

*Fit for the Future
Research and Development for the European Waterborne sector*

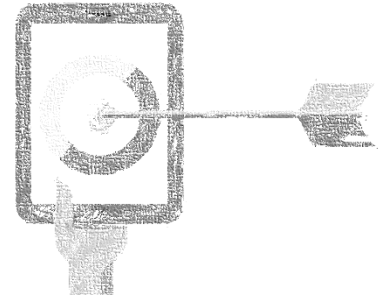


DECARBONIZATION, DIGITALISATION AND LOGISTICS – STEPS TOWARDS 2050

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CONTENT:

- 1. Ports: Vital and expanding role for European economy**
- 2. Ports are facing a rapidly changing environment**
- 3. Ports are keen & active to contribute to global and regional challenges**
- 4. European Port Industry: a distinct world leadership**
- 5. Share Valencia Port approach in shaping our future R&D pathway**
- 6. Endorsement of WATERBORNE Strategic Research Agenda**



1. Ports: Vital and expanding role for European economy:

- **Role of ports (maritime and inland) goes beyond being a node in the global transport network**
- **Main role of ports: Facilitator of economy and trade development of its hinterland**
 - **Exchange nodes among maritime and land transport modes to support the mobility** (people & goods)
 - Satisfying Supply & Distribution Chain requirements
 - Prompting industrial & economic development
 - **Base point for Blue Economy**
 - Shipyards and production sites (offshore structures, etc.)
 - Marine resources (fishing, biotechnology, energy, deep mining, etc.)
 - Marine tourism (cruises, nautical sports, underwater activities, etc.)
- **Secondary role towards their wider host communities: environmental, social and cultural character**
 - **Minimize and compensate externalities; contribute to energy transition and support circular economy**
 - **Promote employment** (qualified & quality jobs)
 - **Facilitate citizen access to waterfront** (host cultural activities and other services in unused commercial port areas)

2. Ports are facing a rapidly changing environment

▣ Pressing Environmental considerations

- **Sustainable development**
- **Minimisation of environmental impact**
- **Optimal use of resources, efficient use of energy**
- **Address climate change** - Decarbonisation and use alternative energy sources (i.e. renewable, LNG, Hydrogen,...)
- **Safety and security**
- **Resilient infrastructure and services**, to face extreme conditions and minimize accidents and life / assets losses

▣ Advancing Technological developments

- **Many disruptive technologies: Digitalisation, Automation, Machine Learning, , AI, AR (Augmented reality), Blockchain, etc.**
- **New materials**
- **Autonomous ships, vehicles, drones, satellites, Hyperloop, etc.**
- **Additive manufacturing** - 3D printing

▣ Evolving Business models

- **Modifying traditional ways of operation**
- **Creating new opportunities, thanks to efficiency gains & collaborative economy**
- **Market trends:** collaborative platforms, asset sharing, e-commerce, product to consumer shipping, product-as-a-service, etc.

3. Ports are keen & active to contribute to goal and regional challenges

- Contributing to European long-term vision for a prosperous, modern, competitive and neutral economy
 - Evolving along a green, safe, digital & social pathway
- Contributing to UN Sustainable Development Goals



4. European Port Industry: a distinct world leadership

▣ Port diversity

- Size, people, economic environment, technological development, governance
- Strength to shape the future

▣ World-class stakeholders

- Port operators, port infrastructure construction companies, equipment manufacturers, intermodal transport operators, port service providers, port authorities, etc.

▣ Large experience in seaports / inland ports collaboration

- ESPO, EFIP, BPO, FEPORT, ECSA, etc.
- Technology Platforms: WATERBORNE, ALICE, etc.



▣ EU policies & regulations: a World reference

- Decades prompting research, innovation, modernisation and integration of EU transport & port sector

5. Share Valencia port approach in shaping our future R&D pathway

2018 Innovation Plan for Valencia Logistics Port Cluster*

- Based on R&D benchmark analysis among major European container ports and other leading global operators
- Contribution of key actors of Valencia port cluster, including academia (Interviews and three workshops)



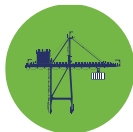
- Environment, Energy, Safety & Security
- Digitalisation & Automation
- New Logistics Business & Collaborative Models



44 main innovation trends identified grouped in 7 main components of port-logistics chain



Port Infrastructure



Terminals



Port Operations



Maritime transport



Ships



Land transport



Logistics

Identification of Key Innovation Lines and Actions for Valencia port

*Note: Valenciaport's Cluster Innovation Plan of 2018

Coordinated by the Fundación Valenciaport and supported by Agencia Valenciana de la Innovación and the Port Authority of Valencia

5. Share Valencia Port approach in shaping our future R&D pathway

Environment, Energy, Safety & Security

- **Evolution towards a zero emissions operations model**
 - **Energy transition and self-supply taking into account renewables sources** (solar, wind, biomass, etc.)
 - **Electrification and use of alternative fuels** (LNG, LPG, Hydrogen, Bio-fuels, etc.)
- **Carbon Footprint: monitoring and communicating** (for products and services offered by the Port-Logistics Cluster)
- **Environmental and commercial rebates** (to prompt transition to sustainable operations and services)
- **Smart Energy Grids development** (based on IoT, Big Data, Blockchain, etc.)
- **Security, safety and emergencies integral management based on industry 4.0 technologies**
- **Drones based applications**
- **Cybersecurity models**
- **Adaptability of port infrastructures to mitigate Climate Change effects**
- **Maximize utilization of Truck drayage**

Main Innovation Trends

Digitalisation & Automation

- **IoT information broker (Industrial DATA Spaces)** to support port operations
- **Planning & optimisation of maritime operations**
- **Prediction and management of road access / congestions**
- **Automation of terminals and vehicles**
- **Vehicle – Infrastructure communication systems** (fleet control, ETA, equipment assignment, etc.)
- **Traceability services in Blockchain networks**
- **Predictive maintenance systems**
- **Predictive systems for Vessels' ETA to the port (JIT application)**
- **Management of massive data acquisition systems**
- **Maritime traffic management systems**

New Logistics Business & Collaborative models

- **Foster innovation with Start-Ups – logistics accelerators**
- **New modern Customers relationships models based on Global digital platforms** (gathering shipping companies, logistics operators, etc.)
- **Full cargo load & container traceability**
- **Smart aggregation of logistics demands to remove inefficiencies**
- **Development of new logistics circular economy models**
- **Provision of value-added information services by Port Authorities**

6. Endorsement of WATERBORNE Strategic Research Agenda

- **Full support to pursue the ambitious vision and missions laid out for the future**
 - **The transformation of the Waterborne transport**, to become Green and Clean, Safe and Secure and Connected and Automated
 - **Ensuring Europe's leadership in marine technology**
 - **Develop European leadership in the Blue Economy**
 - **Integrate shipping and inland navigation into seamless port and logistics operations**
- **Will provide BENEFITS for the economy and the mobility of customers of 2050**
 - **People:** Zero fatalities and accidents; attractive job opportunities with above average salaries; better living environment, etc.
 - **Business:** new business opportunities; mobility cost reductions, etc.
 - **Planet:** Zero emissions; protected water environment; optimised traffic flow and less congestion
- **Call upon EU Commission, Parliament and Council:**
 - **To accomplish the proposed WATERBORNE Strategic Research Agenda**
 - **To provide adequate resources to invest in:**
 - Research, Development and Innovation
 - Education and Training



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Autoridad Portuaria de Valencia

THANKS FOR YOUR ATTENTION

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