities. The MUA is also part of the Offshore Alliance (with the Australian Workers' Union) which represents workers on offshore oil and gas facilities.

The MUA is a Division of the 120,000-member Construction, Forestry and Maritime Employees Union Union and an affiliate of the 20-million-member International Transport Workers' Federation (ITF).

The MUA supports the government taking action to address climate change. We are working hard to prepare our membership and industries for the necessary transition to a zero-net emissions economy and society. We recognise the need to urgently reduce emissions globally and in Australia to prevent global heating from exceeding 1.5°C, but this will have a very significant impact on the jobs held by many of our members. Our ability to provide climate leadership in these industries depends on the ability of governments and of our union to deliver a just transition to our members working in fossil fuel industries, and their communities. If we cannot provide such a transition, we risk significant reductions to workers' living standards, deepening inequality, and a very significant political backlash which could stall the transition we need.

Developing a nationally cohesive approach

We look forward to the role of the final Plan in establishing a nationally cohesive approach to deliver on the policy objective of reducing emissions in the maritime sector. The Paper usefully identifies a raft of initiatives and collaborations at national government, port and industry level. However, a much stronger role for government and clear policy levers need to be identified as part of the Plan.

The government must also carefully examine which actors in the vessel 'value chain' or 'procurement chain' have the economic power to drive the decarbonisation effort and therefore what Government policy and regulatory approaches are needed to assist those actors who can make decisions to advance decarbonation. As Australia has very few ship owners, but a very large ship chartering sector, and quite a large ship operator sector, the principal decision makers who can make the economic decisions which will drive decarbonisation trends are the vessel charterers (both importers, exporters and government e.g. Defence), followed by the vessel operators. The charterers and vessel operators are involved in a range of sectors – in resources/energy, in agriculture/aquaculture, in construction materials, in wholesale and retail trade and in marine tourism (passenger sectors).

Policy should be developed to influence vessel chartering decisions, and vessel operators. This in turn should assist in influencing shipowners who are largely located overseas.

There are also domestic vessel owners and builders, particularly for smaller vessels. Targeted policies for these areas are recommended below.

IMO standards, decarbonisation and the National Law

The paper usefully outlines the role of Australia and the IMO in developing regulatory settings. Global adoption of the IMO's regulatory settings will be critical to the facilitation of decarbonisation in the global maritime industry. Yet in Australia, domestic vessel regulation and qualifications under the National Law have been almost entirely decoupled from these global standards. The MUA has been advocating for years that this is a serious problem that must be rectified by raising domestic safety, crewing and qualifications to align more closely with international IMO standards in one streamlined system.[1] The challenge of decarbonisation once again highlights the need to review domestic standards to better align with IMO international standards. This must be considered in the government's ongoing review of the National Law – we are concerned that perhaps this has not been the case.

Questions for Industry Stakeholders – Australia's role in the IMO

How would an IMO-regulated GHG fuel standard impact your organisation? How can the government support the implementation of this policy to maximise domestic benefits?

As outlined above, a streamlined approach to implementing international standards domestically is needed.

Strings must also be attached to government funding for decarbonisation projects to ensure that that they maximise domestic economic and social benefits alongside achieving decarbonisation. For example, Australian flagging of ships, training of Australian crew, support for Australian shipbuilding and manufacturing should all be incorporated into any requirements for government funding under the Plan.

Green Shipping Corridors – Australian Approaches

- *In what ways can the Government make tangible benefits available from the development of green shipping corridors for ports, maritime workers, domestic commercial vessels, energy providers and other industries?*

[1] Maritime Union of Australia, Stopping the race to the bottom on maritime safety, May 2021.

- *How should the Government be engaged in brokering green shipping corridors? At what point do you think the Government can add value in establishing new green shipping corridors? Conversely, at what point should the Government step back and let private sector organisations broker these arrangements?*
- *How can green shipping corridors build Australia's capability to supply and use zero and near-zero emission fuels? Is there a role for the Government to ensure these benefits are shared by the domestic maritime sector?*

Answers to these questions are across the following sections.

The paper focusses on the many significant international initiatives on green shipping corridors that the government is participating in and supporting. This is very welcome.

However a similar process must also take place domestically to identify Australian routes and ports which can serve as Green Shipping Corridors. This work should include both existing domestic shipping routes, and domestic freight routes which could benefit from modal shift of freight to ships, in terms of reliability, climate resilience, and emissions reduction. This is an important outcome that should be incorporated into the final MERNAP. BITRE should already hold this data, for both onshore and maritime freight routes.

Emissions reduction through modal shift of freight from a busy trucking route onto ships could quickly achieve substantial emissions reduction while using existing technologies.

Important high-volume routes that are candidates for domestic Green Shipping Corridors include:

- The Queensland bauxite trade from Weipa/Amrun to Gladstone. This route is owned and managed by Rio Tinto, transporting bauxite from Rio Tinto's mines, on board their ships and to their alumina refineries. Rio Tinto is on a decarbonisation pathway. There are substantial renewable fuel manufacturing facilities planned in the port of Gladstone, which could be used for ship bunkering.
- The domestic expedition cruise sector corridors, across northern and NW Australia. Part of the sector's appeal is the pristine natural environment of key routes and stopovers.
- The Bass Strait freight and passenger services from Melbourne to Tasmania. This is a high-volume route, carrying cargos to and from a State that promotes its green credentials. There are significant plans for renewable fuel manufacturing in northern Tasmania, and for renewable fuel bunkering in the Port of Melbourne. Renewable fuel manufacturing planned for Portland Vic could also supply vessels in Geelong.
    - Bass Strat operators already benefit from the Tasmanian Freight Equalisation Scheme (TFES). Decarbonisation objectives could be integrated into that scheme in return for the benefits that flow to ship owners/operators which benefit from the TFES.
- Consideration should be made of whether a future sea freight route between West Australia and Victoria, designed to carry consumer goods and ensure that the flow of goods to West Australia was not interrupted by onshore floods and disruption, could be a candidate for a Green Shipping Corridor.

Where shipping companies are making announcements on shipping decarbonisation, government should also carefully consider whether additional investment could leverage wider access to renewable energy sources, to ensure that they are also accessible to other ships using the same wharves or port area. For example, CSL are investing in an electric battery-capable self-discharging ship operating between Klein Point and Adelaide.[2] If infrastructure is being put in place to support this ship then the government and port authority could look at ensuring this infrastructure supports other ships using the same wharves at either end, and make it a domestic green shipping corridor.

The Strategic Fleet as a model for maritime decarbonisation

The strategic fleet procurement process can contribute to the domestic vessel decarbonisation plan by setting standards for the rest of the domestic shipping sector - without making strategic fleet vessels too much more expensive to operate.

We note Strategic Fleet Taskforce recommendation 15(c) *Links to decarbonisation efforts and use of green fuels* in which the Taskforce recommends that the Government explore where Government investment in reducing greenhouse gas emissions might extend to reducing or eliminating emissions from strategic fleet vessels.

The Taskforce report acknowledged a number of Government commitments to decarbonisation initiatives in the maritime sector including (i) the International Maritime Organisation's (IMO) roadmap for reducing emissions from shipping; (ii) Australia's membership of Mission Innovation, and in particular its 'Zero Emission Shipping Mission' which aims for at least 5 per cent of the global deep-sea fleet measured by fuel consumption to be made of ships capable of running on well-to-wake zero-emission fuels by 2030; and (iii) Australia's commitment to the Clydebank Declaration (established at COP26) that has committed Australia to support the establishment of green shipping corridors, which are a subset of initiatives referenced in the Issues Paper.

The Taskforce mentioned that Government decarbonisation programs may have an impact on the maritime sector e.g. Australia's emissions safeguard mechanism may have an impact on onshore industry that uses shipping, particularly large resources and energy production companies that export resources and energy products to global markets in ships, many of which will soon be required under forthcoming climate disclosure laws to report on their scope 2 and 3 carbon emissions, which will capture the ships they own operator or charter.

The Taskforce suggested that establishing and operating the strategic fleet could be linked to the Government's broader efforts and commitments to reduce greenhouse-gas emissions, which include decarbonisation of the maritime sector.

In that context we see a significant opportunity for the strategic fleet procurement process to specify that potential owners/operators of strategic fleet vessels demonstrate a pathway to meet and exceed the IMO 2023 GHG strategy targets on all strategic fleet ships they may ultimately be contracted to operate. We note the absence of that specification in the Draft strategic fleet

[2] https://cslships.com/news/csl-and-adbri-partner-to-build-first-fully-electric-battery-capable-self-unloading-ship/.

guidelines circulated by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts for stakeholder feedback on 2 April 2023.

The MUA will be advocating in its response to the consultation paper that this be an eligibility requirement for a potential strategic fleet vessels operator, and we hope that will be accepted by the Department in keeping with the expectations enunciated by the Taskforce.

We strongly urge Departmental officers preparing the MERNAP to confer with their Strategic Fleet Implementation colleagues to propose they strengthen the next iteration of the strategic fleet guidelines to include a provision to meet and exceed the IMO 2023 GHG strategy targets.

Should that requirement become a feature of strategic fleet vessel operations, we believe that will have a substantial demonstration effect on the remainder of the Australian registered shipping fleet, and in that way make a significant contribution to accelerating the decarbonisation of Australian ships, and also contribute to the MERNAP aims to:

- Support Australia's national emissions reduction targets and contribute to global shipping decarbonisation;
- Future-proof the Australian maritime sector and avoid a later accelerated, costly and disruptive transition by setting early signals; and
- Signal to global partners Australia's clear pathway to net zero emission shipping in our waters and ports.

In order to ensure the success of such a strategic leaderships approach, we advocate that MERNAP identify Government assistance programs that will support strategic fleet ship operators to meet and exceed the IMO targets, building on initiatives such as the Safeguard Transformation Stream (STS) within the Powering the Regions Fund PRF).

Training of Australian crew

How can green shipping corridors provide training and experience in low emission fuels and technologies for seafarers? Is there a role for the Government to ensure these benefits are realised?

It is critical that Government use its policy levers and any funding to ensure that Australian seafarers are trained in the new fuels and technologies. Requirements to train and employ Australian seafarers should be attached to government funding and licencing decisions for all renewable energy and hydrogen projects that involve shipping. Examples include:

- Hydrogen Headstart funding
- Funding for hydrogen targets, being discussed as part of the National Hydrogen Strategy review
- Offshore renewable licencing decisions
- Any other new funding or programs developed in the MERNAP process.

Use of Australian export shipping

The paper refers to the H2U hydrogen/ammonia export hub in Gladstone (page 8). What is not included is that this project involves Japanese shipbuilder NYK and the construction and operation of an Australian fleet of ammonia-fuelled ammonia export carriers. Likewise the nearby HyNQ export project is also proposing to develop an Australian fleet of ammonia carriers

Such initiatives should be supported and promoted, and the MERNAP must work to ensure that funding from other areas of government is leveraged to achieve these goals for other similar projects. For example, the MUA advocated that the $2 billion in Hydrogen Headstart funding should require that any export project receiving funding should be required to use Australian shipping to maximise the domestic footprint of this funding and the return to the Australian economy. Regrettably, ARENA did not take this policy approach and none of the shortlisted projects in the first round have made public plans to use Australian shipping.

We urge the MERNAP team to have an urgent discussion with ARENA and the Department of Energy to ensure that future rounds of Hydrogen Headstart funding and/or hydrogen targets require that funded projects use Australian shipping. Likewise CEFC funding for export projects should have a similar requirement.

Future Opportunities

How can Australia use green shipping corridors to promote specific sectors of trade (e.g. ecotourism, energy exports)?

Green Shipping Corridors for smaller vessels

Significant green vessel technology is already available and being built in Australia for smaller vessels, largely for use in overseas ports. At this scale electrification is much more feasible and technologically available, and ports and port authorities can help drive the transition. Australia could take a lead role by moving rapidly in the in this sector, including for towage, pilotage, aquaculture, and small passenger vessels such as ferries, expedition cruise, and tourism vessels. This could also provide significant economic benefits in the use of Australian shipbuilding and likely other manufacturing.

Likewise significant cargo handling equipment in ports could also be electrified, along with port vehicles. These will also require adequate charging stations which are resilient to flood and severe weather events.

The potential required electrical capacity for port electrification must be understood and factored into electricity system planning. It is likely that most ports will need substantial upgrades to their electrical supply and electrical system. If this work is not undertaken, a lack of electrical capacity will prevent the implementation of existing technologies.

We suggest that the final MERNAP include funding to support the development of whole-of-port Green Shipping plans, which would include:

Commented [PH1]: We also said this in September but we may as well say it again...

- shore power
- electrification of port vessels
- electrification of port vehicles and machinery
- total potential port electrical demand, and any required upgrades to port electrical supply/transmission and port electrical and charging systems
- potential energy sources for larger vessels, bunkering needs, and any common user facilities required to support this.
- Any new risks and hazards to be managed

MERNAP should also provide a pool of funding to support the installation of the required Gren Shipping port infrastructure. Clear expectations must be attached to this funding that the introduction of any new port electrification technologies not be used to undermine the existing port workforce or negatively impact port working conditions.

Offshore renewables shipping and licencing

Under the *Offshore Electricity Infrastructure Act*, offshore renewable energy developers are required to apply for a Feasibility and then a Commercial licence. Merit criteria for the National Interest portion of the Merit Criteria includes the project's 'impact on, and contribution to, the Australian economy and local communities, including in relation to regional development, job creation, Australian industries and the use of Australian goods and services' (*Offshore Electricity Infrastructure Regulations 2022*, s.26(4)(a)).

The MERNAP should work with the Department of Energy and the Offshore Infrastructure Registrar to make clear in the Guidelines for Feasibility Licence applications[3] that use of Australian registered ships and Australian crew will be assessed as part of this criteria. This is currently not made clear.

Decarbonisation and regulating the market power of container shipping

We draw to the attention of the Department to the Productivity Commission's recommendation 6.1 (Repeal Part X) in its Final Report of its inquiry into the long-term productivity of Australia's maritime logistics system, entitled *Lifting productivity at Australia's container ports: between water, wharf and warehouse* of 9 January 2023. The Commission recommended that:

> *The Australian Government should repeal Part X of the Competition and Consumer Act 2010 (Cth) (CCA):*

[3] DCCEEW, Guideline: Offshore Electricity Infrastructure Licence Administration – Feasibility Licences, version 3 March 2024, p.12

- *No other industry has an exemption like Part X, even though there are industries with similar characteristics to the shipping industry.*
- *Shipping lines should show that their agreements provide a net public benefit.*
- *Either a class exemption or the existing provisions under Part VII of the CCA could deal with shipping line agreements under a net public benefit test once Part X is repealed.*

While we understand the Government is still considering that recommendation, reform of Part X (International liner cargo shipping) of the CCA, complemented by reforms to Part 10.07 *Minimum levels of shipping services to be specified in conference agreements* along the lines recommended by the MUA, fully articulated in its submission to the House of Representatives Standing Committee on Economics Inquiry into promoting economic dynamism, competition and business formation of 6 July 2023, provides scope for the Government, in reforming the CCA to specify the Greenhouse Gas (GHG) emissions standards required of the vessels owned and operated by liner shipping companies subject to Part X.

The MUA submission to the House of Representatives Standing Committee on Economics Inquiry referred to above, set out the service standards that we believe should be specified in Liner Conference Agreements, that include a commitment by the liner shipping companies to, inter alia, comply with the IMO Marine Environment Protection Committee (MEPC) emissions reduction requirements and targets.

We recommend that MERNAP adopt such a proposal in its final Plan.

Questions for Industry Stakeholders – Future Opportunities

What are the specific conditions that would allow for the benefits to be realised?

As articulated above, government must use all the levers it has the ensure spending on maritime decarbonisation is also linked to requirements for positive outcomes for the workforce and communities.

How would Australian maritime industry stakeholders like to engage with the Government on developing a joint vision for future green shipping corridor investments?

The MERNAP advisory committee is a positive step. It's role should be enhanced and linked to ongoing development of maritime decarbonisation policy.

MARITIME INDUSTRY AUSTRALIA LIMITED

MIAL Submission
MERNAP Issues Paper 4
Green Shipping Corridors and Partnerships

About MIAL

Maritime Industry Australia Ltd (MIAL) is the voice and advocate for the Australian maritime industry. MIAL is at the center of industry transformation; coordinating and unifying the industry and providing a cohesive voice for change.

MIAL represents Australian companies which own or operate a diverse range of maritime assets from international and domestic trading ships; floating production storage and offloading units; cruise ships; offshore oil and gas support vessels; domestic towage and salvage tugs; scientific research vessels; dredges; workboats; construction and utility vessels and ferries. MIAL also represents the industries that support these maritime operators – finance, training, equipment, services, insurance and more. MIAL provides a full suite of maritime knowledge and expertise from local settings to global frameworks. This gives us a unique perspective.

We work with all levels of government, local and international stakeholders ensuring that the Australian maritime industry is heard. We provide leadership, advice and assistance to our members spanning topics that include workforce, environment, safety, operations, fiscal and industry structural policy.

Response to Issues Paper

The IMO Strategy on Reduction of GHG Emissions from Ships

Decarbonisation of international shipping requires immense public and private investment. The IMO GHG Strategy is an important signal to the private sector – shipowners and energy producers – articulating the global collective ambition that is necessary to attract private investment.

The strategy also provides the framework for member states to work within to create the necessary policy settings to enable the scaled up production, supply and offtake market for low and zero carbon fuels market to decarbonise the shipping industry.

GHG fuel standard

MIAL supports the implementation of a GHG fuel standard that incorporates the following elements:

- The option of complying using flexible compliance units to allow companies unable to access low or zero carbon fuels to comply through purchasing compliance units from other companies with excess units at mutually agreed price.

- Capability to reward first movers with access to fuels of lower carbon intensity than the target through the sale of over-compliant units.
- The additional reward from over-compliance could contribute to closing the price gap between conventional fuel and low or zero carbon fuels. It's important to note that in the absence of incentives for over-compliance, fuel with lowest compliance cost would be used, and hence unlikely to drive early uptake of zero or near zero emission fuels which are more costly in the earlier years of implementation.
- Coverage of lifecycle emissions (Well to Wake) to incentivise the use of fuels with lower lifecycle emission.
- Takes into account the commercial complexity of the maritime industry, including multiple value-chain actors and complex commercial arrangements, to ensure that the effectiveness of the standard is not compromised. To achieve compliance, there will be commercial negotiation between shipowners and charterers around the role which a given vessel plays towards realisation of contributions/credits, or how the cost of compliance could be shared between various players in the industry.
- Incentivises fuel switching activity instead of being a pass-through cost without any decarbonisation benefits.

Green Shipping Corridors – Opportunities and the potential role of Government/s

Decarbonisation of the international shipping industry is an immense task and green shipping corridors provide the opportunity to focus on specific fuel production, bunkering locations and trade routes where obvious alignments exist, including co-location of green fuel production and potential fuel export activities to contribute to building the required level of offtake to support the scaling of fuel production.

Where bilateral or multilateral agreements and commitments exist, such as the Australia – Singapore Green Economy Agreement, the resulting intergovernmental cooperation will potentially improve the chances of success of relevant green shipping corridors.

Government has a role to play in investing in bunkering infrastructure and the development of associated safety standards at these locations to ensure that the benefits of supplying zero and near zero emission fuels are also shared with domestic maritime sector, made available for international ship bunkering as well as made available for export.

MIAL would like to make the following recommendations/observations regarding the government's role in green shipping corridors:

- Government involvement from the start of the green corridor development is necessary.
- Although the industry plays a role in absorbing some of the incremental cost associated with realising green corridor, government has a major role to play in creating the levers and support mechanisms to bridge the significant cost gap between conventional and zero or near zero emission fuels.
- Government can consider facilitating / accelerating policies measures which incentivise zero or near zero fuels adoption including bunkering, safety standards and regulatory framework, supply and demand side mechanisms and subsidies to economically support the development of green corridors.

- Bilateral engagements between governments to explore how complementary policy action could benefit both ends of the corridor are critical.
- Due to the complexity of green corridor implementation and the commercial sensitivity around demand aggregation, there is a role for government to facilitate the demand aggregation activities for the purchase of zero or near zero emission fuel. Demand aggregation can provide offtake certainty to fuel producers, unlock economies of scale, bringing down the cost of zero or near zero emission fuels. This can have an impact on price, assisting to bridge the price gap between conventional and zero emission fuels, addressing one of the critical barriers for realising the corridor.

The Getting to Zero Coalition position paper circulated in support of the establishment of the Australia East Asia iron ore green corridor provides an overview of policy options that may assist Government's consideration of its role in creating the enabling environment for green shipping corridors to succeed.

Association of Marine Park Tourism Operators

4th April 2024

Via email: MERNAP@infrasture.gov.au

MERNAP Issues Paper 4: Green Shipping Corridors and Partnerships.

Please see below the Association of Marine Park Tourism Operators ltd (AMPTO) input to MERNAP Issues Paper 4: Green Shipping Corridors and Partnerships.

s 47F

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Association of Marine Park Tourism Operators

General Introduction to AMPTO and our industry:

AMPTO is a not-for-profit membership association that has been the peak industry body for marine park tourism operators since 1989. AMPTO members carry more than 4 million people each year, 95 per cent of all visitations, to the Great Barrier Reef (GBR). Members range from single vessel operations, small and large island resorts, to publicly listed multi-operational companies. AMPTO's primary objective is to ensure the economic and ecological viability of marine tourism.

Australian tourism is the fourth largest export for our Country and is in fact the largest non-consumptive industry in all of Australia. In 2019 the tourism industry contributed $166 billions to the Australian GDP (Thrive 2030). Adding to that, marine tourism has an economic output $30.7 billion in 2017-18, which is nearly 40% of the entire marine industry economic output[1]. Further to this, marine tourism output has both a direct and indirect value add of $42.4 billion and $26.8 billion (total $69.2 billion or 3.7% of GDP in value add), respectively[1]. Within Queensland, the economic output of domestic and international marine tourism totalled $12.3 billion in 2017-18[1]. This is larger than any other State.

It is clear how significant tourism and marine tourism are to both the National and Queensland State economy. Clearly, marine tourism is a key economic contributor and employer for both the National and Queensland economy and workforce and therefore the importance of the Great Barrier Reef Marine Tourism industry can't be overstated.

The Great Barrier Reef tourism industry is an important sector, and its role in both the National and Queensland State economic can't be overstate. As the number one reason for all nature-based travel and one of the top three reasons for all other visitors travelling to and within Australia, the Great Barrier Reef and its tourism industry is a tourism industry driver and amplifier (keystone sector). Visitors come to Australia to see the Great Barrier Reef and end up doing other tourism experiences.

Please note I have referenced Aims Index of Marine Industry 2020 report and not the 2023 report, as the figures in the 2023 report highlight the significant impact COVID had on the industry and does not reflect the true role our sector plays in the marine industry economy.

As an industry the marine tourism industry in the Great Barrier Reef has a strong history of positive environmental outcomes. These include but not limited to:

- Legacy founders and delivering contractors for the Crown of Thorns Starfish control program. This program is the strongest action one can take to protect live coral on the Great Barrier Reef. The industry delivered this program until the industry was shut down in 2020 due to COVID– nearly 2 decades. The COTS control program continues still today and is recognized globally as a platinum standard reef protection.
- Founders of the Eye on the Reef coral reef monitoring program, back in 1984. This is now a flagship monitoring program within the Great Barrier Reef Marine Park Authority and is a key source of the Authorities reef data that guides its management decisions.
- Co-founders and partners in the Master Reef Guide program. Delivering stronger, accurate education and information for vessel crew and guests.
- The concept creator and drivers of Tourism Reef Protection Initiative.

More pertinent to this issue paper, our industry has been looking at transitioning to more renewal fuel source for over 10 years. This has led AMPTO investing three years of effort, time, and resources to create a holistic industry-wide feasibility study to develop a roadmap

1. The Aims Index of Marine Industry 2020.

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to guide industries transitions. AMPTO has engaged a contractor and specialist engineer to deliver this work. A partnership with Government is key to the success of this work.
Two critical area of the partnership with Government are necessary, 1) Government knowledge and 2) funding, to deliver this study and roadmap successfully and to the standard needed.

AMPTO has been in discussions with both levels of Government (Federal and Qld State) for over a year with a formal proposal submitted to multiple portfolios in both Governments early in 2023. To date no decision has been made and discussions continue.

The industry is committed to this process and is hoping for a positive outcome to be able to deliver our feasibility study and roadmap. Such an approach will enable our sector to provide evidence-based information and technical solutions to technical, logistical, and economic challenges to the industry.

As a sector that operators in the World Heritage Great Barrier Reef, the now “poster child” for climate change, a targeted and structured approach like AMPTO’s will not only be positive for the Great Barrier Reef but will add significantly to Australia and our Industry’s reputation as being serious about climate change and a green energy super-power.

General Feedback with regards to Green Shipping Corridors and Partnerships:

AMPTO represents domestic near coastal DCV’s operator’s and this issue paper is focused the larger vessels and international maritime sector.

On principle the issue paper presents good points, reasonable approach and what appears to be common sense goals for green shipping corridors and partnerships. With that being said, it is hard to see how these commitments will practically be achieved, what will the expectations be for vessel operators to achieve these goals, as well as what will the financial implication be for the industry.

Additionally, many of the IMO and Australian Government commitments to the IMO commitments give rise to concerns for the marine tourism industry that operator near coastal vessels and ferries. The overall concern is the MERNAP process, including this issue paper, seems to believe that what may suit foreign going vessels or large vessels will suit near coastal DCV’s, as MERNAP seems focused on larger vessels and very little on near coastal sector. That assumption is not necessarily true and in particular it is not true for marine tourism industry. Our industry is predominately small and medium size businesses with very narrow margins, is market demand driven, and an extremely price sensitive market. This means there is far less capacity for our sector to invest in the same way, it seems, international going vessel operators are expected invest to reach these IMO GHG emission goals.

When looking at green shipping corridors and partnerships, strong consideration and consultation must be given to the flow on effect these will have on near coastal DCV fleet operations (a wide-ranging sub-sector of thousands of vessels). There needs to be more research done into the feasibility and roadmap for the national economically important and larger near coastal DCV fleet.

For our industry to transition and play our part in emission reduction, an aspiration of our sector, Government funding and support is needed. Without it our sector will be left behind, potentially leading to late acceleration in a costly and disruptive way, leading to business failures and closures.

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The MERNAP has had a consistent theme looking at the larger vessel sector, and the gap remains in understanding the near coastal sector.

Statements like this "*Green shipping corridors can also serve as a springboard for ecotourism. The cruise industry and sustainable tourism operators can use green shipping corridors to not only develop new business opportunities, but can also reduce their own GHG emissions*." highlight the lack of understanding of the near coastal marine tourism industry in Australia. Although the statement seems logical on face value, it does not reflect the reality. If this statement is referring to foreign owned cruise ship companies and not near coastal marine tourism fleet there may be some truth in it. And if the thinking in this statement is to also encompass the near coastal DCV tourism fleet, that would be a mistake, and we risk leaving that sector left behind or pushing them into complying with regulations that are potentially costly, not affordable or not viable to comply with.

It is key for Government to understand that our sector is market driven. What this means is that vessel operators have to offer a product that the market wants and deliver it at a price the market is willing to pay. In other words, we can deliver the right product but at to high a price and the business will fail. Despite the market saying they are willing to pay for sustainability, that is not the reality. If this issues paper is assuming, because of consumer surveys, that customers are demanding low emissions products and therefore there are business opportunities, that would be an error, because again that is not what is adopted in reality. Yes, customers express they want more sustainable and low emissions products, but when they have to choose between products, they nearly always choose the cheaper option, regardless of sustainability – aspirations do not equal reality. This is reflected in Great Barrier Reef visitation data (EMC), where there is a shift to cheaper experiences.

From the information at hand, transitioning to more renewable fuels and technologies will cost more and therefore drive ticket prices up. For example, through consultation with members who have looked at HVO's, as a "easy' first step, it has been found even if there was reliable supply, which there is not, HVO's cost about 10% more per litre and are approximately 20% less efficient, plus it is not compatible with many engines in use by our fleet. This means a significant initial investment by the vessel operator and the marina operators and at least an ongoing 30% higher fuel cost. This will drive ticket prices beyond what the market will pay. Already the Great Barrier Reef tourism industry is one of, if not the most expensive coral reef tourism experience in the world because to the very high operating costs to operate in Australia. Therefore, the Great Barrier Reef marine tourism industry is extremely restricted in what they can adopt.

Apart from financial pressure, there is a potential risk of reputational damage to Great Barrier Reef marine tourism industry. If the MERNAP process results in policies that mean domestic marine tourism industries can't transitioning like other countries or marine sectors do, we will be seen unfairly as not caring for the environment. This is why there needs to be feasibility study and work to look at our situation.

Questions for Industry Stakeholders:

• How does the 2023 IMO Strategy on Reduction of GHG Emissions from Ships shape your organisation's future decarbonisation activities?

It adds uncertainty and potentially will slow investment. Without understanding what this IMO strategy means for the near coastal tourism fleet and the lack of knowledge and information, operators must be very cautious. Although our sector has a strong aspiration and agreement to reduce GHG emissions there needs to be more research done on how that will work for our

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specific sector. The IMO Strategy reinforces our need to seek Government support to do that research to have the technical information available for operators to use to drive investment and transition.

• What are the key opportunities your organisation sees coming from the Strategy?

In the medium term, there are possible opportunities for the reliable supple of alternative fuels, at the same time as innovation and development of technology which will support the adoption of these alternative fuels. In the longer term this will hopefully lead to better economy of scale and therefore more competitive pricing. Also, more effective and fit-for-purpose regulations that don't hinder vessel operators.

• How would an IMO-regulated GHG fuel standard impact your organisation? How can the Government support the implementation of this policy to maximise domestic benefits?

It adds uncertainty, as it is unclear how Australia will implement it. The Government needs to work to understand near coastal DCV's businesses and provide support for research into how to transition. It must avoided lumping all maritime sectors together.

Questions for Industry Stakeholders:

• In what ways can the Government make tangible benefits available from the development of green shipping corridors for ports, maritime workers, domestic commercial vessels, energy providers and other industries?

Funding support will be essential to have tangible benefits.

• How should the Government be engaged in brokering green shipping corridors? At what point do you think the Government can add value in establishing new green shipping corridors? Conversely, at what point should the Government step back and let private sector organisations broker these arrangements?

-

• How can green shipping corridors facilitate the two-way exchange of new technologies, capabilities and approaches for the Australian maritime sector?

That will all depend on the relationship of the corridor partners and the agreements that are made.

• How can green shipping corridors build Australia's capability to supply and use zero and near-zero emission fuels? Is there a role for the Government to ensure these benefits are shared by the domestic maritime sector?

Reliable and affordable supply is seen as one of the major challenges to overcome if operations adopt zero or near-zero emission fuels. Green shipping corridors can potentially play a role in alleviating that challenge. It is still unclear how at this stage. Government's role is to ensure regulations supports and drives the uptake or supply of these fuels rather that hinders.

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• How can green shipping corridors provide training and experience in low emission fuels and technologies for seafarers? Is there a role for the Government to ensure these benefits are realised?

Naturally there will be lessons that can be shared between different partners of green shipping corridors. However, the Government needs to understand the Australian context and therefore be able to apply those lessons learnt in an Australian appropriate way. There needs to be a national approached and support (financially) for seafarers and training organisation to update, deliver and acquire the necessary training. Currently, it is very complex as there are variations from State to State within Australia.

Questions for Industry Stakeholders:

• How can Australia use green shipping corridors to promote specific sectors of trade (e.g. ecotourism, energy exports)?

It is important to distinguish between green shipping corridors and actual domestic marine ecotourism operations to ensure that there is no reputational damage to domestic ecotourism business for not being a part of green shipping corridors or for not being able to adopt a full suite to decarbonising strategies. Potential customers often misunderstand the differences.

Cautious must also be taken to endure there is no favouring of certain business types and therefore disadvantage other local domestic ecotourism marine operations.

Providing a framework and support that encourages businesses to adopt low or near-zero emissions fuels will be key, as local domestic ecotourism operations don't have the economy and customer base to do this alone.

• What are the specific conditions that would allow for the benefits to be realised?

Streamline and easy-to-understand legislative framework that stimulates financially viable investment. This will have to go hand-in-hand with easy access, or ability to access necessary technical, practical, and logistical information, based off really applied research, not academic research.

• What international examples of green shipping corridors should Australia be learning from to ensure broad domestic benefits from these arrangements?

-

• How would Australian maritime industry stakeholders like to engage with the Government on developing a joint vision for future green shipping corridor investments?

Yes.

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MERNAP Issues Paper 4: Green Shipping Corridors and Partnerships

Background

The Global Maritime Forum (GMF) is committed to shaping the future of global seaborne trade to increase sustainable long-term economic development and human wellbeing and works closely with industry stakeholders to facilitate the acceleration of global shipping decarbonisation.

An **Australia-East Asia Iron Ore Green Shipping Corridor** was announced by GMF in 2022 following the identification[1] of the corridor as a high-potential candidate for establishing clean ammonia-powered shipping of iron ore from the Pilbara region to importing countries in East Asia. Since then, 15 industry members[2] with operations on the trade route (the taskforce) are under the Getting to Zero Coalition[3] exploring its implementation and undertaking various activities to support its development.

GMF's responses below are mainly based on the knowledge and experiences gained through the above corridor, but also other corridor initiatives and projects in the overall GMF portfolio. GMF is pleased to elaborate or answer follow-up questions from your team as needed.

1 The Next Wave: Green Corridors

2 BHP, Bureau Veritas, Cargill, ClassNK, Fortescue Future Industries, Intercontinental Energy, K Line, Lloyd's Register, NYK Line, Oldendorff Carriers, Pilbara Ports Authority, Rio Tinto, Star Bulk, Woodside Energy, Yara Clean Ammonia.

3 Getting to Zero Coalition

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Questions and answers

Section 5. Green Shipping Corridors – Australian Approaches

- **In what ways can the Government make tangible benefits available from the development of green shipping corridors for ports, maritime workers, domestic commercial vessels, energy providers and other industries?**

First, understanding how the overarching goal of the green corridor movement can support broader national objectives is key to determining a successful policy strategy. Ways in which green corridors can create tangible benefits in line with national objectives are[4]:

1. **Maritime leadership –** where green corridors are seen as a way to modernise the country's shipping sector and to secure, future-proof, or strengthen the country's position as a maritime nation.
2. **Energy leadership –** where green corridors represent a mechanism to create early demand for scalable zero-emission fuels, thus securing the country's position in future energy markets.
3. **Climate leadership –** where green corridors contribute to the broader decarbonisation agenda and the global climate movement through early reduction of supply chain emissions within multiple sectors.
4. **General innovation and technology leadership –** where green corridors unlock a new market for innovations, thus securing the country's position in the global knowledge economy.
5. **Strengthening trade partnerships –** where green corridors represent a mechanism to create stronger value chain links and advantageous conditions for trade along significant routes, thus securing strategically important trade flows.

Tying the above examples with ways the Governments can make tangible benefits available for ports, maritime workers, domestic commercial vessels, energy providers and other industries include:

A. **Ports –** reducing administrative barriers to corridor deployment by facilitating faster permitting and approval processes on the fuel, port infrastructure and vessel side; and by supporting the establishment of domestic or international bunkering and/or export hubs; the Government can help future-proof domestic port infrastructure by spurring early investments in the transport, storage and provision/bunkering of clean marine fuels, and create resilience ahead of global regulation, minimising the risk of out-of-date/inefficient port operations and disruptions of key supply chains.
B. **Maritime workers –** the Government can support/facilitate the establishment of training programmes/centres needed to (re)train/educate maritime workers to acquire the right skill sets needed for shipping's decarbonisation. This can help create new opportunities for maritime workers and boost their competitiveness in and outside Australia. Should Australia provide the right training opportunities and conditions for maritime workers, this can also benefit Australia's image as a maritime nation and help attract new talent from abroad.

4 National and regional policy for green shipping corridors. 2023. Global Maritime Forum.

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C. **Domestic commercial vessels –** the development of green shipping corridors involving domestic industry players and national/state Government can allow for important spillover effects (commercial, technology, knowledge) to the domestic shipping industry allowing for faster and more efficient innovation, development, and uptake of clean marine fuels. Here, Governments or industry associations can help facilitate knowledge exchange between Australian green corridor initiatives and domestic stakeholders.

D. **Energy providers –** Governments can help spearhead the energy transition and create benefits for clean energy providers by, for example, developing fuel-side certification schemes; call attention to shipping as an early offtake opportunity of clean fuels to domestic energy providers to help their projects get off the ground; integrate/matchmake clean fuel supply with clean fuel demand across domestic sectors (shipping included) to help solve the chicken-and-egg problem; stimulating and incentivising supply and demand through policy support.

E. **Other industries –** all in all, supporting the development of green shipping corridors means providing key supply chains with the opportunity to ship their products on clean fuels; advances and boosts the country's general innovation and technology development related to the clean energy transition; and can have spillover effects on job creation in other, relevant sectors and helps diversify the Australian economy as a whole.

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- **How should the Government be engaged in brokering green shipping corridors? At what point do you think the Government can add value in establishing new green shipping corridors? Conversely, at what point should the Government step back and let private sector organisations broker these arrangements?**

Governments play a critical role in providing the enabling environment for green shipping corridors to materialise. A structured dialogue between green corridor stakeholders and policymakers is required throughout the development but it can be said that the required policy effort can be expected to intensify as green corridors approach implementation. Whilst the initiation and early planning phases can happen without the involvement of governments, the nature of the challenges in the implementation phase, however, make robust public action essential for the success of green corridors.

An analysis carried out by GMF puts forward several ways Governments can be engaged in brokering green shipping corridors. These are divided according to corridors' development stages below:

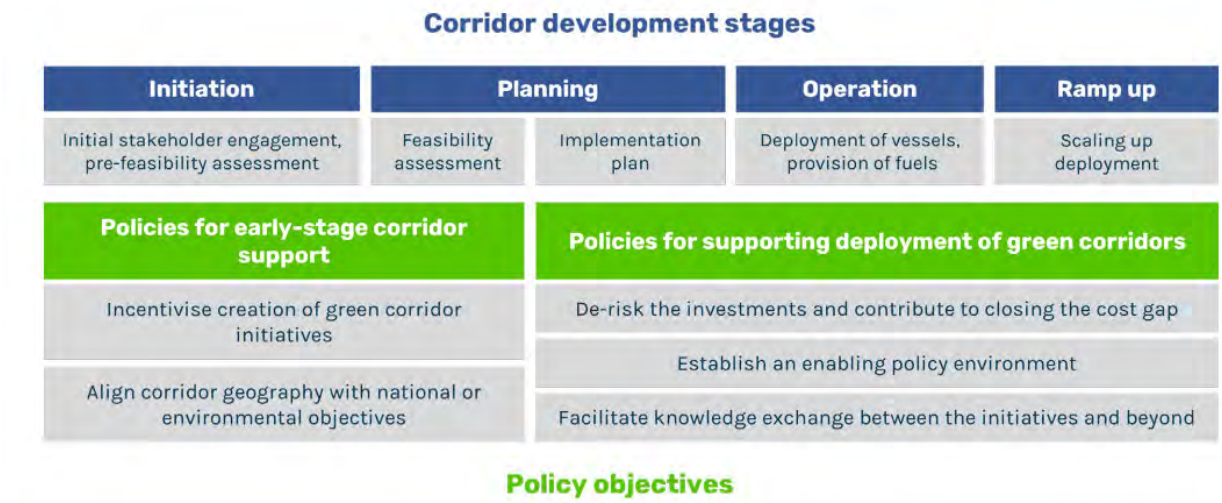

Figure 2: Potential policy objectives at different stages of green corridor development

Government action varies from funding for pre-feasibility and feasibility studies and country level assessments in the early development stages, through to policy that helps unlock private sector investments in green corridors. Governments will add critical value by de-risking such investment decisions by narrowing the cost gap, particularly the significant cost of scalable zero-emission fuel production. Please read the full study on *National and regional policy for green shipping corridors* here which elaborates on the different approaches for supporting the initiation and deployment of green corridors.

Demand and supply-side policy support are further discussed concretely for the Australia-East Asia Iron Ore Green Corridor in this recently published Position Paper.

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Policies targeting the cost gap must be developed in parallel with other complementary measures to eliminate potential bottlenecks and create the enabling conditions for deployment. These measures should aim to achieve the following objectives:

- Building credibility and trust by, for example, developing fuel-side certification schemes or advocating for green corridors at the IMO level
- Reducing the administrative barriers to deployment by facilitating faster permitting and approval processes on the fuel, port infrastructure and vessel sides
- Mobilising skill force by providing support in (re)training and education
- Further de-risking the investment by providing loan guarantees
- Facilitating knowledge exchange between the initiatives and beyond

Knowledge exchange is a key condition for scaling up the business models and the technologies currently being developed under the umbrella of green corridors. At the same time, green corridor initiatives sometimes do not have an intrinsic incentive to share data or are restricted by non-disclosure agreements. This creates an opportunity for individual governments and the Clydebank Declaration Signatories to act as data brokers or central nodes for ensuring early data sharing within the green corridor movement and beyond.

Apart from the suggestions above, and as briefly mentioned in the previous question, Governments can also play an important function as a matchmaker and aggregator between producers and consumers of clean fuels (including shipping as an offtaker) to help ensure the right offtake amount (and duration) for domestic fuel production projects to take off.

- **How can green shipping corridors facilitate the two-way exchange of new technologies, capabilities, and approaches for the Australian maritime sector?**

To ensure that there is a two-way exchange between the domestic maritime sector and green shipping corridors, domestic (or international) actors engaged in green shipping corridors can initiate or engage in knowledge sharing activities (e.g., hosting webinars; publishing reports or analyses; participating in events). Naturally, green shipping corridors are important test-grounds for shipping's decarbonisation pathways, and as initiatives progress (some of which domestic industry players might be participating in) technologies, capabilities, and approaches will eventually transfer to the domestic sector. However, as mentioned above, some green corridor initiatives either do not have an intrinsic incentive to share data or are restricted by non-disclosure agreements. The Australian Government can play an important role in ensuring early knowledge and data transfer between green shipping corridors and the domestic maritime sector.

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- **How can green shipping corridors build Australia's capability to supply and use zero and near-zero emission fuels? Is there a role for the Government to ensure these benefits are shared by the domestic maritime sector?**

Green shipping corridors provide an excellent source of early demand for clean hydrogen and derivative projects in Australia. With an estimated demand for 275 kilotons of zero or near-zero carbon ammonia in 2030 and around one million tons by 2035, the Australia-East Asia Iron Ore Green Corridor[5] alone could be a substantial early demand for Australian zero or near-zero carbon ammonia, underpinning the offtake and scale-up of Australian national clean hydrogen production, should the right policy support be provided.

There are, however, also important export and demand aggregation opportunities to be explored from other green shipping corridors[6] that plan to bunker in the region, for instance the Australia-Singapore Green & Digital Shipping Corridor, with operations planned by end 2025, and the Silk Alliance, with zero or near-zero carbon ammonia activities planned by 2028. Supporting the development of green shipping corridors, with emphasis on not just supply but also demand-side stimulation to allow for commercially viable fuel uptake, can help anchor early investments and drive growth in cost-effective clean hydrogen and derivatives projects, as well as unlock the major export opportunity that exists for East Asian markets, establishing clean hydrogen value chains with Australia's Clean Energy Partners and beyond. It could also underpin Australia's capacity to produce zero or near-zero carbon ammonia for fertilisers used in food production and technical ammonium nitrate used in some of Australia's largest mines.

Apart from Government roles already outlined above; the Government can also design policy support in a way that benefits domestic industries, including the domestic maritime sector. Supply-side subsidies may target both domestic and international producers, with the scope usually dictated by the government's overall energy strategy and the extent to which self-sufficiency is prioritised. Supply-side subsidies may either include or exclude consumption for export from the list of eligible off takers or introduce a production sub-target for domestic consumption purposes. Demand-side subsidies would typically target domestic consumption. In the case of shipping-specific capital expenditure and R&D subsidies, access to funding is often restricted by factors such as the time spent in a country's waters, the number of port calls in a given country, or the vessel's country of registration. For green corridors, this implies that eligibility for the subsidy may ultimately depend on the chosen fuel production and/or bunkering location and the ship flag. At the early stages of development, the parties behind the corridors may want to align or adjust these decisions based on the policy landscape and support prospects.

Real life examples of how policy support (demand and supply side subsidies) for clean hydrogen, shipping R&D and capital expenditure subsidies have been designed can be found in the *National and regional policy for green shipping corridors,* table 2-3, here.

[5] Position paper to the Australian Government. 2024. Getting to Zero Coalition.
[6] As of December 2023, Singapore is involved in 6 announced green corridor initiatives based on the Global Maritime Forum's 2023 Annual Progress Report on Green Shipping Corridors.

- **How can green shipping corridors provide training and experience in low emission fuels and technologies for seafarers? Is there a role for the Government to ensure these benefits are realised?**

For green shipping corridors to materialise, (re) training and skill development for seafarers, port workers and others handling clean fuels and technologies must be established. Important learnings will be created from the first green shipping corridors deployed on water. The Government can play a key role in mobilising skilled workforces by supporting the establishment of training programmes/knowledge institutes and collaborate with existing training programmes/hubs under development globally.

Section 6. Future Opportunities

- **How can Australia use green shipping corridors to promote specific sectors of trade (e.g. ecotourism, energy exports)?**

As global iron and steel value chains begin their transition to net zero, future-proofing Australia's iron ore trade is critical for the country's ability to remain competitive in the global market. In parallel with the country's efforts to decarbonise iron ore mining and processing, developing a clean fuelled shipping route is necessary to help decarbonise the full iron ore value chain. The Australia-East Asia Iron Ore Green Corridor offers Australia a platform to decarbonise its most important trade flow and move ahead of global regulation. With the IMO's revised GHG strategy, positioning shipping for a rapid switch to scalable zero-emission fuels in the 2030s, a lack of adequate planning for this energy transition could put the resilience of global supply chains at risk. By enabling early testing and refinement of zero or near-zero emission shipping technologies and facilitating a timely build-out of the clean hydrogen and derivatives supply chain (zero or near-zero carbon ammonia being the focus for the Australia-East Asia Iron Ore Green Corridor), Australia can minimise the chances of disruption and gain a first-mover advantage by clearly positioning its iron ore trade for a net-zero future. This could help secure Australia's continued attractiveness to key iron ore export markets, mainly China, Japan, and South Korea, which have all set net-zero targets, and enable domestic mining companies committed to net-zero to fulfil their Scope 3 emissions.

To fulfil Australia's ambition to become a leading clean hydrogen exporter, exporting clean hydrogen and derivatives by running vessels on clean fuels, can create a competitive advantage towards other clean hydrogen exporters (e.g., USA); boost Australia's image as a clean hydrogen super-power; and increase Australia's attractiveness choice among energy importers (given adequate policy support to bridging the fuel cost gap).

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- **What are the specific conditions that would allow for the benefits to be realised?**

A critical barrier to realising green corridors is the significant cost gap of running a ship on clean fuels versus conventional marine fuel. The global production cost of clean fuels is forecasted to be significantly more expensive than conventional marine fuel through at least 2030, creating a substantial gap in the business case for green shipping corridors, recognised as the main area where government intervention is likely to be required. While industry players recognise their role in absorbing parts of the green premium, where the Australia-East Asia Iron Ore Green Corridor members currently are figuring out how to balance costs and risks across value chain members, industry levers alone will not suffice to close the cost gap.

Please see *National and regional policy for green shipping corridors* here.

Demand and supply-side policy support are further discussed concretely for the Australia-East Asia Iron Ore Green Corridor in this recently published Position Paper.

- **What international examples of green shipping corridors should Australia be learning from to ensure broad domestic benefits from these arrangements?**

There are currently no green shipping corridors that have reached deployment; domestic benefits have, therefore, not yet been investigated in practice. However, there are a couple of green shipping corridors that:

a) Are categorised as 'far along'/at the end of their planning phase. Examples include:
    a. Australia-East Asia Iron Ore Green Corridor
    b. Silk Alliance
    c. Gothenburg-North Sea Port
    d. Port of LA/LB-Port of Shanghai

Read more in the Annual Progress Report on Green Shipping Corridors here.

b) Have produced papers that touches upon domestic benefits:
    a. ARUP Canadian Green Shipping Corridors: Analyses domestic benefits based on different Canadian case studies. Read here
    b. The Australia-East Asia Iron Ore Green Corridor Position paper to the Australian Government. Read here

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- **How would Australian maritime industry stakeholders like to engage with the Government on developing a joint vision for future green shipping corridor investments?**

The Global Maritime Forum and members of the Australia-East Asia Iron Ore Green Corridor are actively inviting the Government to join a dialogue that brings together industry and government to develop a joint vision for this green shipping corridor.

A **public-private Roundtable is being organised in Brisbane on May 16** to discuss preferred implementation pathways and agree on concrete next steps from both sides needed to implement the corridor. Invitations have been shared with representatives from Department of Infrastructure, Transport, Regional Development Communications and the Arts, Department of Climate Change, Energy, the Environment and Water and the Department of Industry, Science and Resources; as well as relevant representatives from the Western Australian Government.

Thank you!

For any questions, please contact s 47F, Project Manager Decarbonisation at GMF:
s 47F @globalmaritimeforum.org

DNV

Memo to:		**Memo No:**	MERNAP No.4 DNV Comments
MERNAP@infrastructure.gov.au		**From:**	M-DP-SA
		Date:	5 April 2024
Copied to:		**Prep. By:**	s 47F

MERNAP Issues Paper No. 4 – Comments from DNV

DNV applauds the ongoing attention and effort being paid to the problem of decarbonisation of the maritime sector to, from and around Australia.

We are pleased to provide the following comments as a part of the consultative process and are available to elaborate as required.

For ease of reference, we have replicated the headings from Issues Paper No.4 in organising our comments.

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4. International Maritime Organization – Australia's Role

Questions for Industry Stakeholders:

- How does the 2023 IMO Strategy on Reduction of GHG Emissions from Ships shape your organisation's future decarbonisation activities?
- As a service provider to both the Energy and Maritime sectors any change in the regulations will initiate change in the way we support the industries and value chain. At the end of the day the pressure for companies to meet their compliance obligations overrides any extra value that is generated by a broader agenda. Or put another way, these industries feel that the effort to just comply is so great and increasing all the time that any notion of 'altruism' or activity that may be considered 'beyond compliance' is a 'nice-to-have'
- What are the key opportunities your organisation sees coming from the Strategy?
- Interpretation of the compliance requirements down to the ground level will dominate. This will then see a greater knowledge develop (by clients) of the value add of going beyond compliance and seek to do more than the bare minimum. This will tie into a greater awareness of the DEI-agenda which seeks to change the narrative on diversity/equality/inclusivity and feed into efforts by companies to do more in order to be a more attractive place to work/invest than their competitors
- How would an IMO-regulated GHG fuel standard impact your organisation?
- As above, this will develop into a need for more support of clients in procuring and sustaining verifiable supply chains. 'Verification' is a core business activity of DNV so more attention will be paid to providing efficient and effective tools to minimise the disruption to business as these are rolled out. Additional services will be required for 'future proofing' these aspects – which is also an opportunity for business to develop in lock step (or a bit ahead) of new regulations.
- How can the Government support the implementation of this policy to maximise domestic benefits?
- Australia is generally a bunkering location of last resort due to (a) high relative fuel costs and (b) proximity of Singapore. In order to take a position as a result of any GHG Fuel standard, Government will need to fund some of the infrastructure for storage of these fuels (for consumption of export) and subsidise the price of fuel sold in Australia to maritime customers. An economic assessment by treasury and the productivity commission should provide insight into the societal and economic benefits of becoming a major supplier of the worlds green

shipping fuels. When an assessment was made of the impact of converting shipping to LNG supplied by Australia in 2012-13 the modelling indicated a measurable impact on GDP as Australia shifted from importing all fuel used for our trade to being a major supplier of LNG to power our trade, the same applies for future green fuels.

5. Green Shipping Corridors – Australian Approaches

Questions for Industry Stakeholders:

- In what ways can the Government make tangible benefits available from the development of green shipping corridors for ports, maritime workers, domestic commercial vessels, energy providers and other industries?
- Subsidise the development of the local stakeholders so that the supply of alternative fuels is available at scale. This is not just direct tax incentives or cash injections but also training for maritime workers that will be responsible for handling new fuel sources. Infrastructure investment for electrification of cargo handling is costly and rarely a sure-fire winner when the ROI is viewed over a 15+ year horizon, so Government should step up and lean into funding/supporting the establishment of this enabling infrastructure. This goes also for logistics networks on shore – road and rail. Industry will not self-invest unless they have a strong case to make high profits, and customers in these locations will not commit to servicing the maritime sector unless they have surety of supply (fuel to purchase at a competitive price point).
- How should the Government be engaged in brokering green shipping corridors?
- Start at Government to Government (such as with Singapore) then quickly involve the relevant Ministries (e.g. Transport, Infrastructure, Energy, Environment) and relevant Port Authority. It should already be obvious what kind of ship traffic is most likely to these locations so this will inform in advance on potential infrastructure requirements, costs and timelines.
- At what point do you think the Government can add value in establishing new green shipping corridors?
- Commit to a practical strategy that is flexible enough to be applied in different ways in different locations. For example, Government to support the supply of green fuels servicing the main hubs to other domestic users in the vicinity – that is, ensure there is a bunker barge based in Sydney with green fuels supporting Port Kembla and Port of Newcastle.
- Seed funding to commission a development plan THEN a funding commitment to develop early-stage infrastructure. This should all be aligned with a national-level strategy that addresses the different timelines in developing all the critical assets and skills required.
- Conversely, at what point should the Government step back and let private sector organisations broker these arrangements?
- Politics prevents a clear answer to this question.
- How can green shipping corridors facilitate the two-way exchange of new technologies, capabilities and approaches for the Australian maritime sector?
- Depending on the type of ‘green’, a commonality in spare parts and support services will develop. This includes OEM suppliers having a presence in both countries, fuel suppliers and their associated technology/systems and best practice in terms of procedures and processes particularly related competence to handling systems using alternative fuels.
- How can green shipping corridors build Australia’s capability to supply and use zero and near-zero emission fuels?
- It is all about price. As Australia will be a supplier of many green fuels, efforts should be made to deliver these to the industry at a lower cost than is the case with the current bunkering fuel market. This recognises that with a shorter distance between production and customer should come lower handling/transportation costs of fuel from source to pump and thereby translate to lower bunkering costs.

- Is there a role for the Government to ensure these benefits are shared by the domestic maritime sector?
- Yes. The Jones Act in the US has been often cited as the single most important factor in the ongoing viability of the maritime sector in the States. This has created the critical demand for skills, supply chains and capacity to enable the needs of the sector to be met. To what extent this may be replicated in Australia is debatable, but it can go hand in hand with the RAN increasing the order book for Australian built vessels (Frigates, Submarines, Offshore Patrol Vessels, potentially Corvettes, landing craft, etc).
- How can green shipping corridors provide training and experience in low emission fuels and technologies for seafarers?
- Dedicated training requirements and delivery partners can be established at both ends of the Green Corridor with a focus on interoperability. Providers of such training and experience exchanges should seamlessly be able to 'certify' seafarers to handle green fuels in both locations – that is, MPA and AMSA will need to cooperate on this!
- Is there a role for the Government to ensure these benefits are realised?
- Funding the development of appropriate training programs for delivery by established RTOs would be a great opportunity (and shop-case the viability) of the Green Corridor.

6. Future Opportunities

Questions for Industry Stakeholders:

- How can Australia use green shipping corridors to promote specific sectors of trade (e.g. ecotourism, energy exports)?
- Obviously, our energy industry this time around should be less about selling everything we can produce (and subsequently experience supply shortfalls in Australia as has been the case with the LNG sector) – if we can use the Green Corridor to build a Green Fuel bunkering industry then this will in turn have a knock-on effect to the associated supply chains, employment opportunities and R&I.
- What are the specific conditions that would allow for the benefits to be realised?
- Not relying on the 'market' to establish prices will mitigate the risk of building a white-elephant (to a certain respect). Government intervention to create demand is important to establish and sustain. If the price-level delta at the pump is reflective of the cost of carbon when compared to other fuels and markets, then this may not seem like a subsidy but more as an incentive to buy Australian green fuels instead of the same in Singapore (which being a much larger and mature trading ground which can allow the market to find its' own price point)
- What international examples of green shipping corridors should Australia be learning from to ensure broad domestic benefits from these arrangements?
- There are not sufficient Green Corridor examples in operation today to opine on best practice.
- How would Australian maritime industry stakeholders like to engage with the Government on developing a joint vision for future green shipping corridor investments
- Potentially some form of commitment from Government that the maritime industry in general will benefit from the same kind of subsidies/incentives that may be attached to a Green Corridor. These general 'sector-wide' incentives could include training in handling of green fuels and some supply of green fuels in domestic locations that are not directly associated with the designated Green Corridor (e.g. if the Green Corridor port is 'Sydney', then provision of a green fuel bunker barge to Newcastle and Port Kembla). Whatever is agreed, bringing the whole sector along on the journey and the ability for all players to reap in the benefits will pay dividends in the future.

MERNAP Issues Paper 4: Green Shipping Corridors and Partnerships - March 2024

ANL Container Line P/L, CMA CGM Group Agencies Australia P/L

How does the 2023 IMO Strategy on Reduction of GHG Emissions from Ships shape your organisation's future decarbonisation activities?	The CMA CGM Group, of which ANL are part of, is actively pursuing the ambition of reaching the IMO's shipping GHG emissions targets, being a 30% reduction compared to 2008 levels by 2030 and an 80% reduction compared to 2008 levels by 2040. There are three parts to the Group's maritime decarbonisation strategy: 1. **Vessel technology**; the Group has invested c.US$15 billion to date in decarbonizing its fleet by ordering new-build vessels that are capable of burning low-carbon fuels; 119 such vessels are expected to be in the fleet by 2028. The Group is also investing US$200 million in retrofitting a number of conventional vessels to be able to operate on low-carbon fuels, as well as utilising more efficient (hydro/aero-dynamic) design i.e., specialised hydrodynamic paint, propulsion systems, and installing equipment to enable use of cold ironing / shore power. 2. **Operational efficiency**: The Group is reducing the energy intensity / fuel consumption of vessels through smarter operations, underpinned by our global Fleet Centre (vessel control tower) which monitors in real-time the vessel's planned and actual route and fuel consumption. Our global service network, fleet plan and proforma schedule has also been designed to reduce carbon intensity / CO2 emissions by reducing speed and amending port rotation where possible. 3. **Energy transition**: The Group is a pioneer in the use of LNG ships (from 2017) and biofuels (from 2019), with 44 vessels expected in the fleet by the end of 2024, and continues to diversify its energy mix by integrating new low-carbon energies including biogas, biomethanol and e-fuels (fuels made from low-carbon (green) hydrogen). We are also actively working on increasing the share of low-carbon fuel in our energy mix by investing upstream (TopCo and ProjectCo-level, technology and innovation) and downstream (renewable fuel production, assets) through our €1.5 billion Pulse energy fund.
What are the key opportunities your organisation sees coming from the Strategy?	The strategy will deliver on the Group's commitment to achieve Net Zero by 2050, and will support the efforts of our customers and our communities in decarbonising. The great majority of our customers have adopted decarbonisation targets and are increasingly attentive to the carbon footprint of their cargo and supply chains. Decarbonising our footprint in the communities where we operate will ensure that we, and the port ecosystem, maintains a social licence to operate.

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	Furthermore, the IMO's strategy would ensure harmonization of rules internationally, providing a clear mandate and level playing field for all parties in the supply chain.
How would an IMO-regulated GHG fuel standard impact your organisation?	An IMO-regulated standard would increase transport and logistics costs given that fuels emitting less GHG are more costly to produce with lesser availability. Such incremental costs would have to be shared by all users. CMA CGM advocates for the harmonization of rules internationally.
How can the Government support the implementation of this policy to maximise domestic benefits?	An international fuel standard will help to accelerate the energy transition by increasing the cost of carbon and providing an incentive to innovate for more sustainable maritime transport. Government can support the implementation by ensuring there is alignment and no overlap / double-up between international and domestic policies and associated schemes i.e., carbon taxes.
In what ways can the Government make tangible benefits available from the development of green shipping corridors for ports, maritime workers, domestic commercial vessels, energy providers and other industries?	There is shared value for all stakeholders in the GSC, and the key inputs and ingredients to its success, as well as the risks and incremental costs can equally be shared. GSC's will require a change in the way fuel is transported and stored, a change in safety and operational considerations for ports and maritime workers/stevedores and a change in regulations and codes of practice. The Australian Government can make tangible benefits available to the local maritime industry by ensuring that it adopts best-practice from regions where maritime decarbonisation operational and policy developments, including GSC's, are more progressed, such as the EU. GSC's send a strong demand signal that will catalyse the local development of renewable energy and green fuel, supported by existing grants, funding and investment schemes managed by ARENA and DCCEEW i.e Hydrogen Headstart. The same renewable energy and green fuel can open up an export market opportunity, with the fuel as an export commodity and the project know-how / IP as an export service. The Government can ensure that all the building blocks that go into a GSC, across the entire value chain from fuel production to port and vessel operations to fuel consumption, have the necessary skills and enabling policy and regulation. New skills will be required in greater numbers to meet the future demand for green fuel production, storage and handling. It is encouraging that the Maritime Industry 2024 Workforce Plan by the Jobs and Skills Council (JSC) is cognisant of the impact that the development of digitalisation, new technology and carbon emission reduction strategies will have skill implications in the future, and that further research and consultation on decarbonisation policy, and initiatives to identify skills and

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	training implications for Australian maritime workers and develop training products is required.
How should the Government be engaged in brokering green shipping corridors? At what point do you think the Government can add value in establishing new green shipping corridors? Conversely, at what point should the Government step back and let private sector organisations broker these arrangements?	The Australian Government has significant influence in the establishment of a GSC by providing the necessary regulation, advocacy and funding/co-investment. The Government can also prioritise from a list of prospective GSC's to guide proponents such as ANL in where its efforts would be best directed. The Government must deliver on its Clydebank Declaration commitment and requires the input and collective effort of the maritime industry to do so. Providing a more focused direction would bring the respective parties into alignment i.e. The Australia-Singapore Green and Digital Corridor is a clear focus/priority, with the framework and support in the process of being developed by the respective governments. Other similar high-priority GSC could address trade and geopolitical relationships and alignment i.e., an ANZ GSC, given our strong cultural, political and maritime trade links with New Zealand.
How can green shipping corridors facilitate the two-way exchange of new technologies, capabilities and approaches for the Australian maritime sector? How can green shipping corridors build Australia's capability to supply and use zero and near-zero emission fuels? Is there a role for the Government to ensure these benefits are shared by the domestic maritime sector? How can Australia use green shipping corridors to promote specific sectors of trade (e.g., ecotourism, energy exports)?	Australia has all the key ingredients for green fuel, with renewable energy (solar, wind, hydro), feedstock (biomass such as timber waste product), as well as an existing energy export infrastructure and network i.e., LNG export ports, a domestic and international bulk liquid/gas export capability. What it lacks is the scale of demand for green fuel locally that would necessitate and make viable the development of green fuel projects. By supporting the development of the green fuel locally, and supporting the export of that fuel to areas globally where the demand is greater and aggregated, and has the necessary scale of demand that the domestic maritime industry lacks, Australia can become a supplier of green fuel for our major trade partners such as Japan and Korea, where local production is less viable due to a lack of the ingredients that we have in abundance.

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4th April 2024

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RE: Feedback on MERNAP Issues Paper:
Green Shipping Corridors and Partnerships

This document provides feedback on the *MERNAP Issues Paper: Green Shipping Corridors and Partnerships* ("the paper") from Maritime Impulse Pty Ltd ("Maritime Impulse").

About Maritime Impulse

Maritime Impulse exists to help domestic commercial vessel (DCV) owners in Australia decarbonise their existing vessel fleets. We offer digital solutions for DCV fleet owners and services around decarbonisation and innovation.

Maritime Impulse has founded a program called MERC (Maritime Emissions Reduction Coalition) which is uniting leading organisations in the maritime, manufacturing, energy, finance, government, and education sectors to drive emissions reduction in the Australian maritime industry for a greener, more sustainable future. It is an innovation ecosystem that aims to bring coordination, focus, and innovation to accelerate the reduction of maritime emissions and deliver a greener, more sustainable future for our waterways and oceans.

MERC will address the reduction of maritime emissions by:

- Uniting leading organisations in the maritime, manufacturing, energy, finance, government, and education sectors,
- Advocating with governments for industry needs,
- Researching the best ways forward for maritime operators,
- Connecting suppliers with early adopter customers,
- Improving Australia's sovereign capacity to deliver maritime electrification, and
- Coordinating collaborative projects across the industry.

Our Feedback

We have tailored our feedback around the questions asked by the paper.

International Maritime Organization – Australia's Role

Q. How does the 2023 IMO Strategy on Reduction of GHG Emissions from Ships shape your organisation's future decarbonisation activities?

The IMO's remit is international shipping, therefore it does not cover Australian domestic commercial or recreational vessels. However, it is still important for three reasons:

1. Some Australian vessels are considered Australian Regulated Vessels as they operate in international waters and may therefore need to follow IMO rules.
2. As the global leader on international shipping the IMO's opinions and approaches to things like emissions reduction are paid attention to by domestic vessel operators.
3. Alternate fuels and energy systems that are seen as viable for international shipping are likely to have an impact on what options are available for domestic vessel operators.

Despite this, the 2023 IMO Strategy on Reduction of GHG Emissions from Ships is still very much leaving things unresolved until more work is done. For instance, the basket of candidate mid-term measures will not be finalised until MEPC 82 in the third quarter of 2024. Those measures are not planned to be formally adopted until third quarter of 2025 and will not enter into force until 2027.

Q. What are the key opportunities your organisation sees coming from the Strategy?

There is an opportunity for partnerships between the IMO and the Australian Government to support projects and initiatives that create local Australian options for sustainable energy supply and technology evaluation.

The shift to using lifecycle analysis (LCA) measures such as measuring well-to-wake greenhouse gas emissions when evaluating the effectiveness of different energy options creates an opportunity for MERNAP to be based around similar well-to-wake methodologies, providing a more robust technical response to reducing GHG emissions.

Q. How would an IMO-regulated GHG fuel standard impact your organisation? How can the Government support the implementation of this policy to maximise domestic benefits?

Any alternate fuel regulation by the IMO will lead to demand for those fuels from ships visiting Australian ports. This will create; a) a need for bunkering facilities (with their attendant safety processes), and b) an opportunity for Australian supply of those fuels. We consider that local production of biofuels and green methanol are the most likely alternate fuels which might become available to domestic vessels as well as international shipping. Green ammonia may have a place in international shipping, but bulk storage in ports is dangerous, and use on domestic vessels is highly unlikely.

Green Shipping Corridors – Australian Approaches

Q. In what ways can the Government make tangible benefits available from the development of green shipping corridors for ports, maritime workers, domestic commercial vessels, energy providers and other industries?

Green shipping corridors don't necessarily create local advantage if the skills and learnings are isolated in specific businesses – they need to overflow into learnings and experiences that are shared more broadly than just the couple of businesses that might be directly involved in international shipping.

What we see overseas is that places like Singapore have made significant commitments to decarbonising domestic maritime vessels like their numerous harbour craft. The Singapore Green Plan 2030 states that their target by 2030 is for "All new harbour craft operating in our port waters to be fully electric, be capable of using B100 biofuels, or be compatible with net zero fuels from 2030"[1]. This commitment brings decarbonisation benefits to their domestic commercial vessels and causes there to be a natural aligning of interests with the IMO's GHG strategy. They have followed that up with their Maritime Cluster Fund, Energy Efficiency Grant, and Enterprise Financing Scheme which all offer maritime businesses either free or cheap funds to decarbonise their operations[2]. The Maritime and Port Authority has also stepped forward as a patron of electric solutions by piloting charging solutions for electric vessels[3] and sponsoring the development of electric harbour craft designs[4]. They also helped create the Global Centre for Maritime Decarbonisation (GCMD) in 2021 which has led the way in advancing projects to develop thinking ahead of the IMO's GHG strategy.

Without the central authority and geographic concentration provided to Singapore, the Australian Government must be more careful in deciding how to promote these benefits. While selecting one or more Australian ports will be necessary to make green shipping corridors commercially successful, this will necessarily reduce the spread of the learnings and innovations from each project. There is a risk that a commercially successful business around supplying alternate fuels will be established, without bringing an overflow of innovations and export potential to Australian manufacturers and technology providers. Once again, having Australia act as a simple resource provider without adding much value or using our considerable research and innovation strengths.

Fortunately, there is an opportunity for the Government to use the establishment of green shipping corridors to setup the nation for success in this area. This can be done by making Government finance and involvement in green shipping corridors contingent on:

1. Making the learnings accessible to the broader ports and maritime sector in Australia.
2. Requiring that the selected ports decarbonise their operations more aggressively than they have done to date or might otherwise do so.

[1] https://www.greenplan.gov.sg/targets/
[2] https://www.mpa.gov.sg/media-centre/details/media-factsheet-charting-singapore-forward-as-a-hub-port-and-international-maritime-centre
[3] https://www.mpa.gov.sg/media-centre/details/vessel-charging-concepts-for-electric-harbour-craft-selected-for-trials
[4] https://www.mpa.gov.sg/media-centre/details/11-proposals-selected-to-advance-electric-harbour-craft-designs-in-singapore

3. Accepting more stringent greenhouse gas emission and sustainability regulations for Green Ports involved in green shipping corridors.
4. Creating open-source digital solutions where they relate to port optimisation to reduce GHG emissions and costs, and the implementation of and contribution to global standards around the same items.
5. Requiring the involvement of local maritime training organisations in upskilling existing staff and requiring those organisations to contribute to the development of Australian standards where they are needed.
6. Keeping these projects as transparent and collaborative as possible. Green shipping corridors should not be about creating advantage for specific Australian or global businesses but helping accelerate the sustainable energy transition in the Australian maritime sector.
7. Requiring a percentage of local supply to avoid ports simply deploying European or Chinese solutions, and not involving local OEMs or service providers. This can ensure that there is an impact on the domestic maritime sector as well, by providing local innovators with demand for zero emissions solutions.

Q. How should the Government be engaged in brokering green shipping corridors? At what point do you think the Government can add value in establishing new green shipping corridors? Conversely, at what point should the Government step back and let private sector organisations broker these arrangements?

As stated about, there is a risk with any green shipping corridor that it simply creates a new set of winners and losers in the Australian maritime sector, perhaps mostly to the advantage of overseas energy companies, OEMs and service providers.

The best way for the Government to have a hand in this is to be tightly involved in the brokering process and setting up the funding and regulatory provisions such that the green shipping corridor provides real value to the Australian maritime, energy, and manufacturing sectors.

Q. How can green shipping corridors facilitate the two-way exchange of new technologies, capabilities and approaches for the Australian maritime sector?

Government funding of some or all of these programs can help establish the need to obey Government rules around what happens with the data, ideas, innovations, and products of these programs, which then allows for some degree of local supply.

Ensuring the green shipping corridor is not limited to providing zero emissions fuels for bunkering and export would be a good start, as it then broadens the areas that can be impacted. Whilst it would be good to ensure local supply, allowing partnerships with organisations from the other partners in each green shipping corridor would also be a good way to facilitate two-way exchanges.

Connecting innovation ecosystems (like MERC) between the partners involved in the green shipping corridor can also help to ensure that collaboration is maximized between the partner country and the Australian maritime sector.

Q. How can green shipping corridors build Australia's capability to supply and use zero and near-zero emission fuels? Is there a role for the Government to ensure these benefits are shared by the domestic maritime sector?

Australia has rightly been identified as having greater potential than most countries to; a) have excess renewable energy, b) have the resources necessary for advanced zero emission fuels (i.e., sustainable biomass), and c) the technical ability to create a large export capability for zero emission fuels. A green shipping corridor to Singapore would find zero emission fuels a natural export cargo. Exporting this cargo via a green shipping corridor makes sense as the transport of such fuels can increase their embedded GHG emissions and decrease their value.

Whilst there is little bunkering done by international shipping in Australia, as we are a top-up destination more than anything else, there is an opportunity to change this because zero emission fuels are less dense (gravimetrically and volumetrically) than marine fuel oil. This will mean that it is likely that any green shipping corridor will have ships needing to bunker more often from Australia.

Put together, these two attributes mean that a green shipping corridor should definitely be located in ports that also have significant zero emissions fuel capability. However, for the benefits of a green shipping corridor to flow onto other ports in Australia, those ports should also be ones that have a diverse range of other business. The Government's involvement in brokering and funding the green shipping corridors and associated programs can help ensure that is possible.

MERC feels that there are two ports that meet our suggested criteria, the Port of Fremantle, and the Port of Newcastle. These are both near renewable energy hubs, Kwinana for the Port of Fremantle and the Hunter for the Port of Newcastle. Both have container terminals and other diverse cargos, including substantial amounts of fossil fuels. Both handle cruise ships and other passenger craft as well, and both have room for growth and can become potential zero emissions fuels export hubs.

Q. How can green shipping corridors provide training and experience in low emission fuels and technologies for seafarers? Is there a role for the Government to ensure these benefits are realised?

As we have already suggested above, there needs to be Government involvement to ensure that training and experience is not limited to the companies that operate bunkering facilities at these ports. Close involvement of training organisations with the upskilling process and ongoing access to shared training facilities in these ports will be vital to ensuring that other ports and harbours around Australia can take advantage of these green shipping corridor programs, and the impact on Australia's maritime emissions be maximised.

Future Opportunities

Q. How can Australia use green shipping corridors to promote specific sectors of trade (e.g. ecotourism, energy exports)?

Green shipping corridors can be used to have different impacts on different sectors.

Energy Exports

Green shipping corridors can establish the initial demand for green energy through local bunkering opportunities and offering lower emissions export routes. The creation of offtake agreements can help local energy producers and other organisations in the supply chain obtain finance and have the confidence to invest in specific locations. This can also help renewable energy providers justify increases in their supply and transmission capabilities.

This depends on the green shipping corridors being established with; a) a requirement for zero emissions fuel use by visiting ships, and b) partner ports that have a known demand for zero emissions fuels at price points that match the capability of Australian suppliers to match. This last point is important as it is easy to secure demand for very cheap fuel, but when it is very expensive that is much harder!

Requiring Australian ports involved in green shipping corridors to decarbonise their own emissions can help promote the use of onshore and offshore power supply to visiting ships in order to reduce emissions even for ships using non-zero emissions fuels. This has the benefit of creating more demand for locally produced renewable energy, without needing to convert it to a molecular fuel.

Sustainable Maritime Technology

If the Government ensures that ports participating in green shipping corridors are required to decarbonise their own operations and be locations where zero emissions maritime activity is promoted, then there can be an overflow of demand for more sustainable maritime solutions. Where this is coordinated with local innovation ecosystems like MERC (Maritime Emissions Reduction Coalition) it can result in startups and existing businesses developing innovative solutions that can not only meet local needs – but create significant export opportunities.

Ecotourism

As the issues paper notes, green shipping corridors can offer cruise lines the opportunity to bring environmentally friendly cruises to these ports, and to reduce the impact of cruises on the local environment. However, given the massive environmental and human health impact of cruise ships much of which goes beyond their fuel choices[5], this is hardly the best outcome.

More substantial benefits exist in cleaning up the environment around ports involved in green shipping corridors, decarbonising harbour craft (including tourism vessels) can allow the port's environs to be promoted as cleaner and nicer to visit than others. They can also create a hub of ecotourism where multiple operators are all offering a similar green experience – attracting climate conscious tourists who can then decide between operators based on other factors than their eco credentials.

Goods Exports

As Australia looks to bring more manufacturing capability onshore, it is important to consider how a green shipping corridor can help exports of those goods to specific international markets where the GHG emissions of the production and supply of a good can affect either the price of those goods, or the ability of those goods to be sold. There are relatively few examples of this now, but we shouldn't ignore the potential for this to grow as the IMO's GHG strategy is applied, and flag

[5] Environmental and human health impacts of cruise tourism: A review

states decide how to apply levies around the GHG emissions of trade. For example, the Pacific Islands are currently leaning towards seeing carbon levies on trade as an essential mechanism to raise funds to ensure they can decarbonise their own maritime sectors.

Goods Imports

As accounting rules start to require reporting of Scope 3 greenhouse gas (GHG) emissions it will become useful for importers to look for opportunities to reduce their Scope 3 GHG emissions by utilising ports in green shipping corridors that provide access to less GHG intensive transport. This may increase local demand for goods imported through these ports and have a flow-on effect to increasing demand for more sustainable road and rail transport as well.

Q What are the specific conditions that would allow for the benefits to be realised?

It is important to ensure that the focus of the green shipping corridors is not simply about the availability of zero emissions fuels. The decarbonisation of ports, and the creation of demand for locally produced sustainable maritime innovations is just as important. This means that the Government must be involved in the creation of green shipping corridors, or at least the rules by which they operate.

Q. What international examples of green shipping corridors should Australia be learning from to ensure broad domestic benefits from these arrangements?

As already mentioned, the Port of Singapore has a centralised and integrated approach that allows them to deliver multiple advantages to local businesses and their economy. From their example, we need to learn that green shipping corridors will not have the same impact in Australia without Government coordination and involvement. It should be noted that the Port of Singapore has many green shipping corridors under development, most of which require them to bunker zero emission fuels. Their involvement with Australian ports is one of the few examples where green shipping corridors may also facilitate the supply of zero emission fuels to Singapore. This is strategically vital to Singapore to maintain their importance as a bunkering destination. Some ships that call in to Singapore might not do so if they could not be assured of bunkering zero emission fuels there in the future.

The Next Wave report from the Getting to Zero Coalition promoted the Australia-Japan iron ore route with bunkering of green ammonia in Northwest Australia (from Pilbara Ports). Fortescue has made the most progress here by their conversion of the Green Pioneer to a hybrid ammonia fuelled design, but the Australia to East Asia Iron Ore Green Corridor Consortium, which includes BHP and Rio Tinto, have also been analysing the opportunity. One of the key problems is that green ammonia is simply too expensive for use as a zero emissions fuel without significant government subsidies[6]. This highlights one of the problems with basing green shipping corridors on specific zero emissions fuels, which is that by creating a difference between early adopters and laggards, it creates demand for Government action to reduce the economic impact of being an early adopter – which in this case is substantial.

The fact is that there are no green shipping corridors that have successfully been setup and are producing results. In almost all cases the intent is simply to reduce the risks for international

[6] "Fuelling the decarbonisation of iron ore shipping between Western Australia and East Asia with clean ammonia", Global Maritime Forum and Energy Transition Commission, March 2024

shipping companies that will be required to start reducing emissions by the IMO's GHG strategy, or the EU's Emissions Trading System (ETS).

Q. How would Australian maritime industry stakeholders like to engage with the Government on developing a joint vision for future green shipping corridor investments?

The vision should be developed with the broader domestic commercial maritime sector in mind and should include mechanisms to ensure the spillover of benefits around decarbonisation of ports, development of technologies, upskilling, and development of training programs across the wider Australian community. We would welcome the opportunity to engage with the Government along with MERC's stakeholders in discussions about the benefits of green shipping corridors.

In Conclusion

Maritime Impulse wishes to thank DITRDCA for the opportunity to comment on the MERNAP Issues Paper: Green Shipping Corridors and Partnerships.

We believe that green shipping corridors could create significant opportunity for Australian maritime businesses and the broader Australian economy. However, we note that few examples of successful green shipping corridors exist, there is considerable divergence of opinion about the scope and boundary of these programs, and the vision behind what they are to achieve is not necessarily in line with helping Australia reduce our GHG emissions from international shipping or developing a sustainable domestic maritime sector.

Finally, as our MERC stakeholders are committed to reducing Australia's domestic maritime emissions, we hope to find that green shipping corridor initiatives are woven into the broader MERNAP strategy in ways that will significantly reduce emissions earlier and develop the strength of our domestic maritime sector.

Yours faithfully,

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CEO & Co-founder
Chair of the MERC Steering Committee

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Maritime
EMISSIONS REDUCTION
Coalition

12 April 2024

MARITIME EMISSIONS REDUCTION ACTION PLAN
Issues Paper 4: Green Shipping Corridors and Partnerships

Department of Infrastructure, Transport, Regional Development, Communications, and the Arts

Port of Melbourne

Port of Melbourne acknowledges the Bunurong, Wadawurrung and Wurundjeri Peoples of the Kulin Nation as the Traditional Custodians of the land and waters on which our business operates.

We recognise and value their unique cultural heritage, customs, spiritual beliefs and relationship with the land. We pay our respects to their Elders past, present and emerging, and to all Aboriginal and Torres Strait Islander peoples across the communities in which we work.

Contents

Executive Summary

Port of Melbourne welcomes the opportunity to respond to the Maritime Emissions Reduction Action Plan Issues Paper 4: Green Shipping Corridors and Partnerships.

As Australia's largest general cargo and container port, Port of Melbourne is a vital trading gateway for south-eastern Australia. It facilitates more than one-third of the nation's container trade and plays a critical role as a key driver of economic activity. Supporting approximately 30,000 full-time equivalent jobs and generating around $7.5 billion in economic benefits to the Australian economy each year.

As the long-term leaseholder and steward of the Port, Port of Melbourne Operations Pty Ltd is responsible for the strategic planning, development, and management of the Port's operations under a 50-year lease from the Victorian Government.

Port of Melbourne is focused on delivering outcomes that provide long-term benefits for our operations' productivity, capacity, efficiency, and sustainability.

Port of Melbourne has taken an active role in exploring decarbonisation initiatives with foreign nations, aligned to Port of Melbourne's sustainability strategy and the broader aim to support decarbonisation of shipping in the maritime industry.

The 13 recommendations outlined in this submission are direct responses to the issues paper questions for industry stakeholders and consider the importance of trade, sustainability, international collaboration, and economic development.

Port of Melbourne welcomes further opportunities to engage with the Department.

Background

Port of Melbourne's Decarbonisation Approach

Port of Melbourne recognises that climate change is a significant global challenge that will have wide-reaching effects on our business, all sectors of the economy, and society.

Port of Melbourne supports the Paris Agreement goals and both the State and Federal Government's commitment to transition to net zero emissions.

Port of Melbourne is committed to managing the risks and opportunities arising from climate change to ensure the long-term sustainability of the Port and the ongoing resilience of our assets.

In 2023, Port of Melbourne set a target to achieve net zero emissions for Scope 1 and 2 by 2030. We plan to achieve this by sourcing the electricity needed for our operations from renewable sources and transitioning our corporate vehicle fleet and marine survey vessel to electric or zero-emissions fuel technologies. Port of Melbourne also set a target to engage with tenants, shipping lines, and other port users to facilitate decarbonisation across the port supply chain.

Industry Trends

It is important to recognise the context and extent of influence of Australia's maritime industry within a global context.

1. While several alternative fuels are being considered to decarbonise the shipping industry, at present there is not a commonly agreed alternative fuel or approach. Further, fuel sources adopted may serve as transition fuels with a move to other fuel sources or technologies becoming more feasible and operationally efficient in the years ahead.
2. Many decarbonisation initiatives in the shipping sector are conducted overseas where shipping lines and vessel owners are domiciled. According to the latest edition of DNV's Maritime Forecast to 2050, the shipping industry will have challenges securing enough supply of zero emissions fuels to meet IMO net zero targets. It is anticipated that the maritime sector needs 30-40 percent of the projected worldwide net zero fuel supply to meet the anticipated demand of 17 million tonnes of oil equivalent (Mtoe) annually by 2030, for which shipping must compete with other industries.
3. While securing zero emissions fuels is critical, the industry is looking at many other forms of efficiency measures that can deliver lower emissions results now. These include, for example, air lubrication systems and wind assisted propulsion. In addition, technologies such as onboard carbon capture and storage can address the competition for sustainable biomass fuels and renewable electricity which are being incorporated into the design of new vessels.
4. Fuel producers will need assurances that there is sufficient demand to justify the investment in production, storage, and transport of zero emissions fuels for the maritime sector.
5. A significant barrier is the cost disparity between running on zero or near-zero emission fuels versus low-cost high emissions fuels.

International Partners

Port of Melbourne is working alongside government bodies and participating in stakeholder forums, such as the C40 Green Ports Forum, to actively explore collaboration opportunities.

Feedback from international partners is that there needs to be improved clarity and clear signals from the Federal and State governments as to which local projects they wish to see advanced as priorities and which fuels they consider having potential application to maritime emissions.

Port of Melbourne currently engages with various potential bilateral partners for decarbonisation initiatives and is participating in active trade discussions with the government, investors, and international partners to provide further insights to optimise commercial opportunities for Australia.

Port of Melbourne's Previous Submissions

- Port of Melbourne previously submitted a response to MERNAP Issues Paper 1, dated 22 September 2023, outlining our decarbonisation strategy, support for MERNAP, and industry trends on which the recommendations were based. For details, please refer to Port of Melbourne's Maritime Emissions Reduction National Action Plan Issues Paper 1: Regulation and Standards submission.
- Port of Melbourne previously submitted a response to MERNAP Issues Paper 2, dated 16 February 2024, outlining decarbonisation, energy efficiency, energy sources, and industry trends on which recommendations were based. For details, please refer to Port of Melbourne's Maritime Emissions Reduction National Action Plan Issues Paper 2: Energy Sources and Technologies submission.

SUMMARY OF RECOMMENDATIONS

International Maritime Organization – Australia's Role	
RECOMMENDATION 1	Ensure the government works closely with Port of Melbourne to establish consistent and effective policy frameworks in line with the IMO Strategy on Reduction of GHG Emissions.
RECOMMENDATION 2	Government must ensure that implementation of IMO-regulated GHG fuel standards gives the maritime sector lead-time and phasing to plan, invest and integrate with global standards.
RECOMMENDATION 3	Implement a Renewable Fuel Roadmap to effectively chart the current fuel supply chain, address cost parity issues, and subsequently enable the sector to plan, develop, deploy, and bunker renewable fuels domestically in Australia.
Green Shipping Corridors – Australian Approaches	
RECOMMENDATION 4	Embed consultation pathways where the government and different industries can share best-practice initiatives, challenges, and opportunities.
RECOMMENDATION 5	Accelerate development of potential green shipping corridors by declaring green methanol as a priority fuel.
RECOMMENDATION 6	Recognise Port of Melbourne as the primary collaboration partner for exploration of potential green fuel initiatives with Singapore.
RECOMMENDATION 7	Facilitate and fund technology exchanges between green corridor participants to enable broad sector benefits.
RECOMMENDATION 8	Empower MERNAP to serve as a collaborative hub for green fuel testing and market introduction.
RECOMMENDATION 9	Contribute to the development of trades and skills in low emission technologies through both industry and government-backed initiatives.
Future Opportunities	
RECOMMENDATION 10	Leverage green shipping corridors to foster sustainable trade and tourism.
RECOMMENDATION 11	Develop a comprehensive co-design strategy that encompasses all sectors impacted directly or indirectly from green shipping corridors.
RECOMMENDATION 12	Systematically track international green corridor pilots to develop tailored integrated approaches for Australia.

RECOMMENDATION 13	Enable multiple engagement vehicles with industry to ensure co-design opportunities of green shipping corridors can occur across the maritime supply chain.

International Maritime Organization – Australia's Role

Consultation Questions

- *What are the key opportunities your organisation sees coming from the Strategy?*
- *How would an IMO-regulated GHG fuel standard impact your organisation?*
- *How can the Government support the implementation of this policy to maximise domestic benefits*?

POSITION

Australia's engagement with the International Maritime Organization (IMO) is critical in aiding decarbonisation efforts for Port of Melbourne and the broader maritime sector. As Port of Melbourne is a key gateway for the movement of goods into communities across Australia, closer alignment with the IMO strategy (both from a policy perspective and as a signal to the broader market) would have substantial outcomes for commercial and trade opportunities.

Port of Melbourne commends the Federal Government's proactive engagement and endorsement of the broader IMO strategy. For Port of Melbourne to effectively align operations and activities of the vessels and freight in and out of the Port with the IMO framework, ongoing engagement between industry, the IMO, and the Federal Government is critical.

The IMO strategy has provided a roadmap to guide Port of Melbourne and Australia's sustainability initiatives, but Australia's role, both from a government and industry perspective, is to align the international and domestic policy frameworks more closely.

Consultation Question

How does the 2023 IMO Strategy on Reduction of GHG Emissions from Ships shape your organisation's future decarbonisation activities?

Recommendation 1

Ensure the government works closely with Port of Melbourne to establish consistent and effective policy frameworks in line with the IMO Strategy on Reduction of GHG Emissions.

The 2023 IMO Strategy on Reduction of GHG Emissions from Ships is an important input to Port of Melbourne's decarbonisation efforts, particularly given that emissions from ships in Port of Melbourne waters is the single largest contributor to our greenhouse gas emissions inventory.

In 2023, Port of Melbourne set a target to engage with shipping lines, and other port users to better understand their emissions reduction strategies and identify potential areas of collaboration to progress decarbonisation across the port supply chain. However, more needs to be done to ensure that Port of

Melbourne continues to receive domestic and international signals that provide certainty, stability, and security for the sector.

To effectively progress the decarbonisation of the global shipping fleet, it is essential the government considers various factors, including achieving cost parity between conventional and renewable fuels, mitigating risks, and exploring feasible regulatory options. These considerations should be embedded within frameworks to ensure a balanced and pragmatic approach to transitioning towards renewable fuels. This involves evaluating and addressing the economic, technological, and operational challenges inherent in shifting from established sources to alternative, more sustainable options. By doing so, Australia can create a conducive environment for innovation and adoption, ensuring the maritime sector's move towards sustainability is both feasible and effective.

Port of Melbourne continues to progress and facilitate decarbonisation initiatives across the port supply chain, evidenced by the ongoing measurement of maritime emissions in port waters, the evaluation and feasibility of shore power implementation, and signing an MOU for green methanol bunkering.

The challenge for Port of Melbourne lies in demonstrating the checkpoints outlined by the IMO, ensuring compatibility with the global shipping fleet directives and counter directives set out by the State and Federal Governments. Duplication is a major risk from a policy framework perspective, and while alignment is important, there must be domestic frameworks that are tailored to the geographical, economic, and regulatory realities in Australia.

This necessitates governmental support in crafting policies that facilitate the innovation, trial, and deployment of decarbonisation initiatives. These frameworks should work alongside the IMO and state bodies to effectively transform the IMO's strategic vision into actionable, measurable steps that are lasting, cost effective, and sustainable for the sector.

Consultation Question

How would an IMO-regulated GHG fuel standard impact your organisation?

Recommendation 2

Government must ensure that implementation of IMO-regulated GHG fuel standards gives the maritime sector lead-time and phasing to plan, invest and integrate with global standards.

The IMO's GHG strategy emphasises scalable zero emission fuels by the 2030s. Introducing a regulated GHG fuel standard, whether it adopts a carbon credit system or a taxation model, would impose additional compliance burdens on ship operators and port operators, including Port of Melbourne.

Given Australia's significant involvement in global sea freight (accounting for 14 percent of global sea freight), the sector could face important implications if standards are implemented too quickly. Therefore, it is important that large-scale demand for zero or near-zero emissions fuels is stimulated, ensuring the cost disparity between these fuels and current conventional marine fuels is minimised.

Fuel standards can present opportunities to drive progress in fuels. The stronger the signals to the market, the more lead time organisations will have to adopt, plan, invest in, and integrate renewable fuels into operations. This will anchor early investment, driving innovation in new fuels and reducing costs.

While Port of Melbourne is well-positioned to foster investment in renewable energy, government adoption must be balanced with the commercial realities of operations and the costs to businesses, for Australia to transform into a global hub for green maritime fuels.

As a result, the sector must be set up for success with the correct settings. Realising this potential necessitates an approach orchestrated by the Federal Government to look at a fuel standard with a view towards future trade opportunities, coupled with sector realities.

Consultation Question

How can the Government support the implementation of this policy to maximise domestic benefits?

Recommendation 3

Implement a Renewable Fuel Roadmap to effectively chart the current fuel supply chain, address cost parity issues, and subsequently enable the sector to plan, develop, deploy, and bunker renewable fuels domestically in Australia.

Port of Melbourne recommends adopting a Renewable Fuel Roadmap embedded in MERNAP, which includes timelines, directives, and signals to help the sector plan appropriately for adoption and change. Any policy framework adjustments should consider the impact on ship operators and ports across Australia.

The roadmap should include domestic opportunities for the bunkering and storage of blue or green hydrogen, green ammonia, and green methanol to pilot green fuel projects that can enhance the maritime sectors capabilities. The infrastructure required to facilitate these fuels (either for bunkering or storage) would be extensive. Therefore, a roadmap should embed considerations that focus on accelerating approval processes, and factor in both the costs and scale of infrastructure upgrades.

Cost parity issues exist across the energy transition, be it in energy generation, impacts on developing nations or mode shift. The government can contribute by de-risking investments through certainty around fuel options and identified projects, as well as in the development and start-up phases to overcome initial cost barriers until scale is achieved.

While assessing the feasibility of current options, the Federal Government also needs to examine model vessel patterns and recognise the lower energy density of future fuel opportunities. This includes leaving the door ajar for biodiesel and electrification opportunities that may become more feasible as technology catches up.

The importance of developing a roadmap that leaves the door ajar for technological innovations is a strong foundation for sound policy development.

If measured effectively, the government could gradually introduce an IMO-regulated GHG fuel standard.

Mapping the current fuel supply chain as well as ensuring a comprehensive understanding of future fuel opportunities would enable both the sector and government to better understand the opportunities for production and supply. This is the foundation for effective, efficient, and tailored investment opportunities.

For practical domestic benefits, the Federal Government must examine the entire fuel value chain and how production, distribution, storage, and bunkering can contribute. Consequently, any implementation of GHG fuel standards must also provide opportunities to become an economic multiplier for the sector, reduce carbon emissions, build and maintain trust, foster certainty, and provide opportunities.

Green Shipping Corridors – Australian Approaches

Consultation Questions

- *In what ways can the Government make tangible benefits available from the development of green shipping corridors for ports, maritime workers, domestic commercial vessels, energy providers and other industries?*
- *How should the Government be engaged in brokering green shipping corridors? At what point do you think the Government can add value in establishing new green shipping corridors? Conversely, at what point should the Government step back and let private sector organisations broker these arrangements?*
- *How can green shipping corridors facilitate the two-way exchange of new technologies, capabilities and approaches for the Australian maritime sector?*
- *How can green shipping corridors build Australia's capability to supply and use zero and near-zero emission fuels? Is there a role for the Government to ensure these benefits are shared by the domestic maritime sector?*
- *How can green shipping corridors provide training and experience in low emission fuels and technologies for seafarers? Is there a role for the Government to ensure these benefits are realised?*

POSITION

Green shipping corridors (*trade routes between significant port hubs where carbon-neutral ships start using carbon-neutral fuels (WtW) earlier than required by existing rules and incentives*) will be critical to fast-track the adoption of carbon-neutral fuels, which play a key role in achieving maritime emissions reduction targets. They would allow Australian ports to work with international partners, shipping lines, and industry to investigate possible green shipping corridors that can assist in resolving key barriers to the uptake of new fuels and technologies, fund collaborative research, and kick-start investment.

In response to international requests, the Federal Government has taken a leadership role to broker agreements of green corridors, with the support of key industry participants, like Port of Melbourne. Potentially advancing green shipping corridors would allow for emissions reduction targets to be met – decarbonising fuel value chains, and positioning Australia as a leader in zero or near-zero emissions shipping while fulfilling obligations as Clydebank Declaration signatories.

As a first priority, the Federal Government should formally recognise Port of Melbourne as the primary collaboration partner for exploration of potential green fuel initiatives with Singapore, particularly in the acceleration and development of carbon-neutral fuels. Given the Port of Melbourne's active involvement in exploring green methanol projects, it stands as the ideal candidate for potential partnerships under the new Federal Government agreement with the Singapore Maritime and Port Authority.

The successful implementation of complementary policy frameworks by the government to enable the corridors will determine the shipping and maritime industry's ability to decarbonise and meet the requirements outlined by the IMO's zero emissions targets by 2050.

To better implement green shipping corridors across Australia's ports, the Federal Government must work with industry partners, the Department of Foreign Affairs and Trade and Port of Melbourne on mechanisms

to incentivise stronger trade relationships with international partners and implement policy frameworks that encourage investment. This must include further opportunities for opportunities like trade-missions, of which Port of Melbourne attended in Singapore and Malaysia, in April 2024 to speed up partnerships and showcase the interest from Australian industry and government.

Australia is in a unique geopolitical and demographic position to lead the global maritime sector in the establishment of green corridors, but increased opportunities to harness the power of industry should be maximised.

Trade missions, global conferences, and industry summits, which involve stakeholders, like Port of Melbourne, can position a unified commercial and government approach to establish green corridors in an effective manner.

As mentioned in Port of Melbourne's prior MERNAP submissions, aligning with international directions and standards while ensuring regulatory certainty to encourage maritime decarbonisation investment is essential for the successful implementation of shipping corridors.

Understanding the supply chain for each alternative fuel is critical to ascertaining viability for shipping and how Australia can contribute to production and supply.

Additionally, financial backing from the government is needed to motivate and signal to industry to invest in alternative fuels, aligning efforts with global maritime decarbonisation goals.

Consultation Question

In what ways can the Government make tangible benefits available from the development of green shipping corridors for ports, maritime workers, domestic commercial vessels, energy providers and other industries?

Recommendation 4

Embed consultation pathways where the government and different industries can share best-practice initiatives, challenges, and opportunities.

For the government to implement tangible benefits from the development of green shipping corridors, there needs to be more opportunities for collaboration between key stakeholders.

While Port of Melbourne commends the Federal Government for working towards decarbonisation initiatives, the siloed nature of engagement can decrease the effectiveness of policy formation and subsequently result in duplication and redundancy when implementing policy frameworks.

Port of Melbourne has long advocated for pathways for green shipping corridors, but the regulatory and policy frameworks are not currently fit for purpose to enable these initiatives to become a commercial reality.

The Federal Government should view green shipping corridors through the lens of multiple interconnected systems to enable effective delivery and implementation.

Energy providers, for example, are a sector that needs regulatory and investment certainty to generate and deliver carbon-neutral fuels. This is a necessity to enable and facilitate domestic and international investment. Also, it is important to help drive technological innovation to meet the unique demands of

infrastructure development and address volume challenges and market capabilities. Exploration of all renewable fuel options is a policy necessity; however, regulatory structures need to be realistic in helping signal opportunities, barriers, and measurements for uptake.

Further, how closely the government works with the energy, maritime, and education sectors is critical for the effective training to meet the demands of how green shipping corridors would change the way these sectors operate. Best-practice sharing is important, but ensuring consistency across education pathways to help train and upskill sectors is critical to maintain efficiency and effectiveness of innovation and new methods.

To make further progress, we need to see ongoing roundtables and summits with the C40 Green Ports Forum, port authorities, government departments, as well as bilateral trade partners. These initiatives help improve the likelihood of effective, consistent, and comprehensive deployment of bilateral trade opportunities.

Test pilots also need to be conducted to ensure that Australia does not rely on feasibility studies when other nations are ready for implementation.

Consultation Question

How should the Government be engaged in brokering green shipping corridors? At what point do you think the Government can add value in establishing new green shipping corridors? Conversely, at what point should the Government step back and let private sector organisations broker these arrangements?

Recommendation 5

Accelerate development of potential green shipping corridors by declaring green methanol as a priority fuel.

The Federal Government can add immediate value by declaring green methanol as a priority fuel for green shipping corridors.

For green shipping corridors and other decarbonisation collaborations to exist, abundant fuel supply is needed. Without strong signals from the government, there is risk on losing the opportunity for development, deployment, and bunkering opportunities of fuels that are preferences by international stakeholders.

Green shipping corridors are a mechanism to fast-track the adoption of carbon-neutral fuels. If there is early signalling of fuel preferences by the Federal Government, key stakeholders can effectively address barriers of uptake and begin negotiations for development, shipping, and bunkering.

Effectively managing the need to keep technological pathways open for emerging fuels – while dealing with the reality of the need to send early signals to investors and trade partners by picking fuel preferences – can subsequently help speed up the decarbonisation journey of the maritime sector.

By specifically picking green methanol, Port of Melbourne can potentially be a key enabler alongside others to demonstrate feasibility, reduce ambiguity, increase uptake of existing efficiency measures while being a first mover in the green shipping corridor market, to stimulate the energy transition.

Recommendation 6

Recognise Port of Melbourne as the primary collaboration partner for exploration of potential green fuel initiatives with Singapore

The Federal Government has an opportunity to formally recognise Port of Melbourne as primary collaboration partner for exploration of potential green fuel initiatives with Singapore and other trading partners, particularly those aimed at the acceleration and development of carbon-neutral fuels with international partners.

Port of Melbourne's call for formal recognition stems from our proactive initiation and ongoing involvement in exploring green methanol projects, positioning us as an ideal partner under the recent Federal Government's agreement with the Singaporean Government and the Singapore Maritime and Port Authority. Utilising Port of Melbourne is a natural choice given we are the largest gateway of trade in Australia and potentially have the capabilities to export green methanol over time at scale for bunkering opportunities with key partners.

Additionally, this formal partnership would signal to the Singapore industry, Australia's commitment to decarbonisation efforts, and also to other potential key partners that feasibility in green fuel deployment is a necessity for green shipping corridors to become a reality.

Consultation Question

How can green shipping corridors facilitate the two-way exchange of new technologies, capabilities, and approaches for the Australian maritime sector?

Recommendation 7

Facilitate and fund technology exchanges between green corridor participants to enable broad sector benefits.

Port of Melbourne believes there is a necessity to bridge an innovation and commercialisation gap that green corridors could introduce. Australia is notoriously strong in research, but commercialising and innovating novel concepts and technologies has been challenging.

Green shipping corridors can be an opportunity for trade agreements where sustainability and technological advancements should be shared, including the benefits of innovative resources and technologies.

It is essential that sustainability and technological advances can permeate advancements into the wider sector, which would not only speed up decarbonisation, but simultaneously strengthen trade relationships and improve commercial opportunities in Australia.

Port of Melbourne advocates for agreement among corridor participants to facilitate and finance essential exchanges of knowledge, ensuring benefits of green shipping corridors extend throughout the entire maritime supply chain, enhancing sustainability and innovation on a broad scale.

Consultation Question

How can green shipping corridors build Australia's capability to supply and use zero and near-zero emission fuels? Is there a role for the Government to ensure these benefits are shared by the domestic maritime sector?

Recommendation 8

Empower MERNAP to serve as a collaborative hub for green fuel testing and market introduction.

In the submission to MERNAP Issues Paper 1, Port of Melbourne noted that MERNAP presents a significant opportunity to provide a platform to reach communities such as the National Transport Research Organisation Commonwealth Scientific and Industrial Research to work with the private sector.

Green shipping corridors are necessary signals to the global market on how Australia views decarbonisation and the importance of emission reduction. The government, alongside stakeholders like Port of Melbourne, signals to investors across the industry that certainty, stability, and consistency will be part of the adoption model.

The success of green corridors will depend on their ability to act as testing grounds for new innovative technologies and facilitate their commercialisation. Early consultation on commercial opportunities for inclusion will be critical to ensure benefits are shared across the domestic maritime sector.

Transparent and clear communication on the benefits, opportunities, and risks is a necessity for the sector to plan effectively.

Consultation Question

How can green shipping corridors provide training and experience in low emission fuels and technologies for seafarers? Is there a role for the Government to ensure these benefits are realised?

Recommendation 9

Contribute to the development of trades and skills in low emission technologies through both industry and government-backed initiatives

Training and experience in low-emission fuels and technologies are necessary for the successful implementation of green shipping corridors.

While training pathways are important, upskilling through micro-credentials can help facilitate the development of on-the-job workers and allow for accreditations. Education institutions alongside entities like the Victorian Chamber of Commerce and the State Government, can ensure courses are fit-for-purpose, while simultaneously being practically implemented for the workforce.

International partners can also serve as an opportunity for skill growth and training. An example for Port of Melbourne is opportunities with the potential Singapore Green and Digital Shipping Corridor. The Maritime and Port Authority of Singapore recently supported the world's first ship-to-containership methanol bunkering operation.

This represents how Port of Melbourne can draw on Singapore's expertise and then pass on this training to port staff and operators. Best-practice sharing is one of the benefits of international port-to-port corridors and represents how knowledge and innovation internationally can provide case studies for local development.

The challenge will be how Port of Melbourne shapes training without regulatory certainty and policy signals that ensure the return on investment of training corresponds to tangible commercial and sustainability outcomes.

The government can serve as a conduit between nations and fund training pathways via TAFEs and universities or establish grants for in-house training for organisations. This will ensure shipping and port operators are adequately upskilled in the use of new low-emissions technologies.

Future Opportunities

Consultation Questions

- *How can Australia use green shipping corridors to promote specific sectors of trade (e.g. ecotourism, energy exports)?*
- *What are the specific conditions that would allow for the benefits to be realised?*
- *What international examples of green shipping corridors should Australia be learning from to ensure broad domestic benefits from these arrangements?*
- *How would Australian maritime industry stakeholders like to engage with the Government on developing a joint vision for future green shipping corridor investments?*

POSITION

For Australia to effectively harness the future opportunities of green shipping corridors, the government must work alongside stakeholders like Port of Melbourne to enable the successful implementation of green corridors. This would not only support carbon emissions but would have a multiplier effect across the Australian economy, impacting business, consumers, and trade, while simultaneously improving diplomatic relations. Australia can move past feasibility and into delivery by urgently reviewing international case studies.

Australia needs to harness opportunities while ensuring that the maritime sector's decarbonisation is effectively delivered. The Federal Government has a chance to be a leader in the maritime industry's decarbonisation efforts but must ensure that communication, consultation, and opportunities for co-design are embedded in processes and planning.

Consultation Question

How can Australia use green shipping corridors to promote specific sectors of trade (e.g. ecotourism, energy exports)?

Recommendation 10

Leverage green shipping corridors to foster sustainable trade and tourism.

Green shipping corridors can benefit different sectors within the Australian economy. With the growing emphasis on Scope 3 emissions for large organisations, transferring goods in international trade routes will increasingly become essential for local businesses to meet their sustainability targets and domestic expectations. This is particularly relevant given that mandatory reporting under climate-related financial disclosure legislation is proposed to take effect from June 2026 onwards.

Enabling green shipping corridors would also be critical for trade, and the development of bunkering would facilitate domestic energy storage in Australia. Australia has long been an importer of critical commodities; which can expose our supply chains and ultimately lead to increases in costs if disruptions in trade occur. By viewing green shipping corridors as a vehicle to boost the development of green fuels, this would be an opportunity to position Australia and our ports as enablers to store, manufacture, and export green fuels instead of relying on importing them.

Still, with the geopolitical environment and subsequent trade routes becoming more turbulent, it is essential to ensure Australia is well-positioned to develop renewable fuels domestically and effectively bunker those fuels for the transfer of goods to key trade partners. This would allow for broader sectoral support for low-emission fuels while becoming an economic multiplier for sectors domestically and internationally.

Eco-tourism can also significantly benefit from the development of green corridors. By showcasing these corridors, the Australian tourism sector can signal ethical and sustainable practices across Australian travel routes and enable environmentally conscious transfer of goods to communities in urban and regional centres. This is an important consideration as Scope 3 emissions become more paramount across all sectors, including tourism.

Consultation Question

What are the specific conditions that would allow for the benefits to be realised?

Recommendation 11

Develop a comprehensive co-design strategy that encompasses all sectors impacted directly or indirectly from green shipping corridors.

Trade sectors cannot be created or boosted without a well-considered and widely supported strategy that has buy-in from industry stakeholders. Port of Melbourne believes the conditions for fruitful outcomes of green corridors must include stakeholders' contributions that benefit or impact industries directly or indirectly from the green corridor.

For the relevant sectors to pivot and innovate to harness the opportunities and subsequent decarbonisation targets, they will require consistent, effective, and coordinated consultations from the government on timelines, trade negotiations, and how industry benefits can best be harnessed.

Given the time constraints of decarbonising the maritime sector, the government should avoid working in silos and instead ensure the communication methods with industry are transparent and consistent. This can be demonstrated through a co-design approach that enables growth, innovation, commercialisation, and economic growth multipliers across sectors of Australian society.

Consultation Question

What international examples of green shipping corridors should Australia be learning from to ensure broad domestic benefits from these arrangements?

Recommendation 12

Systematically track international green corridor pilots to develop tailored integrated approaches for Australia.

The C40 Ports Forum initiative has been a critical enabler for implementing the world's first green corridor between Los Angeles and Shanghai. The implementation plan was announced in September 2023 and provides a blueprint which can be replicated across other member cities on not just the methodology but also the implementation of delivery.

The utility of international green corridor case studies, such as those of China and the United States, is that they enable the practical utility of trade and carbon emission reduction while facilitating opportunities for harmonious diplomatic relations. When countries view large cities as having joint goals of decarbonising to double as a tool for trade relations, it can serve as an opportunity for good-faith discussions on broader trust across countries.

This is an important lesson for Australia. We must ensure that we open our minds to diplomatic trade relations with countries that focus on shared agreement and opportunity, not just on current allyship.

Consultation Question

How would Australian maritime industry stakeholders like to engage with the Government on developing a joint vision for future green shipping corridor investments?

Recommendation 13

Enable multiple engagement vehicles with industry to ensure co-design opportunities of green shipping corridors can occur across the maritime supply chain.

To deliver a joint vision for future green shipping corridors, industry and government must work together with a long-term vision and approach towards relationships, dialogue, and consultation.

The delivery of green shipping corridors is a multi-sector challenge that can only be realised through meaningful dialogue that considers all aspects of the maritime supply chain and considers current and future industry constraints.

Green corridors need to be seen through the lens of opportunities for bilateral trade opportunities, diplomatic missions and enablers for productivity, economic growth, and the streamlining of investment opportunities.

Further, mapping the potential of each green shipping corridor against trade and fuel consumption would allow more tailored fuel type selection and development and an evidence base for monitoring and measurement.

Engagement with industry would involve frameworks embedded in MERNAP, which sees regular intervals of industry forums, roundtables, and ministerial engagements to discuss the delivery constraints, economic implications of initiatives, trade relationships, and geopolitical considerations.

For more information

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SIFAH MARINE

RESPONSE TO MARNAP ISSUES PAPER 4

GREEN SHIPPING CORRIDORS & PARTNERSHIPS PRIVATE SECTOR RESPONSE

11TH APRIL 2024

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Sifah Marine

Sifah Marine is a maritime technology company located in the Integrated Innovation Network Hub in Newcastle, New South Wales. We focus on bridging the gap between evolving technology and practical maritime operations in the ports and shipping sector.

We are the authorised Australian partner for Wärtsilä in relation to Port Management Information Systems, supporting ports around the Asia-Pacific region in the digitalisation and digitisation of their port processes. Port Management Information Systems are designed to facilitate the planning and management of port operations.

MERNAP Response

HOW DOES THE 2023 IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS SHAPE YOUR ORGANISATION'S FUTURE DECARBONISATION ACTIVITIES?

Sifah Marine acknowledges the ambitious goals outlined in the 2023 IMO Strategy on Reduction of Greenhouse Gas Emissions from Ships. We recognise the strategy's role in driving innovation and prompting the maritime industry to accelerate decarbonisation efforts.

As a key partner of Wärtsilä, we are a leading provider of Port Management Information Systems (PMIS) and technology solutions for the maritime industry. We are well-positioned to contribute to Australia's achievement of these environmental objectives.

s 47G [redacted]

s 47G [redacted] This ultimately leads to reduced fuel use and lower emissions within the corridor.

As standards for cleaner fuels and technologies are implemented, port operations will need to adapt. Sifah Marine is committed to staying informed about these developments and adapting its solutions to meet the evolving needs of the industry. s 47G [redacted]

The 2023 IMO Strategy presents both challenges and opportunities for Sifah Marine. s 47G [redacted]

We look forward to collaborating with the government and other stakeholders to achieve the objectives of the 2023 IMO Strategy for Australia's maritime sector.

WHAT ARE THE KEY OPPORTUNITIES YOUR ORGANISATION SEES COMING FROM THE STRATEGY?

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Our capabilities extend beyond the technological advancements offered by PMIS. Our organisation can provide valuable operational support and feedback to implement green corridor initiatives in Australian ports and domestic shipping. Our team's maritime expertise encompasses a deep understanding of port operations, vessel scheduling, and logistics. We can leverage this knowledge to significantly contribute to the success of green corridors.

Conducting Feasibility Studies: Sifah Marine can collaborate with stakeholders to assess the viability of proposed green corridors. s 47G

Developing Operational Plans: Our team can assist in developing detailed operational plans for green corridors. s 47G

Providing Ongoing Support: We can offer ongoing support throughout the lifecycle of a green corridor initiative. s 47G

By combining cutting-edge PMIS technology with this deep operational expertise, Sifah Marine offers a comprehensive solution for supporting successful green corridor initiatives in Australia. This two-pronged approach positions us as a key partner in the nation's transition towards a cleaner and more sustainable maritime sector.

IN WHAT WAYS CAN THE GOVERNMENT MAKE TANGIBLE BENEFITS AVAILABLE FROM THE DEVELOPMENT OF GREEN SHIPPING CORRIDORS FOR PORTS, MARITIME WORKERS, DOMESTIC COMMERCIAL VESSELS, ENERGY PROVIDERS AND OTHER INDUSTRIES?

Investing in infrastructure upgrades for clean fuel handling at ports, alongside workforce training programs through TAFE, AMC and private training providers, is crucial. Government support for clean fuel subsidies and collaboration between energy providers and the maritime sector can incentivise a shift towards cleaner practices and a robust domestic clean fuel supply chain. Furthermore, green corridors should prioritize just-in-time arrivals, building on the success of the Port of Newcastle's Vessel Arrival System (VAS) – a potential leader in decarbonisation efforts. By optimising arrival times and minimizing vessel idling, green corridors can significantly reduce emissions and fuel consumption. Government support for research and development initiatives and cross-industry collaboration can further accelerate innovation in clean maritime technologies. By implementing these measures, green shipping corridors can become catalysts for a more sustainable and prosperous maritime sector, delivering tangible benefits for ports, workers, vessels, energy providers, and the broader Australian economy.

HOW SHOULD THE GOVERNMENT BE ENGAGED IN BROKERING GREEN SHIPPING CORRIDORS? AT WHAT POINT DO YOU THINK THE GOVERNMENT CAN ADD VALUE IN ESTABLISHING NEW GREEN SHIPPING CORRIDORS?

Government funding can be directed towards upgrading port infrastructure to handle clean fuels like hydrogen or ammonia. Additionally, support can be directed towards TAFE education providers to develop and deliver training programs focused on clean fuel technologies and vessels. This investment will equip the maritime workforce with the necessary skills to operate and maintain these new systems, ensuring a smooth transition for ports and empowering workers to excel in the evolving green maritime sector.

Government initiatives such as clean fuel subsidies for domestic commercial vessels operating within green corridors can make clean operations more economically attractive. Furthermore, encouraging collaboration between energy providers and the maritime sector can incentivise the production and distribution of clean fuels within Australia, fostering a robust domestic supply chain. These measures will not only directly benefit the maritime industry but also stimulate innovation and growth within the clean energy sector, contributing to a more sustainable future.

HOW CAN GREEN SHIPPING CORRIDORS FACILITATE THE TWO-WAY EXCHANGE OF NEW TECHNOLOGIES, CAPABILITIES AND APPROACHES FOR THE AUSTRALIAN MARITIME SECTOR?

s 47G [redacted] Additionally, piloting new onboard technologies like air lubrication systems or wind-assisted propulsion can assess their effectiveness in emissions reduction.

Green corridors can extend beyond domestic benefits, acting as catalysts for global knowledge sharing and collaboration. Collaboration with ports participating in green corridors worldwide can lead to an exchange of best practices in infrastructure development, clean fuel bunkering procedures, and operational optimisation strategies. Sharing data and experiences from operating vessels within these corridors can inform the development of new clean shipping practices across the global commercial fleet.

Furthermore, research institutions and technology providers can leverage green corridors as real-world testing grounds for their innovations. Notably, Australian institutions like AMC Tasmania, a world leader in maritime technology and autonomous research, present exciting collaboration opportunities. Sharing knowledge and experiences with these institutions can accelerate the development and global commercialisation of these technologies.

Port Management Information Systems (PMIS) play a crucial role in collecting and analysing real-time operational data within green corridors. s 47G [redacted] Aggregated and anonymised data can be shared with research institutions globally to support the development of solutions for industry-wide challenges.

By facilitating pilot projects, fostering global collaboration, and enabling data-driven decision making, green shipping corridors can become powerful engines for innovation in the Australian maritime sector, with the potential to contribute to advancements on a global scale. Sifah Marine, with its expertise in port digitalisation, data management, and established partnerships, is well-positioned to play a key role in supporting this transition and ensuring Australia shares its knowledge and experiences with the world.

HOW CAN GREEN SHIPPING CORRIDORS BUILD AUTRALIA'S CAPABILITY TO SUPPLY AND USE ZERO AND NEAR-ZERO EMISSIONS FUELS? IS THERE A ROLE FOR THE GOVERNMENT TO ENSURE THESE BENEFITS ARE SHARED BY THE DOMESTIC MARITIME SECTOR?

Sifah Marine sees green shipping corridors as a powerful tool to strengthen Australia's capability to supply and utilize zero and near-zero emissions fuels. These corridors can function as real-world testing grounds for clean fuel infrastructure, logistics, and bunkering procedures. This practical experience gained within green corridors can be directly applied to develop a robust domestic supply chain for clean fuels, enhancing Australia's energy security and reducing reliance on traditional fuels. The benefits extend beyond commercial shipping, with learnings and infrastructure development applicable to the domestic maritime sector as a whole, bolstering national fuel security for our defence forces. Government support in facilitating pilot projects, research collaboration, and infrastructure development for clean fuels within green corridors is crucial. This ensures these advancements are not only implemented within the corridors but also shared and adopted more broadly, benefiting the entire domestic maritime sector, including defence, and ultimately strengthening Australia's overall fuel security.

HOW CAN GREEN SHIPPING CORRIDORS PROVIDE TRAINING AND EXPERIENCE IN LOW EMISSION FUELS AND TECHNOLOGIES FOR SEAFARERS? IS THERE A ROLE FOR THE GOVERNMENT TO ENSURE THESE BENEFITS ARE REALISED?

Green shipping corridors offer a unique opportunity to equip Australian seafarers with the skills and experience needed for low-emission fuels and technologies. These controlled environments provide practical learning in handling clean fuels, safety protocols, and operating low-emission vessels. This hands-on experience complements classroom training and strengthens understanding of these new technologies.

The transition to clean fuels necessitates an upskilling of the workforce. Sifah Marine supports the development of targeted training programs, delivered through a network of institutions including TAFE and AMC, alongside private maritime training companies. Government funding and grants can be instrumental in ensuring the development and delivery of high-quality programs focused on low-emission technologies across these institutions.

The Strategic Fleet Taskforce Report highlights the importance of collaboration and knowledge sharing. Green corridors can serve as platforms for Australian seafarers to exchange best practices with counterparts in partner countries operating similar technologies. Government support for these cross-experience opportunities, potentially through grants or exchange programs, can significantly accelerate knowledge transfer.

By fostering a strong training environment through green shipping corridors and supporting targeted initiatives, Australia can empower its seafarers to become leaders in the transition to a clean maritime future. Sifah Marine is committed to playing its part in delivering this vital training and ensuring Australian seafarers remain at the forefront of the industry. We believe a collaborative approach, involving government, educational institutions, and private training providers, is crucial to achieving this goal.

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MERNAP Consultation Team
Department of Infrastructure, Transport, Regional Development, Communications & the Arts
Canberra

Via email: MERNAP@infrastructure.gov.au

Dear MERNAP Consultation Team

Shipping Australia's response to MERNAP Issues Paper 4: Green Shipping Corridors and Partnerships March 2024

1. Shipping Australia is the principal Australian peak body that represents the locally owned and the locally active ocean freight-focused shipping industry. We provide policy advice, insight, and information to just over 70 members, who, between them, employ more than 3,000 Australians. We provide policy input to Australian State, Territory and Commonwealth Government bodies. We are recognised across Australia by politicians, public service officials, national media and trade media as being the national association for Australian shipping.

2. This submission is provided following consultation and feedback from our members.

3. Our membership includes Australian ports, the local arms of global shipping agents and domestic shipping agents, towage companies, the locally active arms of ocean shipping lines, and a wide variety of Australian-owned and locally operated maritime service providers. Services provided by our members include ocean freight shipping, local seaport cargo handling, domestic harbour towage, Australian marine surveying, and domestic pilotage, among other services. Our members handle nearly all Australian containerised seaborne cargo. They also handle a considerable volume of our car, and our bulk commodity trades.

4. Australia's total economy (GDP current US$) in 2022 stood at US$1.69 trillion, according to the *World Bank's DataBank.* Our trade in goods and services accounts for about 45.1% of Australia's Gross Domestic Product, being 19.7% for imports and 25.4% for exports *(ibid).*

5. A 2017 study demonstrated that Australia's international liberal international trade system led to the economy being 5.4% higher in 2016 than it would otherwise have been without trade liberalisation; that the average Australian family had a real income AUD$8,448 higher than otherwise; and that trade supported approximately one-in-five jobs *(See: "Australian trade liberalisation – analysis of the economic impacts," The Centre for International Economics (2017) prepared for the Australian Department of Foreign Affairs and Trade).*

6. In 2020-2021, Australia's total international (i.e. excluding coastal) physical sea-borne trade stood at 1.61 billion tonnes of cargo valued at AUD$601.4 billion *(p.iii, Australian sea freight 2020-21, January 2023, Bureau of Infrastructure and Transport Research Economics Statistical Report, Commonwealth of Australia, January 2023).* Exports accounted for 1.52 billion tonnes valued at $354.8 billion. Imports account for 97.1 million tonnes worth $246.6 billion *(ibid)*. In the same year, 6,219 uniquely identified cargo ships made a total of 17,303 voyages to Australian ports directly from overseas ports; meanwhile, 6,314 uniquely

identified ships made a total of 30,613 port calls at Australian ports in the same year *(ibid at p.iv).*

7. As over 99% of our cargo is carried by sea *(Shipping Australia)*, it therefore follows that international shipping is essential to the interests of all Australians simply because without that seaborne international trade then Australia simply would not function as a country. Seaborne international trade accounts for a such a major part of Australia's economy and that the benefits of Australia's international trade to Australians far exceed the dollar value of the cargo itself.

8. For further details of the importance of Australia's seaborne freight, and details of how that freight is carried at sea, please review S*hipping Australia's submission to the Productivity Commission's inquiry into Australia's Maritime Logistics System (SAL:22-004) of 14 February 2022 (available via the Productivity Commission website).*

9. It should therefore follow from this explanation of the fundamental economic importance of the physical shipping by sea of Australia's international trade that any regulatory burdens imposed on the shipping industry ought to be as light as possible to achieve the desired regulatory goal and that the regulatory goals should be justified by a pressing need.

10. To do otherwise is to impose an unnecessary burden on the bedrock of the Australian economy and to unnecessarily hurt the interests of the everyday Australian family.

11. It should be noted that there is generally considered to be around 195 countries recognised in the world *("How many countries are there in 2024?" BBC Science Focus Magazine, January 2024)* of which 44 are landlocked resulting in about 151 countries with coastlines.

12. National sovereignty extends beyond the land territory of a country out to 12 nautical miles from the coastline *(Article 2(1) and Article 3, UN Convention on the Law of the Sea)* and global shipping companies between them visit every single one of these countries.

13. It therefore follows that global shipping countries are potentially subject to at least a minimum of 151 jurisdictions (and, in fact, many more owing to the presence of jurisdictions of supra-regional bodies, such as the European Union, or jurisdictions of sub-national bodies, such as the States and Territories of federal countries such as Australia).

14. Global shipping companies simply cannot operate if they must comply with every separate law of every jurisdiction everywhere in the world; for example, the effects of some sets of laws would be mutually exclusive. Accordingly, it is utterly imperative that, if world populations are to enjoy the benefits of international trade, then shipping must be subject, insofar as it is possible to one, global, unified, shipping jurisdiction created by one regulator.

15. Accordingly, Green Shipping Corridors therefore should not be declared / operated unilaterally by Australia, or by any one nation acting alone. Ideally, even country-country Green Shipping Corridors ought not to be declared so as to avoid the "spaghetti-bowl" effect of bilateral Free Trade Agreements. The Spaghetti Bowl Effect of multiple bilateral trade agreements – which are signed so as to boost trade – has the unintended and perverse consequence of causing trade relations to slow down *(see World Bank Blogs: "Effect of the Spaghetti Bowl on South Asia-East Asia Trade Relations", O Sajid, February 11, 2015).*

16. It is easy to imagine a similar effect occurring if multiple different Green Shipping Corridors are established with different rules, incentives etc; this would tend to increase the administrative burden on, and complexity of, shipping.

17. In line with the principle of international uniformity of law, Green Shipping Corridors should be declared on a global basis by the International Maritime Organization, which is the global

UN Agency responsible for the worldwide regulation of shipping, and operated in full alignment with whatever standard, method, or practice is promulgated by that Organization.

18. At the very least, Green Shipping Corridors should be declared / operated on a regional basis with multi-country partners as is done with the large regional trade agreements such as the Regional Comprehensive Economic Partnership.

19. The declaration of a Green Shipping Corridor should have positive effects for green ships (howsoever "green ships" are defined) and should be at the very least have neutral effects on non-green ships. The declaration of a Green Shipping Corridor should not prohibit a non-green ship from calling at Australia nor should it unduly hinder or burden non-green ships in any way shape or form, such as by the imposition of sanctions, or the payment of monies or any other fees, or increase in time / delay, or requirements for extra inspections etc.

20. Green Shipping Corridors should therefore be accessible by all ships regardless of whether or not that given ship is a "green ship", howsoever that is defined.

21. **Green Shipping Corridors should be technology- and fuel-agnostic; government and / or the public service should not engage in the business of "picking winners".**

22. No single fuel type or technology should be incentivized or preferred over any other as this could, potentially, lead to a perverse outcome in which a sub-optimal fuel or technology succeeds at the expense of the actually optimal fuel / technology / combination.

23. In Australia, government focus is currently on hydrogen. However, maritime industry participants are not focused on hydrogen; they are focused on investing in methanol as a marine fuel. And, of late, there have been developments in ammonia as a marine fuel too, which, until recently, was very much a second-runner when compared to methanol. Similarly, wind-assisted propulsion was a fringe case, but which appears to be gaining ground of late. Meanwhile, some members of Shipping Australia have complained of an excessive focus on alternative advanced fuels at the expense of biofuel, particularly fatty acid methyl esters (i.e., biodiesel), which those members regard as highly desirable.

24. Accordingly, at this stage, it is not possible to definitively say which of the above technologies will succeed – or even if any of the above will succeed; it could, in theory, be some other technology. For instance, approximately 15-18 years ago, much of the attention was focused on Liquefied Natural Gas, which was forecast with a high degree of confidence to be transitional fuel that would be used for the next few decades. Yet, because of industry developments in alternative fuels since then, that LNG use-case is being pushed back.

25. There is also an industry view that no single technology will dominate (unlike bunker fuel which largely took over after the sail-ships ceased service) and that different technologies will be used in a wide variety of cases e.g., battery-electric for near-shore operations (such as ferries and short-sea light coastal) but liquid fuel for deep sea.

26. Any Green Shipping Corridor incentives should be structured in such a way that there is a definition of "green" that refers to the productive output of the ship and / or its emissions rather than the fuel or technology it uses. All vessels that meet the criteria should be eligible for any incentives regardless of their choice of fuel or technology.

27. Specifically, any incentives must be available for net-zero emissions ships i.e., those ships that do emit greenhouse gases from combustion of fuel but which originally sourced those greenhouse gases from the atmosphere and so do not add to the stock of greenhouse gases in the atmosphere.

28. Consider methanol-powered vessels. Methanol has the formula CH_3OH, which means every molecule of methanol contains an atom of carbon; combustion of methanol results in carbon dioxide, a potent greenhouse gas. However, methanol can be manufactured using renewable energies and renewable feedstocks. The carbon used in the manufacture of methanol can be sourced from organic sources (agricultural waste, forestry residue, town sewerage etc). Such carbon originates from the atmosphere – it is drawn down from the atmosphere by plants, forms part the methanol feedstock, is then incorporated into fuel by the manufacturing process, and is released back to the atmosphere during combustion. Accordingly, it is a net-zero fuel in that it does not add extra carbon into the atmosphere unlike fossil fuels. Any such net-zero fuelled vessels should be eligible for the same incentives as carbon free emissions vessels (e.g. ammonia-fuelled, hydrogen-fuelled, or wind-powered, for example).

29. **The funding burden of the operation of any Green Shipping Corridor ought to fall primarily on the beneficiaries of international trade** i.e., the general populations of the world, which can be done through funding needs being met from general taxation.

30. Where such funding arrangements are not available, then **any funding through levies, fees, payments etc, ought to fairly fall across all the participants in the supply chain** who directly or indirectly engage in international trade including ports, terminals, warehouses, land transport companies that transport seaborne cargo (such as drayage and cartage where the cargo either had a seaborne-leg or will have a seaborne-leg), customs brokers, freight forwarders and the like. Any levies, fees, etc should be separately charged on an invoice with a fixed, unalterable name – perhaps fixed by subordinate regulation – so that the companies subject to the charge can pass it on to the next party in the supply chain so that the ultimate cost is borne by the final consumer. However, Shipping Australia notes that such a system would necessarily result in a higher cost to the end user (as each participant would charge an administrative fee) than merely paying for such incentives from general taxation.

31. In relation to the specific questions in the MERNAP Issues Paper 4: Green Shipping Corridors and Partnerships of March 2024, we note and respond as follows below.

32. ***How does the 2023 IMO Strategy on Reduction of GHG Emissions from Ships shape your organization's future decarbonization activities?***

33. Up until quite recently, the industry was somewhat in limbo due to pertinent questions pertaining to the direction of the global maritime environmental regulations not yet being answered. We are pleased that the IMO has now, through the 2023 IMO Strategy on Reduction of GHG Emissions, provided clarity to the industry. The agreement on a decarbonization trajectory and adoption of lifecycle carbon factors for all marine fuels makes planning for future investments in new energy-efficient assets and the retrofitting of existing assets less risky.

34. Meanwhile, some members have announced that they have set an ambitious target to deliver net zero emissions from operations by 2040, 10 years earlier than the IMO Strategy for industry so as to achieve net zero emissions from operation by or around 2050.

35. Shipping Australia member, Maersk, advises that it has made a commitment that all future ship orders will be for vessels that are able to be operated on green fuels. Maersk have placed orders of 25 vessels capable of operating on green methanol of which two are already in operation on the global Ocean network.

36. In Australia, Maersk has signed an MOU with Port of Melbourne and other industry participants to review the feasibility of enabling a green methanol fuel hub at Port of Melbourne. Maersk further advises that is in active dialogue with potential investors and developers of green methanol projects to enable the green fuel transition in Oceania.

37. ***What are the key opportunities your organization sees coming from the Strategy?***

38. Our members see opportunities to actively engage with our clients on developing mutually beneficial decarbonization strategies for the supply chain. Members also advise that they see the potential for accelerated greenhouse gases emissions reduction; the enabling of one international standard across markets (cross-reference: please see also our earlier comments on the need to avoid multiple different standards of Green Shipping Corridors and the need for global regulation); a levelled playing field, crucial to enable the decarbonisation of the shipping sector and to ensure that first movers that adopt to green fuels are not disincentivised; an aligned interest across industry to ensure adequate infrastructure investment in the green fuel supply chain.

39. ***How would an IMO-regulated GHG fuel standard impact your organization? How can the Government support the implementation of this policy to maximize domestic benefits?***

40. An IMO-regulated GHG fuel standard would be a positive development for the global shipping industry – provided that it is adopted in the majority of countries / states / territories / jurisdictions so as to ensure one, global, standard. The last thing a global industry like ours needs is a patchwork of complicated and poorly aligned regional regulations, which only ends up adding unnecessary and excessive administrative burden.

41. The Government could support the implementation of this policy by ensuring the proposal it backs (there are several currently on the table, such as from ICS and WSC) is fair across all segments (dry bulk, tanker, container, ferry, etc.), simple (to reduce administrative burden on shipowners and crew members), transparent, futureproofed, and flexible. Such a regulatory framework would be beneficial to domestic fuel suppliers and reduce the risk and uncertainty when it comes to investing in shoreside infrastructure to support the needs of shipping. Members also advise that the full lifecycle is taken into account when measuring emissions.

42. ***In what ways can the Government make tangible benefits available from the development of green shipping corridors for ports, maritime workers, domestic commercial vessels, energy providers and other industries?***

43. A Green Shipping Corridor is not a one stop solution to decarbonize but a test – starting on a small scale – to demonstrate that low greenhouse gas emission cargo movement can be achieved. An initial corridor could be a pilot for a Proof of Concept that could show the way.

44. The success of Green Shipping Corridors to a large degree depends on the facilitation of virtual arrival / just-in-time arrival by port and terminal operators, so the Government should promote and encourage this. Incentivise shipowners to send their most energy-efficient vessels to Australian ports by offering attractive incentives, such as priority berthing, discounts on port dues (ESI), etc. Incentivise first movers, producers, suppliers, and consumers alike.

45. ***How should the Government be engaged in brokering green shipping corridors? At what point do you think the Government can add value in establishing new green shipping corridors? Conversely, at what point should the Government step back and let private sector organizations broker these arrangements?***

46. The Government should encourage those trading partners that have not yet become signatories to the Clydebank Declaration, to do so. Once this vital political will is in place, the Government can then focus on supporting the upgrade of the needed physical and digital infrastructure of ports, terminals, and fuel supply.

47. It is vital that these foundations are in place. On the basis of experience, incentives will play a key role in catalyzing the players, and for this to happen, we need policy-level movement.

48. ***How can green shipping corridors facilitate the two-way exchange of new technologies, capabilities, and approaches for the Australian maritime sector?***

49. The success of Green Shipping Corridors will be more likely if Clydebank Declaration signatories agree to global standards surrounding the physical and digital infrastructure that these corridors will utilize. For example, a common standard for On-Shore Power Supply (OPS) at ports, and a common maritime single window digital infrastructure that all actors in the maritime supply chain can use to successfully facilitate virtual arrival / Just-In-Time arrival. Shipping Australia notes that Australia did not meet the deadline for the IMO-mandated Single Window and continues to not be in compliance by not having such a Single Window.

50. ***How can green shipping corridors build Australia's capability to supply and use zero and near-zero emission fuels? Is there a role for the Government to ensure these benefits are shared by the domestic maritime sector?***

51. If the Government actively promotes and facilitates the concept of Green Shipping Corridors, this should be a catalyst that triggers the necessary reactions of local fuel suppliers to provide for the increasing demand for zero and near-zero emission fuels in Australian ports. This is a great opportunity for Australia to position itself as a major global player in the supply of zero and near-zero emission fuels to the maritime industry.

52. ***How can green shipping corridors provide training and experience in low emission fuels and technologies for seafarers? Is there a role for the Government to ensure these benefits are realized?***

53. Green Shipping Corridors will require the use of new fuels, engines, fuel supply and containment systems, energy-efficiency technologies (including wind-assist technology), digital infrastructure, etc., to be successful. With all these new technologies, the timely upskilling of maritime workers both onboard and ashore will be paramount. This is another opportunity for the Government to leverage the just transition by establish Australia as a major maritime training hub.

54. ***How can Australia use green shipping corridors to promote specific sectors of trade (e.g., ecotourism, energy exports)?***

55. The export of green energy, be it e-methanol, bio-LNG, e-ammonia, etc… will require ships and a well-structured and coordinated maritime ecosystem, so the establishment of green shipping corridors for other segments of the maritime industry will benefit the energy sector too. Knock-on effects could be the accelerated decarbonization over other sectors of the economy, and a boost in ecotourism.

56. ***What are the specific conditions that would allow for the benefits to be realized?***

57. Firstly, agreement and adoption of global standards and regulations to tackle the climate crisis. Secondly, all coastal states becoming signatories to the Clydebank Declaration and ensuring that they deliver on these commitments. Thirdly, the building the right incentives to trigger action by all parties (banks, insurance companies, ports, terminals, fuel suppliers, shipowners, shippers, and receivers, etc...)

58. ***What international examples of green shipping corridors should Australia be learning from to ensure broad domestic benefits form these arrangements?***

59. Any other Green Shipping Corridors e.g. the Singapore / Rotterdam Green Corridor.

60. ***How would Australian maritime industry stakeholders like to engage with the Government on developing a joint vision for future green shipping corridor investments?***

61. Shipping Australia and its members are always happy to contribute our knowledge, ideas, and experience to the conversation.

Submission Authorised by:

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Chief Executive Officer
Shipping Australia

SUBMISSION ENDS