

Waterborne Declaration

In the coming years, the Waterborne community will play a critical role in helping to achieve the “Europe 2020” objective of smart, sustainable and inclusive growth.

We believe that research and innovation are essential to address the dual challenges of societal and economic progress. We declare that:

- We will deliver more extensive, integrated, efficient and sustainable waterborne transport systems and infrastructure
- We will provide increased support for the emerging offshore food, energy and minerals sectors
- We will reduce our impact on the environment
- We will play an important role in delivering a more competitive and sustainable low carbon economy
- We will continue to prioritise safety and security within the Waterborne community

To address these challenges, the Waterborne community will demonstrate strong leadership, will foster a co-operative and supportive research environment and will develop clear implementation plans.





Waterborne Declaration

With more than 70% of the planet's surface covered by water, the oceans are at the heart of life on earth. They drive our climate, shape our environment and are becoming increasingly important as a source of raw materials, food and energy.

Out of sight and out of mind for the vast majority of people, the oceans are also the primary transportation route for many of our natural resources and the goods that are made from them. Globally, close to 90% of goods travel to their destination by sea and these volumes will continue to increase.

Given the pivotal role and potential of oceans in the economic and social wellbeing of our planet, their use must be managed sensitively and in a manner which minimises man's impact. Our past history of overexploitation and accidental damage bears witness to the difficulties of achieving this.

The Waterborne community, as a major provider of maritime products and services, understands its responsibilities in this regard. We understand that, in the coming decades, we must redouble our efforts to develop strategies and technologies which will continue to deliver social and economic benefit without adversely affecting the environment upon which we depend.

A dynamic maritime industry is a key element of healthy societies, environments and economies. Our job is to deliver vital products and services to society. Our challenge is to do this in a sustainable manner. To succeed, we must continue to improve our infrastructure, our knowledge and our innovation capability.

In the coming years, the Waterborne community will play a critical role in helping to achieve the "Europe 2020" objective of smart, sustainable and inclusive growth.

We believe that research and innovation are essential to address the dual challenges of societal and economic progress. We declare that:

- We will deliver more extensive, integrated, efficient and sustainable waterborne transport systems and infrastructure
- We will provide increased support for the emerging offshore food, energy and minerals sectors
- We will reduce our impact on the environment
- We will play an important role in delivering a more competitive and sustainable low carbon economy
- We will continue to prioritise safety and security within the Waterborne community

To address these challenges, the Waterborne community will demonstrate strong leadership, will foster a co-operative and supportive research environment and will develop clear implementation plans.



THE WATERBORNE SECTOR

We are:

SUPPLIERS OF SAFE AND EFFICIENT TRANSPORT for goods and passengers on a local, national, continental and intercontinental scale. Close to 90% (by volume) of all global transportation is waterborne

We also:

SUPPORT THE EXPLOITATION OF ENERGY AND RAW MATERIALS. Predominantly fossil fuels but renewable energies such as wind, wave and tidal are increasing in importance. Exploitation of other raw materials is an emerging sector which will require extensive support from the maritime community.

SUPPORT THE SUPPLY OF FOOD FROM THE SEAS – fisheries and aquaculture

SUPPORT THE GATHERING OF MARINE INFORMATION through the provision of products and services for oceanographic surveys, global data gathering and marine research

Defining the Challenges

The major challenges facing the Waterborne sector through to 2020 and beyond are both **societal** and **economic**.

■ *Societal Challenges:*

- Developing a low carbon, low emission economy
- Adapting to climate change
- Harvesting natural resources
- Assuring safe and secure supply of goods and services

■ *Economic Challenges:*

- Improving competitiveness
- Improving innovation and technology transfer
- Increasing the level of education and skills
- Addressing new and developing routes and markets

Addressing the Challenges

The Waterborne community proposes to address these challenges by means of both privately and publicly funded research and innovation. This work will support the delivery of the “Europe 2020” objectives and beyond. We will focus our efforts on three main areas:

■ *Sustainable Waterborne Transport*

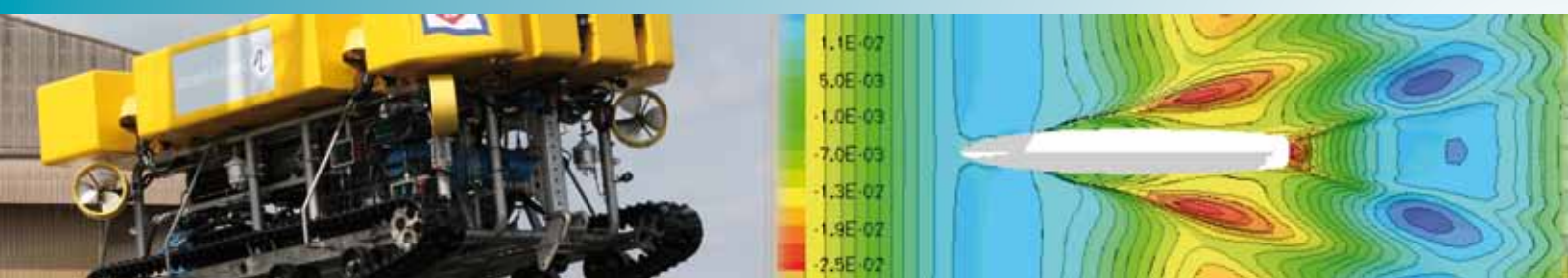
- Assuring security of supply
- Increasing the energy efficiency of ships and vessels
- Minimising the environmental impact of ships and vessels
- Building safer ships and vessels
- Increasing competitiveness
- Recruiting and retaining a skilled workforce
- Developing advanced waterborne infrastructure including e-maritime solutions

■ *Support for the harvesting of offshore resources*

- Renewable energies: Wind, wave and tidal energy
- Fossil fuels and raw materials
- Fisheries and aquaculture

■ *Minimising impact on the oceans*

- Developing a better understanding the oceans
- Improving products and services for marine monitoring
- Increasing direct collaboration with the marine sciences



Supporting the Solutions

The scale of the task we face requires better co-ordination of research and development, both within the maritime sector and in partnership with related sectors. To achieve this we propose to strengthen the **WATERBORNE Technology Platform**.

Detailing the Challenges

1 *Sustainable Waterborne transport*

By being more sustainable, we believe our industry will be more competitive. This initiative aims to improve the competitiveness of the stake holders of waterborne transport (shipping and ship-building including equipment suppliers, ports and infrastructure, classification societies, recreational marine and service providers), to secure jobs and employment, to decrease the environmental impact of transport, to improve safety and security and to facilitate a modal shift in transport. Beside the major maritime challenges, also the related topics of inland navigation and the maintenance of inland waterways will be addressed and supported by our industry.

a. Assuring security of supply

A significant proportion of the EU's goods and energy arrive via the oceans; 8 million barrels of oil a day arrive by ship. Maintaining the security of this supply is paramount for the economic and social well being of the community.

Some supply threats are technology or climate based, others are geo-political. With the political stability of countries bordering important shipping routes becoming more uncertain, acts of piracy and terrorism are likely to continue. New solutions for ensuring the security of ships and their crew need to be developed and implemented in addition to reducing our dependence on fossil fuels and increasing the ability of vessels to withstand extreme conditions.

b. Promoting safer and more environmentally friendly ships

Given the high-technology nature of the EU-shipbuilding sector and the high EU-wide priority for safety and environmental quality, high global standards and effective international control is important.

E-maritime solutions will be developed as a means to improve the flow of information from ship to ship and ship to shore and to provide the backbone for new products and services. Improved safety and monitoring services will be a high priority in the pursuit of zero accidents.

PROVIDE MARINE SPORT AND RECREATION – from small boats to super yachts, there are 6 million recreational craft in the EU enjoyed by 32 million users every year

ADDRESS THE NEEDS of and support innovation for navigation on and maintenance of inland waterways

PROVIDE VESSELS AND EQUIPMENT for regulatory authorities such as coastguard services, border patrols, policing and customs

DESIGN AND BUILD naval vessels and equipment

PROVIDE SPECIALISED VESSELS for the construction of new ports and harbours, coastal defences, inland waterways

LEAD THE WORLD in cruise liner design and construction



WATERBORNE IN FIGURES

The EU maritime industry cluster has an estimated turnover of €270Bn and directly employs about 1.5 million people. Close to 90 % of Europe's trade with the rest of the world is shipped through its sea-ports as well as 40 % of intra-European trade.

SHIPPING

- » More than €120Bn turnover
- » More than 400,000 direct employees
- » 209 M GT EEA flagged vessels or 23% of the global total
- » 381M GT EEA owned or 40% of global merchant fleet
- » 15,000 EU registered ships

SHIPBUILDING

- » €30Bn turnover (including naval)
- » 120,000 direct employees
- » 150 large shipyards
- » Global leaders in advanced ship design and construction

40% of the EU's internal trade is already carried by water and this fraction could and should be encouraged to grow as a way of reducing congestion and pollution from land based transport.

Shipping contributes some 2.7% of global CO₂ emissions (about 1,000 million tonnes in 2010 from ships over 100 gross tonnes), despite the production of green house gasses per tonne mile being significantly lower than other means of transport.

The continued growth of global trade makes an absolute reduction in current emission levels very challenging and it will not be achieved by simple evolutionary technical changes. If growth rates average just 2% over the next 30 years, shipping volumes will increase by 80%. Innovative means of reducing emissions such as green house gasses, NO_x and SO_x must be explored, including the use of alternative fuels and propulsion systems.

Although the exact impact of climate change is unclear, it is apparent that we can expect more extreme weather events, which will lead to a change in the operational envelopes of vessels and offshore structures. New technologies, modelling and validation methods will be required to determine an appropriate engineering and operational response. Current design codes and Classification Rules will need to be changed accordingly.

c. Competitiveness

European companies belong to the world leaders in all fields of the maritime industry and waterborne operations. However, constantly changing market, society and environmental conditions create new opportunities and new challenges. The European maritime industry, based in an area of wealth and high social and environment protection standards, must address these challenges by means of technological and commercial research, development and innovation to maintain leadership and competitiveness.

Maritime RDI is one of the keys to European competitiveness and covers parallel development of the supply chains, equipment and materials, manufacturing and support infrastructure. It deals with all vessel types from high volume and specialised cargo vessels, large cruise ships and ferries through special service supply ships, ice breakers, tugs and dredgers, research and coast guard vessels to super yachts, sail and power boats.

High quality, efficient vessels and waterborne systems mean cost effective and environmentally sustainable transport, especially where integration with other transport modes is optimised. On average, the external cost of waterborne transport is less than 1/5 of the cost of road transport. A shift of larger transport quantities from road to waterborne transport could save hundreds of millions of euro in the external costs of transport .¹



This modal shift will be enabled by integrated vessel and cargo handling system designs, focused on the cargo, to deliver rapid logistics handling from ship to shore.

By its very nature, the sector is already global in its manufacturing and operations. The major players understand the worldwide differences in regulatory environments and in labour and social conditions. Given the overarching need for a level playing field, the industry's competitiveness strategy is based on high productivity, the superior performance of its innovative products and services, and an ongoing commitment to developing and implementing new knowledge.

d. Technology, education and skills

Research and innovation are key to delivering the leading edge technology the sector requires. With the Waterborne community playing an active role in supporting other sectors, a more collaborative and inter-disciplinary approach will be required.

At a Community level, the smaller EU companies in particular indicate that accessing funding and programmes at EU level is difficult and time consuming. Dramatic simplification of procedures and improving accessibility is needed. At the level of member states there are differences in whether and how national governments design innovation aid schemes. Further exchange of best practices and raising awareness on the possibilities for effective RDI incentive schemes would be preferable.

The Waterborne sector can only remain competitive if it continues to deliver high added value by using leading edge technologies and processes to create intelligent products. This means attracting and retaining an appropriately educated and trained workforce.

Numerous initiatives have already been implemented to promote professions in the maritime cluster such as "European Shipyard Week". This remains a highly topical issue across the industry and may become more difficult if a critical mass of knowledge is not retained and specialised educational facilities are lost. A continuation of the active promotion of professional and technical careers in the maritime cluster is required. In addition, labour migration between the maritime clusters should be encouraged and supported.

¹ Commission estimates

MARINE EQUIPMENT

- » €42bn turnover
- » About 300,000 direct employee 7,300 companies
- » 45% of the total global market
- » 46% of products are exported
- » Marine equipment comprises up to 80% of a ship's value

PORTS

- » €20Bn of added value
- » 350,000 direct employees
- » 1000 seaports
- » 3,5 billion tonnes of cargo per year.
- » 400 million passengers

NAVAL

- » €15Bn turnover
- » 82.000 direct and indirect employees
- » 12 major companies

INLAND NAVIGATION

- » Up to 44% of the total transport share in the catchment areas of major seaports.
- » 515 million tonnes of freight per annum
- » 145 billion tonnes-km.



DREDGING

- » €7 billion per annum turnover (doubled since 2000)
- » 25,000 direct employees
- » 80% share of the available market

CLASSIFICATION SOCIETIES

- » EurACS members have a 55% share of the global classification of ships

RECREATIONAL MARINE

- » €24Bn turnover
- » 278,000 direct employees
- » 22,100 businesses including 2,400 boatyards

AQUACULTURE

- » € 3.2 billion added value
- » 20.3 % of total EU fisheries
- » 1.3 million tonnes of product per annum

OFFSHORE WIND

- » Supplies 4.8% of EU electricity
- » Estimated 161 GW by 2020 including 40 GW offshore

2 Support for the harvesting of offshore resources

This initiative aims to provide products and services for the exploration and exploitation of marine energy and other natural resources as well as the transport of those resources to the end users. It aims at the competitiveness of all relevant stake holders and a reduced impact on oceans.

a. Energy

There is a high level of awareness of the need to reduce our long term dependence on fossil fuels, from both economic and environmental perspectives. Until there are viable alternatives to fossil fuels however, we will need to support the exploitation of the limited remaining resources. More advanced vessels will be required for:

- Deployment, operation and recovery in extreme conditions
- Extreme weather operations, including extreme cold
- Deep water exploration

The development of a sustainable energy position requires use of more renewable energy (EU goal of 20% by 2020) and the exploitation of alternative energy sources. In the marine environment we need to provide products and services to support:

- Offshore wind farms (fixed and floating)
- Wave, current and tidal energy devices
- Thermal and osmotic energy
- Advanced dredging
- Energy conversion, storage and transfer
- Greater involvement of the classification societies in offshore energy
- Specialised vessels and equipment for installation, maintenance and support
- Specialised repair yards and ports

b. Food

A rapidly increasing world population is placing ever increasing burdens on the food supply chain. At the same time, natural sources of protein such as fish are declining due to environmental changes and poor long term resource management.

In this climate, aquaculture is becoming increasingly important. The potential for growth in Blue Food in Europe is substantial, in particular as fish farming moves to the open sea. To realise these



opportunities there will be a need for greater support from Waterborne technology for:

- Specialised factory and support vessels
- Effective monitoring systems
- Good area planning to prevent conflict with other use of the oceans

c. Raw materials

The World's oceans are largely unexplored but it is known that there are valuable and necessary resources to be recovered from on and beneath the sea bed. This is an emerging market and exploitation of these resources will require a high level of inventiveness and innovation for:

- Site investigations
- Deep water operations
- Advanced simulation and validation

3 *Minimising impact on the oceans – Blue Seas*

The oceans and seas are under pressure from human activities and climate change. The growing vulnerability of coastal areas, increasingly crowded coastal waters, the key role of the oceans in the climate system and the pressures on the marine environment call for a stronger focus on our oceans and seas.

Climate Change is expected to have a significant impact on sea level rise, coastal erosion and extreme events. These phenomena will put increased pressure on coastal areas where around 80% of the largest population centres in the world are found. This situation will force policy makers to reconsider the design of coastal defence. It has been estimated that the actual expenditure cost for coastal protection in Europe exceeds 1 billion Euros per year. The idea of "Building with Nature" is based on the principle of using the natural forces, instead of fighting them. The concept of ecodynamic design, implementing the ecosystem's approach in practice to help shape the human activities along the coastal lines, ports, rivers, marinas, interfaces, is fundamental for a sustainable and technically feasible development.

Invasive species transported in ballast water in ships are vectors of profound changes in marine ecosystems. In the short term, the problem will be solved by strict regulations requiring treatment of all ballast water. In the longer run, technological solutions need to be found such as ballast free ships.

OIL AND GAS

- » €30Bn in the global services and supplies market
- » 70% of the European market
- » Just 2% of prospective resources have been explored in deep and ultra-deep waters
- » 40% of the future oil & gas will come from water depths to 500m, 20% between 500 and 1500m and 40% from 1500 to 3000m.

FISHERIES

- » 84,909 vessels with a gross tonnage of 1,844,292 tonnes
- » 141,110 direct employees

RESEARCH STRUCTURE

- » 40 Maritime Universities in 17 countries
- » 40 research establishments with more than 3,000 research staff



Commercial shipping may offer platforms for research. Ships are already becoming heavily instrumented, and the environmental R&D programmers should be encouraged to develop instrument packages that can be carried by ships. The ship-of-opportunity concept with advanced instrumentation packages reduces the number of specialised oceanographic vessels that are required. It provides valuable real time information on weather and sea conditions allowing improved sailing practices such as weather routing and current riding that improve safety and reduce fuel consumption.

Monitoring of the oceans, the seas and the coasts as well as their sources of pollution like rivers should be a joint endeavour with marine scientists.

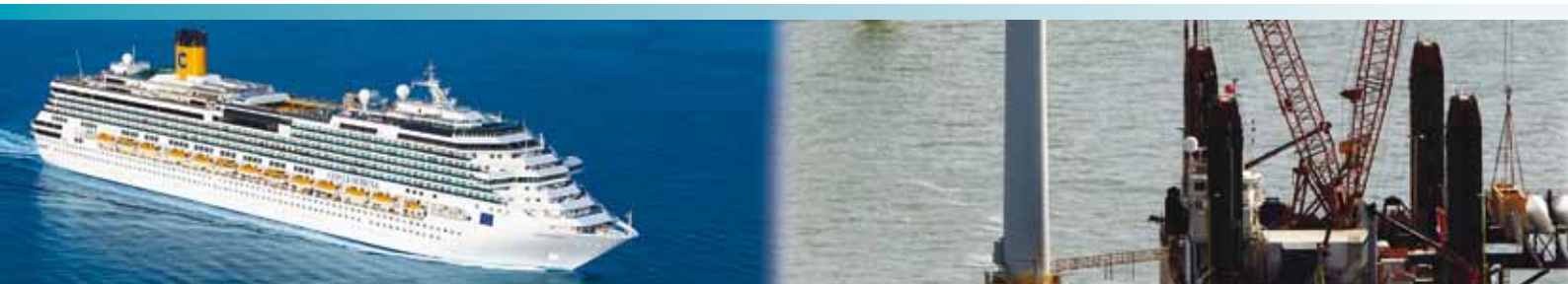
The ocean may also become a major arena for bio-fuel production, e.g. algae production.

Storage of CO₂ in subsea reservoirs and use of CO₂ for oil recovery may provide for the more effective exploitation of oil reserves and reduced atmospheric green house gasses.

The Northern route would reduce the length for transport from East Asia to Northern Europe by one-third but all these developments also carry considerable risks for the environment. Research is required which will allow policy makers to take the appropriate measures to ensure that such developments remain sustainable.

To understand the oceans role as a CO₂ sink is a major issue in understanding the climatic variations. About 50% of the post-industrial anthropogenic CO₂ release has been taken up in the ocean, half of which has been taken up in the North Atlantic.

A greater understanding of the impact on the oceans of oxides of sulphur and nitrogen is required together with cost effective mitigation strategies.



The *WATERBORNE* Technology Platform

In order to support the research required by the maritime community in addressing these challenges, a more coherent, collaborative and goal orientated approach is needed.

The *WATERBORNE* TP will provide this support by enhancing research infrastructure and by ensuring better collaboration, technology transfer and implementation of research results through innovation.

WATERBORNE TP will improve synergies between national and international initiatives and amongst the research community. It will facilitate the creation of inter-disciplinary innovation partnerships between the stakeholders which will have clear focus and critical mass.

The maritime community will continue its commitment to the *WATERBORNE* TP and we invite the Member States and the European Commission to join us.

In the period up to 2020 the maritime community will commit to an annual spend of approximately €90m on the EU Research Programme within the key areas of:

- Sustainable waterborne transport
- Sustainable use of marine resources
- Minimising impact on the oceans



WATERBORNE Secretariat
c/o CESA
Rue Marie de Bourgogne 52-54
B-1000 Brussels, Belgium
<http://www.waterborne-tp.org>

WATERBORNE^{TP}
WATERBORNE_{TP}