



Australian Government

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

TRANSPORT GROUP / REDUCING SURFACE TRANSPORT EMISSIONS / MARITIME EMISSIONS & ENVIRONMENT

MERNAP Issues Paper: Regulation and Standards

August 2023

Introduction

The Australian Government is delivering on its election commitments to reduce emissions. The Government has legislated an economy-wide net zero emissions target by 2050 and committed to develop a Transport and Infrastructure Net Zero Roadmap and Action Plan to reduce emissions across this sector of the economy. Following the commencement of the National Electric Vehicle Strategy and work on the light vehicle Fuel Efficiency Standards, the Government is turning its attention to emissions abatement measures across other transport modes, including maritime, rail, aviation, and heavy vehicles.

As part of the Transport and Infrastructure Net Zero Roadmap, and in response to calls from industry stakeholders, the Government committed in the May 2023 Budget to develop a Transport and Infrastructure Net Zero Roadmap and Action Plan, a key element of which will cover the maritime industry. The maritime chapter – known as the Maritime Emissions Reduction National Action Plan (MERNAP)¹ will identify and prioritise actions that will help decarbonise our maritime industry, setting us on course to meet the legislated national emissions reduction targets, and support the global shipping decarbonisation transition.

The MERNAP is being developed through a short series of issues papers. Each issue paper will examine a theme. This paper examines regulations and standards, and future papers will consider fuels and technology, skills and training, financing and other matters. The Department recognises there are regulations at a range of levels that impact on the maritime industry – including at the local government, State/Territory and Commonwealth levels. This paper and the associated consultation will focus on Commonwealth regulations and the intersection of Commonwealth and State/Territory regulatory frameworks. This focus will allow national measures and actions to be taken in support of the industry's decarbonisation.

Comments received in response to this paper will be used to provide advice to Government about potential future policy settings. Submissions can be made via the MERNAP consultation portal (website: [Charting Australia's Maritime Emissions Reductions | Department of Infrastructure, Transport, Regional Development,](#)

¹ [Charting course towards zero maritime emissions for Australia | Ministers for the Department of Infrastructure](#)

[Communications and the Arts](#)). We would appreciate submissions by close of business **Friday 22 September 2023**.

The MERNAP will also draw on other Commonwealth initiatives that are able to support the maritime sector's transition. Such initiatives include the Safeguard Mechanism², the National Reconstruction Fund³, Powering the Region's Fund⁴, future investments through the Net Zero Authority⁵, and Australia's position at the International Maritime Organization.

Purpose

The MERNAP sets out to achieve the following objectives:

- support for Australia's national emissions reduction targets with a maritime framework and contribute to global decarbonisation;
- future-proof the Australian maritime sector and avoid a later accelerated, disruptive transition by setting signals early;
- signal to global trading partners Australia's clear pathway to net zero emission shipping in our waters and ports; and
- promote a safe and equitable transition for the maritime sector, particularly for the maritime workforce.

To achieve these goals, industry and government will need to examine their investments in a range of approaches across the port, shipping and energy sectors. While there is some uncertainty around the technical and global maritime regulatory framework, the end-game is clear – a decarbonised maritime sector by 2050. Such a goal requires new approaches, including the use of new fuels, investment in new technologies, operational changes such as just-in-time arrival systems and vessel management, and skills training approaches. Recognising it is difficult to identify regulatory gaps and barriers unless you have hit one in a practical implementation sense, this paper is intended to serve as a vehicle for information gathering and input from industry and government stakeholders. These regulatory challenges may also lie outside the maritime sector (e.g. Australia's broader energy transition) and therefore the interconnectivity of all relevant aspects of this transition will require consideration. This process will be ongoing in the MERNAP's development as regulations and standards play a role in other cross cutting issues such as workforce capability and safety.

In support of the MERNAP objectives, this issues paper examines Australia's domestic regulatory environment and seeks to draw out barriers experienced by industry in their own decarbonisation journeys. This paper is set out as follows:

- In Part One, we provide some context for the maritime industry and set out what we think the key principles for regulation should be.
- In Part Two, we look at the regulatory environment in a range of different contexts:
 - General: We are interested in the general regulatory environment and what barriers to decarbonisation exist in a general regulatory sense.
 - Ports: Ports have a complex regulatory environment, falling under different jurisdictions and both private and public ownership. The section will seek to highlight the challenges in relation to connection to shore power and bunkering of new low or zero carbon fuel initiatives.

² [The Safeguard Mechanism \(cleanenergyregulator.gov.au\)](https://www.cleanenergyregulator.gov.au)

³ [National Reconstruction Fund: diversifying and transforming Australia's industry and economy | Department of Industry, Science and Resources](#)

⁴ [Consultation hub | Powering the Regions Fund - Climate Change \(dceew.gov.au\)](#)

⁵ [A new national Net Zero Authority | PM&C \(pmc.gov.au\)](#)

- Shipping: Shipping in Australia and globally is diverse in nature and there are a range of regulatory frameworks that apply, including domestic safety legislation. This section seeks views on the construction of green novel vessels, the construction of bunkering vessels for new fuels and drop-in bio fuels.
- Future global regulatory environment: In this section we set out some of the work occurring at the International Maritime Organization (IMO) and seek views on how Australia can best engage in his process.

Part One: Australia's Maritime Sector and principles for regulation

Shipping is a crucial to Australia's social and economic well-being. Shipping moves 99 per cent of Australia's goods traded by volume, and approximately 79 per cent by value. In 2021-22, 1.644 billion tonnes of imports and exports were moved by sea, worth \$755 billion in total. In 2021, there were 26,400 foreign-flagged vessel arrivals in Australia, completed by 6,170 unique vessels. At 56 per cent, bulk carriers accounted for the majority of international vessel arrivals. Container ships accounted for 13.9 per cent.

International Shipping is regulated under conventions of the International Maritime Organization (IMO), which are then implemented through domestic legislation. This is regulated and enforced by agencies such as the Australian Maritime Safety Authority (AMSA), Australian Border Force, the Department of Agriculture, Fisheries and Forestry, the Australian Fisheries Management Authority, and State and Territory governments.

As of December 2022, there were 11 Australian-flagged and crewed vessels over 2,000 deadweight tonnes (DWT) holding General Licences under the *Coastal Trading (Revitalising Australian Shipping) Act 2012* (the Coastal Trading Act) that operate in Australia's coastal trade. In 2021, 504 unique foreign vessels undertook 2,309 voyages under a Temporary Licence under the Act.

Separately to international shipping, Australia's diverse domestic maritime industry includes tourism, public transport, fishing, and operations by tugs, offshore service vessels and construction vessels. The maritime sector is served by a diverse range of ports, as well as vessel and shipping services, around Australia's coastline. The *Marine Safety (Domestic Commercial Vessel) National Law Act 2012* is a single regulatory framework for the design, construction, certification and safe operation of domestic commercial vessels inside Australia's Exclusive Economic Zone⁶. The Department of Agriculture, Fisheries and Forestry, the Australian Fisheries Management Authority and State and Territory governments also play a role in regulating other aspects of the domestic maritime industry.

Building an understanding of both the international and domestic components of the maritime sector in Australia and how the regulatory frameworks interconnect is key to charting a path to a decarbonised industry. There are foundational interdependencies between the decarbonisation pathways of international shipping, and how it impacts the domestic industry. An example of this is the choice of fuels for international shipping to meet their international GHG obligations. These choices in turn will impact on Australian port's investment decisions in bunkering and related services, which will require a domestic regulatory approach. These interdependencies require a holistic view of our regulatory frameworks. The regulatory barriers that this paper identify are not exhaustive, and serve as a starting point for industry input to help build a full picture.

⁶ The Marine Safety (Domestic Commercial Vessel) National Law Act 2012 is currently being reviewed by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts, matters that form part of this review are out of scope for the MERNAP issues paper and process.

As subsequent issue papers consider other themes, an anticipatory regulatory approach can be developed for the short, medium and longer term to enable future investment and support the transition to a decarbonised sector.

Q What aspects of the domestic and international industry do you think we should be particularly mindful of?

Key principles for regulation

The maritime sector is made up of a diverse range of actors with varying capacities, roles, responsibilities and incentives. The domestic aspect is made up of commercial operators with a single vessel or a single service who characteristically have limited access to regulatory information or financial resources to reconfigure vessels in a short-time frame, as well as larger operators with multiple vessels. Conversely, there are international shipping companies and energy and service providers operating in Australia with substantial vessel fleets or operations, routine access to legal and regulatory counsel, and international finance backing.

Key principles in both assessing current regulatory challenges and devising new approaches should:

- recognise the differing capacities of actors in the maritime sector to finance and implement regulatory measures;
- ensure a clear regulatory environment for investment certainty;
- ensure an even playing field across the sector;
- be undertaken with broad consultation across the maritime sector; and
- undertake comprehensive impact assessments.

Q These principles will help us provide advice to Government on what the potential future next steps might be. Do you agree with these principles? What other aspects should we consider?

Part two: Regulatory Barriers and Opportunities

a) General

Through early consultation with key maritime industry stakeholders, the Department recognised a range of national regulatory barriers to actions in support of decarbonisation. This includes the intersection of Commonwealth and State/Territory regulatory frameworks, as well as more localised requirements and standards, and even encompasses good practice which is well established in industry. Some examples have been included in this paper to stimulate thinking on other intersections and barriers that have been encountered during other experiences of the sector. This will enable the resulting MERNAP to prioritise and map regulatory barriers and inform initial remediation actions.

Across the maritime industry, this paper seeks input from stakeholders on the following questions:

Q Recognising the role of government in supporting the transition, what regulatory areas of Commonwealth responsibility should the MERNAP focus on?

Q What key regulatory arrangements would support or obstruct your operation and investment in decarbonising the maritime sector? What do you think the regulatory priorities to facilitate maritime decarbonisation should be?

Q What would prevent you from embarking on an accelerated response to decarbonisation (e.g. long lead-in time with regulatory change)?

Q We have set out a few potential areas below where there may be regulatory barriers or opportunities. What other areas exist from your perspective?

The following two sections outline the feedback we have received from conversations with ports and shipping stakeholders. They highlight more specific areas of experienced regulatory barriers and pose further questions to draw out the widest range of stakeholder experience.

b) Ports

Ports and associated infrastructure are of the utmost economic and social importance to Australia, providing a gateway to the rest of the world. Ports in Australia fall under multiple jurisdictions and regulatory frameworks. Whilst the majority of ports are under private ownership, several remain state-owned, meaning that both the private and public sector are responsible for port operations and investment. The regulatory framework is set by government – Commonwealth, State/NT and local government.

Many small vessels are also owned and operated by port operators (public and private) and could potentially be ideal candidates for the early adoption of new fuels, due to their localised operations. These include pilot vessels and lines vessels (used to assist with securing ship's mooring lines). In many cases, there are state government licencing requirements for tugs and for pilots, which may have decarbonisation goals attached to them.

Decarbonisation efforts by ports often span across multiple regulatory boundaries. State and Territory governments are responsible for land use, planning and controls, including for ports, and their adjacent land areas and connecting transport systems. Local governments also make decisions that affect ports, such as planning requirements and local road access. State or Territory governments have historically owned port authorities, however, there is a trend toward privatising these assets on a long-term lease basis.

The Australian Government is responsible for environmental assessment of port developments where matters of national environmental significance are concerned, as well as safety and security matters, customs, and implementation of Australia's international maritime obligations for ports.

Q The regulatory framework above begins to identify the intersections and complexities of regulation for ports. What situations have you or other potential investors come across where these regulatory layers contradict each other in relation to decarbonisation, or are inconsistent in their interlinkages?

Q What have been your challenges with complying with the existing regulatory framework in relation to decarbonisation?

*Q What regulatory arrangements would support or obstruct your operation and investment for ports in decarbonising the maritime sector? For you, what would **prevent** an accelerated response to decarbonisation?*

Based on our initial consultation, regulatory hurdles in ports' decarbonisation include the connection of shore power infrastructure and bunkering of new low or zero carbon fuels.

Connection of Shore Power

Shore power infrastructure is a method of emission mitigation that is used in ports for their scope two and scope three emissions. Ships use a connection to the local land-side power grid rather than using their engine when at berth to provide power for heating, cooling, lights, navigation and other equipment. Different types of vessels have vastly different power load requirements. A large cruise vessel power supply needs to provide passenger services (hotel load) and are therefore much higher than self-unloading bulk carriers, which again are much higher than bulk carriers unloaded by port-side infrastructure. Shore power could deliver emission reductions of 48-70 per cent in port: 30-60 per cent for CO₂, 40-60 per cent in SO₂, and 57-70 per cent in black carbon (Daniel. H et al, 2022).

The IMO has recently adopted guidelines on the consistent and safe use of onshore power connections at the 107th meeting of the Maritime Safety Committee (*Interim guidelines on safe operation of onshore power supply (OPS) service in port for ships engaged on international voyages*). Specific ship/vessel connection

guidance is still under development, but guidance for connecting cruise ships to shore power have been established and agreed (under the guidance of the Cruise Lines International Association). There is currently limited guidance and industry approaches to connecting bulk or cargo ships to shore power.

Q Do you or your investors have visibility of the required standards/guidance for the development of shore power? How do these standards currently impact your investment decisions for ports? Are guidelines sufficient?

Q What other information do you need to inform investment and operational decisions in relation to shore power? Is greater certainty in the status of the standards/guidelines a prerequisite?

Q What examples/evidence of implementation of shore power internationally could Australia leverage or learn from?

The regulatory barriers and gaps for maritime emissions reduction can also be outside of the sector's regulatory environment. For example, Ports Authority NSW is working to implement shore power to the Glebe Island and White Bay port precinct for cruise and bulk ships, providing five shore power connection points in the Bays Port precinct – four for bulk ships at Glebe Island and one for cruise ships at the White Bay Cruise Terminal. A budget of \$46-55 million has been estimated, including design and investigation costs, 33kV cable, shore power equipment, and the cable system.

Shore power investments face regulations and standards barriers in relation to protocols for connecting to the energy grid. In connecting shore power that utilises a significant load of green energy from solar or wind sources, companies need to establish Power Purchasing Agreements. These agreements can be complex and come with high administrative burdens. Under the National Energy Retail Law, a port with multiple new and significant customers effectively becomes a retailer of energy. This leads to additional regulatory requirements in establishing shore power as a source of energy for vessels and ships. It is important to consider the impact regulations and standards outside of the maritime sector may have on ports involved their investment decisions.

Q What other regulatory challenges have you or others you know experienced in consideration of investment in shore power?

Bunkering of New Low or Zero Carbon Fuels

To support decarbonisation efforts, it is important that Australia has the infrastructure and processes in place to bunker new low and zero emissions fuels such as hydrogen, ammonia and methanol. The process of bunkering fuels includes the logistics of storing, loading, and distributing fuel among available shipboard tanks. Therefore, not only is there a need for new infrastructure, but also detailed regulations for the safe handling of fuels that have different properties than those currently used.

Some of the barriers involved in bunkering new fuels include compatibility issues with current infrastructure and regulatory frameworks. Specific regulations around chemical handling and safety, emergency response, and the necessary planning and approval pathways for bunkering facilities need to be mapped against low emission fuels to prevent regulatory burden for ports investing in new bunkering approaches. This process will involve engagement with AMSA and state-based regulators to further understand current regulation and potential new pathways.

Q What lessons can be learned from the development of liquefied natural gas (LNG) as a bunker fuel?

Q What is your understanding of the scope and magnitude of the different requirements for the emerging fuels handling?

Q What research is required to understand which equipment and procedural standards should apply?

Q What is your understanding of the scope and magnitude of the different requirements for emerging fuels handling?

c) Shipping

Based on preliminary conversions, regulatory hurdles that have been experienced in vessel and shipping decarbonisation include:

New and Emerging Technologies

Most new domestic commercial vessels need to comply with the National Standard for Commercial Vessels (NSCV).⁷ The NSCV does not currently have explicit standards related to low emission fuels and propulsion systems such as hydrogen, methanol, ammonia, and higher-powered electric vessels. A new build using these fuels will need to seek certification under the 'Novel Vessel Policy Statement'. While there is a regulatory pathway to build these types of vessels, the requirement to be built to class rules and undergo class survey (as opposed to being built to the NSCV and surveyed by an AMSA accredited marine surveyor) adds additional costs. Constructing and maintaining the vessel in accordance with the rules of an AMSA recognised organisation has been identified as a significant impediment to building vessels based on low and zero emission propulsion technologies.

Construction of Bunkering Vessels for New Fuels

Bunkering vessels are required to comply with the International Convention for the Safety of Life at Sea (SOLAS) requirements around safe handling of heavy fuel oil. It can be reasonably expected that as new fuels come online into mainstream use, equivalent standards will be developed.

Q Do these or other regulations, or their current development uncertainty, impact investment in low and zero emission bunkering vessels?

Q What other opportunities or barriers exist?

Drop-in Biofuels

For some segments of the maritime industry, drop-in biofuels will be a natural and vital transitional fuel – or end point – in reducing emissions, particularly where the costs of alternate technologies are prohibitive.

Q What concerns do you have with the pathways for biofuel use (for example a perceived lack of standards across marine applications, or Original Equipment Manufacturers not supporting their use)?

Q Is there a lack of standards across marine applications limiting the use and uptake of alternative fuels, including biofuels? If yes, what are the gaps?

Q What standards apply to support engine manufacturers in the transition to biofuels? If there are no international or domestically recognised standards, is there an accelerated pathway for land-use engine standards for biofuels that can be adapted for maritime application?

⁷ The DCV National Law is out of scope for the MERNAP process, and it is currently undergoing its own review process. See [Independent Review of Domestic Commercial Vessel Safety Legislation and Costs and Charging Arrangements | Department of Infrastructure, Transport, Regional Development, Communications and the Arts](#) for more information.

Q In what areas is further analysis on standards, regulations, and communication required to build confidence in the use of biofuels as a potential emissions reduction strategy?

d) Future Global Regulatory Environment

Recent decisions by the IMO in relation to GHG emissions will increase the speed of the transition in the international maritime sector – creating both new standards and rules, but also opportunities for Australia to export and bunker alternative fuels.

In June 2021, the IMO adopted an initial combined technical and operational efficiency measure to achieve its 2030 ambition by requiring ships to meet a Carbon Intensity Indicator (CII) metric on a declining trajectory.

- This global measure came into effect on 1 January 2023 and is enforced domestically through *Marine Order 97 (Marine pollution prevention – air pollution)*.
- Shipping energy efficiency measures can only go part of the way to decarbonisation, with alternative zero carbon propulsion systems needed to reach net zero emissions ambitions.

On 7 July 2023, the IMO adopted the 2023 IMO Greenhouse Gas (GHG) Strategy which aims to:

- reach net zero GHG emissions from international shipping by or around 2050, with interim checkpoints of 20-30 per cent emissions reduction by 2030 and 70-80 per cent by 2040; and
- make zero or near zero GHG energy, fuels and technologies 5-10 per cent of international shipping's energy mix by 2030.

The IMO is now developing a basket of mid-term measures consisting of both technical and economic elements for adoption by 2025 to set international shipping on a pathway to achieve these ambitions. There is unanimous support for a GHG fuel standard as a technical element which will mandate the phased reduction in the GHG intensity of energy used onboard ships. This standard is expected to drive demand for the uptake of zero and near zero GHG marine fuels. Also under consideration are several GHG emissions pricing proposals, aiming to narrow the price gap between alternative and conventional fuels and facilitate the shipping energy transition through the strategic channeling of potential revenue. The IMO has initiated a comprehensive impact assessment to assess the policy measures' socio-economic impacts on Member States, including impacts on food security and the trade competitiveness of economies distant from their markets. The results of this impact assessment will inform the detailed design and prioritisation of measures for adoption.

The Australian Government recognises the importance of transitioning the maritime sector to net zero emissions as soon as possible and the need for urgent action now. We actively engage in the International Maritime Organization (IMO) to develop global mandatory standards and measures to prevent ship-sourced pollution, including GHG emissions from international shipping.

Q Are there specific areas of Australia's international emissions reductions engagements, in relation to IMO regulations, that the maritime sector would benefit from greater knowledge of, and engagement in?

Q What initiatives related to the above issues are happening internationally that we can learn from/consider/adopt when constructing our national approach to decarbonisation under the MERNAP? What has and hasn't worked, and what is feasible for us domestically?

Reference list

Bureau of Infrastructure, Transport and Regional Economics 2014, *Feightline I – Australian freight transport overview* [Freightline 1 - Australian freight transport overview \(bitre.gov.au\)](https://www.bitre.gov.au/publications/feightline-1-australian-freight-transport-overview)

Bureau of Infrastructure, Transport and Research Economics Statistical Report 2023. *Maritime: Australian sea freight 2020-21* [Australian Sea Freight 2020-21.pdf \(bitre.gov.au\)](https://www.bitre.gov.au/publications/australian-sea-freight-2020-21)

Daniel, H., Trovão, J.P.F. and Williams, D., 2022. Shore power as a first step toward shipping decarbonization and related policy impact on a dry bulk cargo carrier. *Etransportation*, 11, p.100150.