

OECD Council Working Party on Shipbuilding (WP6)

Submission by Australia



WP6 Workshop

The Shipbuilding industry's response to the Green
Growth challenge

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AUSTRALIAN GOVERNMENT PAPER TO WORKSHOP ON THE THEME: *THE SHIPBUILDING INDUSTRY'S RESPONSE TO THE GREEN GROWTH CHALLENGE*

1. Summary

Australia is heavily reliant on shipping for its trade, and is currently a world leader in the design and construction of large high-speed aluminum vessels. As a consequence, Australia has a strong interest in how Governments and the shipbuilding industry worldwide are responding to environmental and climate change challenges, and how these responses are impacting on shipbuilding and the supply of ships for the market.

Australia believes that green growth issues should be addressed through a framework that facilitates the making of informed policy choices to maximise the combined economic, social and environmental wellbeing of current and future generations.

It is important to emphasise the need for a collaborative approach to address global challenges. Focus should be given to how governments can assist firms and industries to adopt incremental innovation, because this can provide significant gains in areas such as energy saving and pollution reduction.

Australia recognises that the existing fleet of vessels around the world is under pressure in the market from increased fuel prices, and increasingly from Governments in terms of regulatory requirements to reduce emissions and effectively manage waste disposal.

Increasing market and regulatory demands for more fuel efficient ships is having an impact on shipbuilding design and manufacturing. More broadly, this has implications for linking ship design, development, manufacturing, the use of inputs and raw materials, operation and use of the vessel, and eventual retirement.

In relation to smaller ships including passenger ferries and other vessels, technological developments have led to ships that use less fuel (and hence emit less carbon dioxide) due to the use of lightweight aluminium and composite materials, innovative design techniques and the use of advanced construction technology.

Australia is a world leader in building lightweight aluminium craft that require considerably less power – resulting in substantially reduced emissions – and are made of 100 per cent recyclable material. This leading position reflects a strong history in shipbuilding, where for many years Australia led the world with the manufacture and operation of *mv Accolade II*, a vessel which is on the Australian registry and is still operating a daily service. This 1981 bulk carrier is powered by Compressed Natural Gas (CNG) and was designed to operate inexpensively and with a minimum of emissions.

Australian shipbuilding companies (including in particular Western Australian-based Austal Ships) have since invested considerable funds into the research and development needed for the evolution of modern energy-efficient multihull vessels.

In addition, the Australian Government supports research projects and studies that improve the information bases which inform environmental policy decisions and industry responses to changes in policy.

At the local and individual firm level in Australia, an Environmental Management Systems (EMS) approach is often used to identify and deal with the environmental impacts of the business, including emissions and discharge of wastes from shipyards.

On the horizon, a rapidly emerging and important issue is the likely impact of measures being introduced in Australia to deal with climate change such as a carbon tax and emissions trading scheme, and the related impact that any subsequent increases in energy prices and input costs would have on the shipbuilding sector.

Australia is concerned that international regulatory decisions made in response to climate change issues and impacting on shipping and shipbuilding will be made on the basis of the situation facing the traditional steel construction sector of the market, and may therefore impact unknowingly on the efficient aluminium ship construction industry, and unwittingly eliminate the environmental advantages of lightweight ship construction.

We note the developments taking place in the International Maritime Organisation (IMO) regarding technical and operational measures to reduce greenhouse gas emissions, aimed at improving the energy efficiency for new ships, and operational practices for all ships. The Council Working Party on Shipbuilding should closely monitor these developments as they will impact on shipbuilding, and consider providing input into the IMO deliberations from a shipbuilding perspective as appropriate.

Australia would support further work within the Council Working Party on Shipbuilding work program covering:

- cataloguing how Governments and the ship building industry worldwide are responding to environmental and climate change challenges, and the impact of these responses are having or will have on the shipbuilding industry;
- identifying best-practice case studies with a focus on innovation in the shipbuilding industry that achieve improved environmental outcomes; and
- keeping under review comparisons of carbon dioxide emissions between different modes of transport (ships, road, rail and air), highlighting the favourable environmental outcomes achieved by shipping.

2. Australia's shipbuilding industry

Australia's marine industry consists of ship builders, boat builders, repairers, retailers of marine products, marina service providers, marine equipment manufacturers, super yacht manufacturing and service providers, and many related activities.

Companies involved in the Australian shipbuilding industry primarily manufacture or repair vessels of 50 tonnes and over displacement. Other activities include the manufacture of submarines, and major components for ships and submarines. The local industry does not compete in the world market for tankers, container ships or bulk ships. Instead Australian shipbuilders concentrate on niche products such as high-speed catamarans, ferries, patrol boats and supplying the Australian navy.

Shipbuilding requires manufacturers to adopt the latest technological advances, as well as technical and performance characteristics. In terms of industry systems and the adoption of new technology for shipbuilding, Australia has made use of lighter materials such as aluminium and advanced hydrodynamics, which have substantial environmental benefits in lowering operational fuel use.

Australia is currently a world leader in the design and construction of large high-speed aluminum vessels, and has a strong interest in how the industry worldwide is responding to environmental and climate change challenges. Australia is concerned that international regulatory decisions made in response to climate change issues and impacting on shipping and shipbuilding will be made on the basis of the situation facing the traditional steel construction sector of the market, and may therefore impact unknowingly on the efficient aluminium ship construction industry, and unwittingly eliminate the environmental advantages of lightweight ship construction.

3. Approach to *green growth* issues

Australia believes that green growth issues should be addressed through a framework that facilitates the making of informed policy choices to maximise the combined economic, social and environmental wellbeing of current and future generations.

Australia believes the WTO-consistency of any green growth strategy is essential, to highlight the importance of trade for green growth and the need to avoid trade and market distorting measures. Any strategy should highlight the economic and environmental benefits of removing environmentally-harmful subsidies.

Australia notes the importance of general economic reforms to support green growth and targeted policies aimed at incentivising efficient natural resource use and pollution reduction. Such targeted policies should be aimed at key market failures and carefully assessed to ensure they are cost effective, efficient and avoid issues such as technology lock-in and perpetuating subsidies that are harmful to the environment in the long run. Policies should be consistent with a country's longer term framework for generating sustainable growth.

Australia believes there should be good alignment between a green growth strategy and an innovation strategy in terms of:

- placing innovation at the core of transforming an economy;
- supporting a systematic and flexible policy mix approach tailored to individual countries;
- developing tools such as a handbook to assist implementation; and
- the need for effective measurement of impact.

It is important to emphasise the need for a collaborative approach by Governments to address global challenges. Focus should be given to how governments can assist firms and industries to adopt incremental innovation, because this can provide significant gains in areas such as energy saving and pollution reduction.

Measurement and indicators are crucial if we are to identify the impact of policy on growth, the environment and human welfare. Australia notes that, at present, indicators for specific modes of transport have not been considered in detail. When this stage is reached, it will be important to ensure they

adequately reflect the variety of transport modes and markets as well as the widely different structures of OECD economies and long haul destinations driving them.

4. Environmental issues in Australian shipbuilding

The Federal Government through the Department of Innovation, Industry, Science and Research (DIISR) is working with the marine and shipbuilding industry in Australia to address impediments to growth and pursue development opportunities. The Department also works with the industry and research communities to help build a more innovative and globally successful marine industry that is better able to respond to environmental challenges.

DIISR supports the Marine Industry Working Group, which brings together the various marine industry sectors including shipbuilding to cooperatively address issues of concern, share information and provide a collective voice to government.

In relation to environmental issues impacting on shipbuilding (and other sectors of the marine industry), a key issue facing the industry has been addressing regulatory impediments to growth in the industry. For some years the Australian Government has worked with industry through the Marine Industry Working Group and separately to:

- build better linkages between government regulatory bodies and the marine industry to ensure effective consultation in the development and implementation of regulations;
- encourage greater harmonisation and consistency of regulations impacting on the marine industry; and
- ensure that the views of the marine industry and other key stakeholders are properly taken into account in the establishment and management of marine reserves.

The Australian Government supports research projects and studies that improve the information bases which inform environmental policy decisions and industry responses to changes in policy.

A number of environmental issues have been raised recently in the Marine Industry Working Group including;

- prospective new regulations governing emissions of Volatile Organic Compounds (VOCs) emitted by shipyards;
- the prospective establishment and management of marine reserves; and
- proposed new regulations of emissions by two-stroke engines (the last two issues are more relevant to the recreational boating sector rather than shipbuilding).

At the local and individual firm level, an Environmental Management Systems (EMS) approach is often used to identify the environmental impacts of the business. The process then identifies all the laws, rules and regulations, standards and codes that affect environmental management of the business. A company environmental policy is then developed, which includes objectives and targets to be met by formal procedures. Responsibilities and resources are assigned efforts are monitored to assess the success of the system. This monitoring is then used as a basis for the regular review of the system.

On the horizon, a rapidly emerging and important issue is the likely impact of measures to deal with climate change such as a carbon tax and emissions trading scheme, and the related impact that any subsequent increases in energy prices and input costs would have on the shipbuilding sector.

5. Technological developments impacting on Australian shipbuilding

Australia recognises that the existing fleet of vessels around the world is under pressure in the market from increased fuel prices, and increasingly from Governments in terms of regulatory requirements to reduce emissions and effectively manage waste disposal.

Increasing market and regulatory demands for more fuel efficient ships is having an impact on shipbuilding design and manufacturing. More broadly, this has implications for linking ship design, development, manufacturing, the use of inputs and raw materials, operation and use of the vessel, and eventual retirement.

Technological developments have led to ships that use less fuel (and hence emit less carbon dioxide) due to the use of lightweight aluminium and composite materials, innovative design techniques and the use of advanced construction technology. Aluminium has considerable advantages over steel for many applications, because speed and fuel consumption are important factors.

For example, a 30 metre vessel made of steel has a displacement of 150-180 tonnes, and in aluminium, it would displace about 100 tonnes. The 124 metre RoPax ferry *mv Blue Star Paros* was built in steel in 2001, with a weight of 5390 tonnes and a power of 17,400 kW. Austal Ships in Australia has carried out a detailed design of this same sized vessel in aluminium, and the weight reduces to 3890 tonnes and a power of 14,000 kW for the same ship service speed of 24.5 knots. This power saving is equivalent to a fuel saving of almost 20 per cent.

A feature of the Australian shipbuilding industry is an increase in the sophistication of the products supplied to world markets. To maintain competitiveness there has been significant investment in new, state-of-the-art production facilities and major technological advances in plant and equipment.

Australia's shipbuilding industry has demonstrated the advantages of aluminium construction to world markets. Not only is aluminium lightweight, and hence reduces power and fuel consumption, but it also requires far less energy than steel to cut and form into shape. Cutting aluminium does not require the use of gas or plasma arc with the associated emission of harmful gaseous by-products.

Aluminium is easily handled and requires considerably smaller infrastructure such as high energy consuming cranes. It is also recycled at the end of its life – more of the world's stock of aluminium comes from recycling than is produced from raw bauxite. While the refining of bauxite into aluminium does demand large amounts of electricity, in Europe this is substantially provided by hydroelectricity which is emissions-free.

Marine grades of aluminium do not generally suffer from corrosion, and therefore it is a low maintenance material, and above the waterline does not require painting with its associated VOC emissions and sand blasting and possible leaching into the marine environment.

The Tasmanian-based Incat is currently building a high speed passenger Ro-Ro ship powered by Liquefied Natural Gas (LNG). Greater use of LNG will lead to lower emissions of carbon dioxide, and can

lead to reductions in NOx with appropriate technology. SOx will also be eliminated as sulphur is not present in LNG.

6. International Maritime Organisation (IMO) Greenhouse Gas Emissions standards

The IMO is moving ahead with an approach that is intended to increase the efficiency of shipping through setting benchmarks for transport efficiency which is related to CO2 emissions. The IMO is developing a Ship Design Index, a Ship Operational index and an energy efficiency management plan to be applied to new ships. Guidelines for voluntary application of the Indices are also being developed.

The IMO has previously indicated that it would concentrate on reducing emissions from bulk carriers, container ships, oil tankers, and chemical tankers. However, more recently it has indicated that it intends to apply regulations to all ships.

In relation to passenger and vehicular ferries (RoPax), it is difficult to compare RoPax performance with other forms of transport, as these vessels are neither truly cargo carriers (measured in terms of cargo deadweight capability) nor passenger craft (measured in terms of the numbers of passengers carried). Therefore RoPax will need special consideration when an Energy Efficiency Design Index is extended to other ship types. It may be that RoPax do not fit the IMO metrics developed to date of weight or capacity capability.

The Council Working Party on Shipbuilding should closely monitor these developments as they will impact on shipbuilding, and consider providing input into the IMO deliberations from a shipbuilding perspective as appropriate.

7. Conclusions

Australia believes it is important to emphasise the need for a collaborative approach to address global environmental and climate change challenges. Focus should be given to how governments can assist firms and industries to adopt incremental innovation, because this can provide significant gains in areas such as energy saving and pollution reduction.

Measurement and indicators are crucial if we are to identify the impact of policy on growth, the environment and human welfare. Australia notes that, at present, indicators for specific modes of transport have not been considered in detail. When this stage is reached, it will be important to ensure they adequately reflect the variety of transport modes and markets as well as the widely different structures of OECD economies and long haul destinations driving them.

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