



SEA the Maritime Future: An OCEAN of Opportunities for Europe The Vision and Missions of the Waterborne sector for the Future

1. WATERBORNE: A KEY SECTOR FOR ADDRESSING GLOBAL CHALLENGES, SUSTAINABLE DEVELOPMENT GOALS AND SOCIETAL NEEDS

The ability of society and industry to address global challenges, to meet the UN Sustainable Development Goals, to tackle societal needs and to adopt emerging technologies, will determine the world of tomorrow and the life of future generations.

Oceans and seas will be crucial in the world of tomorrow. They will play a major role in addressing global challenges, meeting the UN Sustainable Development Goals and fulfilling societal needs to the extent that the 21st century will be the “*century of the oceans*”.

With more than 70% of the Globe covered by water, the Waterborne sector in Europe will be pivotal in the coming decades, both in Europe and globally. The sector will not only have to transform waterborne transport into a green, clean, safe, secure, digital and automated mode of transport. It will also play a crucial role in exploiting the promising potential of the new emerging markets in the Blue economy.

2. AN AMBITIOUS VISION AND MISSIONS FOR THE FUTURE

Confronted with these challenges, goals and needs, the Waterborne sector in Europe is determined to take up its responsibility. To that end, the sector has developed an ambitious vision, based on a series of cross-sectoral missions.

These challenges, goals and needs offer both challenging and promising opportunities for Europe and the sector: they can contribute to ***strengthening Europe’s position as a world maritime and innovative leader and to making Europe once again the most competitive maritime region in the world.***

To implement its ambitious vision, the Waterborne sector in Europe will need to make ***significant investments in research, development and innovation (RDI) as well as in education and training in the entire supply chain, including in SMEs.*** These investments will have to be underpinned by an integrated, holistic and coordinated policy and strategy, including for maritime RDI, across all parts of EU framework programmes and other relevant EU funding programmes. To that end, the Waterborne sector supports the establishment of a dedicated holistic maritime industries’ group, headed by a Maritime Coordinator, to discuss and propose the appropriate maritime policies and strategies, including for RDI.

The vision of Europe’s Waterborne sector is based on the following cross-sectoral missions:

MISSION 1: THE TRANSFORMATION OF WATERBORNE TRANSPORT

- Green and Clean waterborne transport: A zero-emission mode of transport

Waterborne transport must become a clean and green mode of transport. To that end, all harmful environmental emissions (including gaseous and carbon emissions) as well as water pollution and noise emissions have to be eliminated. Shipping and inland navigation also have to shift their fuel towards sustainable options, including renewable energies. The sector’s targets are two-fold: first

tackle new-build short sea ships and inland barges (by 2030), and then address all ship types operating in all trades (by 2050). To realize these targets, a cross-sectoral cooperation with other modes of transport and even other sectors will be essential.

- **Safe and Secure waterborne transport: Zero accidents, zero loss of life and zero pollution**

The Waterborne sector will strengthen Europe's lead in marine safety and security in two ways. First, by 2030, new technologies and new methodologies will radically improve the management of the safety of ships and barges and of their operations and will contribute to zero fatalities. Then, by 2050, the Waterborne sector will operate its fleet with a radically improved safety culture – applied on-board as well as on-shore – and characterized by zero accidents, zero loss-of-life, and zero pollution.

- **Connected and Automated waterborne transport: Realizing the full potential of connectivity and automation**

Digitisation will connect smart ships and barges as well as smart ports and smart infrastructure. It will enhance data flows. It will also lead to a higher degree of automation and autonomy, automated and autonomous systems, ship and barge operations and remote controls from the shore by 2030. Future ships and barges will be designed so that they can be continuously updated with latest digital technologies throughout their lifecycle. Connectivity and automation will not only increase maritime operations, safety or the energy efficiency of waterborne transport. They will also increase logistic flows.

To transform waterborne transport in this way, it is important to proceed step-by-step, i.e. existing technologies must be further improved, whilst new innovative technologies must be developed.

MISSION 2: ENSURING EUROPE'S LEADERSHIP IN MARINE TECHNOLOGY

- **Safe, competitive and eco-friendly shipyards and production sites**

By 2030, digitisation and automation will also lead to the use of advanced design and production technologies, which will deliver flexible and cost-effective vessels and offshore structures with low production costs and high productivity. They will, furthermore, contribute to realizing a whole production chain of safe, competitive and eco-friendly shipyards and production sites.

- **Driving maritime and marine innovation and sustainability, with high added value creation**

Digitisation, advanced communication, design and production technologies will further drive maritime and marine innovations, are key for a sustainable European economy and will further increase added value creation, both for shipowners and other maritime and marine sectors. The Waterborne sector has three targets: (1) Embrace the *circular economy* throughout the complete life cycle of all marine products; (2) By 2050, drive the sustainable *Blue Economy* with the design, production, maintenance, conversion, operation and decommissioning of innovative, flexible, modular, and highly efficient ships, inland vessels, offshore structures and underwater vehicles; and (3) Lead the production of *environmentally neutral ships* for existing and emerging markets, including merchant ships, inland ships and necessary technologies.

- **Develop and consolidate industrial leadership with world-class applied maritime research centres**

Applied maritime research centres capitalize on decades of scientific investments in testing and numerical simulation, benefit from an outstanding infrastructure of facilities, and are on the frontline of Europe's maritime industry. They spur risk-free and competitive innovation, improve design

methods, and strengthen safety (including in extreme environmental conditions). The Waterborne sector will further develop these strategic assets and consolidate, through an increased cooperation, its scientific and technical leadership.

MISSION 3: DEVELOP EUROPEAN LEADERSHIP IN THE BLUE ECONOMY. ENABLE NEW BUSINESS MODELS FOR BLUE GROWTH SECTORS

- Facilitating working and living at sea

The Waterborne sector will produce modular systems to support and protect offshore workers, to allow good living conditions at sea and to provide offshore recreational facilities by 2030. Then, the sector will produce the first floating islands for large-scale industrial or recreational activities and inhabitation and make oceans and seas plastic-free by 2050.

- Exploiting the oceans as a sustainable source

The Waterborne sector will produce technologies and systems to facilitate the exploration and exploitation of the oceans as a source for energy, food, and minerals, and to allow their storage and transport by 2030. In concrete, floating wind turbines will become cost effective for remote areas, tidal turbines will be installed in many European coastal regions, other energy sources (e.g. waves, thermal and salinity) will become technically viable for large scale applications, fixed and floating installations will produce fresh water, and aqua-farming and related bio-technologies will satisfy the demand of the European bio-mass market. By 2030, the Waterborne sector will have the first deep-sea mining pilot installations available as a basis for future sustainable and reliable industrial operations.

- Understanding and better protecting oceans

In addition to deploying marine science and maritime technologies at sea, the Waterborne sector will enhance and better disseminate the European marine science model worldwide for many purposes (e.g. for a better exploration, explanation and monitoring of oceans and climate (such as for environmental surveillance), or for an enhanced protection of marine sanctuaries and the cleaning of oceans. By 2030, a fully integrated ocean monitoring system, including operational oceanography and meteorology, will be implemented. This system will provide a holistic view of the environmental impact for any maritime operations, enable the EU to carry out large scale plastic depollution operations in the Atlantic, and deploy a marine sanctuary automated surveillance system based on biomimetic sensors.

MISSION 4: INTEGRATE SHIPPING AND INLAND NAVIGATION INTO SEAMLESS PORT AND LOGISTICS' OPERATIONS

- More efficient port operations and better integrated maritime, offshore and hinterland logistics

By 2050, ports will offer – at the lowest cost – the fastest reliable service with zero-waste and zero-emissions in a safe and secure environment. They will facilitate ship-shore connections as well as demands for energy transition. They will also provide real time information (*digital port*), to assist nautical operations and cargo handling and to improve nautical operations and cargo handling. They will, furthermore, accommodate changing cargo types and flows and embrace new services (such as blue growth, marine tourism, larger vessels, or maintenance for automated vessels).

By 2050, ports will also better connect and seamlessly integrate maritime, offshore and hinterland logistics. They will provide real time information (*digital corridors*) throughout the supply chain, transfer cargos in a seamless way offering customer-tailored solutions (*synchro-modality*), enable a

dynamic business environment fostering smart collaborative planning of hinterland logistics (capacity sharing and self-organizing logistics) and adopt new concepts, such as modularisation of cargo, to achieve secure total inter-modality in transport.

- **Smart infrastructure**

By 2050, ports will have adopted a series of infrastructural concepts, such as adaptive offshore port extensions, flexible and resilient solutions to future vessel types, hinterland logistics and climate, facilities for zero-emission energy (re)generation and supply for ships and port activities, or cutting-edge adaptive secure communication and IT architecture and strategic traffic and port management.

3. STRENGTHENING EUROPE'S WORLD MARITIME AND INNOVATIVE LEADERSHIP. BECOMING AGAIN THE MOST COMPETITIVE MARITIME REGION IN THE WORLD

To date, the Waterborne sector in Europe is ***well-developed, diversified and cross-sectoral: it consists of three subsectors*** (waterborne transport, blue growth, and infrastructure and logistics) with oceans and seas as the common element. In economic terms, the sector accounts for €500 billion a year (3,4% of EU GDP), creates 5,4 million jobs (2.25% of EU employment), and is a driver for other industrial sectors as well as for Europe's economic growth, prosperity and wealth.

Some of Europe's waterborne subsectors are ***currently amongst the world leaders***: shipowners control 40% of the world fleet, shipyards build the world's most complex civilian and naval ships or offshore platforms; manufacturers produce almost 50% of the world's maritime equipment, including sophisticated systems, equipment and technologies for civilian and naval purposes; maritime research centres develop leading edge technology; and dredgers build the most sophisticated maritime works in the world. Hence, the Waterborne sector in Europe has largely contributed to Europe's status as world maritime power.

The Waterborne sector is also a ***strategic sector, both for Europe and the World***. For Europe, it is key for Europe's external and internal trades, for tackling Europe's mobility problem, for connecting European regions and for securing Europe's energy supply and protecting Europe's security and defence. For the World, the sector helps in realizing 8 of the 17 UN Sustainable Development goals¹ and contributes to exploiting new economic opportunities, in particular in the Blue economy².

However, the current status and successes cannot be taken for granted. Other economic powers, such as China, are challenging Europe's leadership by means of dedicated financial incentives and specific policy instruments, which aim at boosting their own local industries and economies.

Through significant investments in research, development and innovation as well as in education and training in the entire supply chain – underpinned by an integrated, holistic and coordinated policy and strategy – the Waterborne sector in Europe will be able to fully implement its ambitious vision and missions and thereby contribute to tackling global challenges, to realizing the UN Sustainable Development Goals and ultimately to meeting societal needs. This, in turn, will greatly help Europe to strengthen its world maritime and innovative leadership and offers Europe the possibility to become once again the most competitive maritime region in the world.

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¹ The Waterborne sector in Europe contributes in particular to food security; water and salination; energy; economic growth; infrastructure and industrialization; sustainable production; climate change; and oceans.

² The Blue economy is the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health. The Blue economy consists of many activities, such as maritime transport, fisheries, renewable energy, and ocean and coastal tourism.