SPC GREECE
Shortsea Promotion Center

European Shortsea Network

2nd ESN Webinar

"Digitalization and environmental sustainability as drivers in the change of SSS"

25th July 2022

The main IT technologies and green solutions adopted in the maritime transport sector by Member States involved in the ESN

Mrs Sapfo Simantoni | SPC Greece

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20 ANIVERSARIO

INTERMODAL PORTUGAL

ENVIRONMENTAL SUSTAINABILITY: REACHING THE TARGETS SET BY THE GREEN DEAL AND THE EU SUSTAINABLE AND SMART MOBILITY STRATEGY

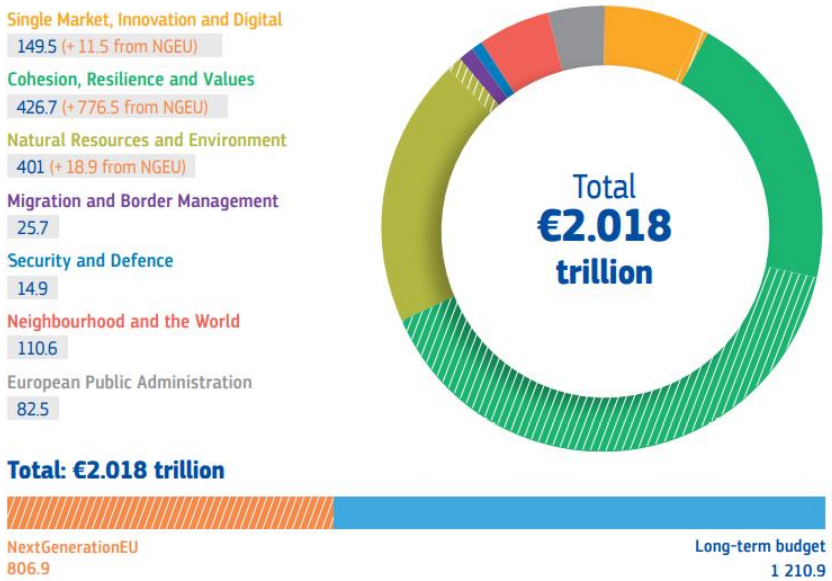
❑ Green Deal and the MFF 2021-2027

- The "**European Green Deal**" provides a roadmap with actions to boost the efficient use of resources by moving to a clean, circular economy, stop climate change, revert biodiversity loss and cut pollution.

- In particular, short sea shipping will have a strong role in reaching the objectives of the EU Green Deal for the EU to become the **first climate neutral continent by 2050** and the **new EU goal for 2030 reducing greenhouse gas emissions by at least 55 percent compared to 1990 levels**.

- To support the transition of countries most dependent on carbon-intensive economies, the Green Deal requires a huge investment, which we will transform into investment opportunities.

- The **Multiannual Financial Framework for 2021-2027 and Next Generation EU** will be a great opportunity to create a wave of green investments.



Source: The EU's 2021-2027 long term budget and Next Generation EU (Facts and Figures)

❑ EU Sustainable and Smart Mobility Strategy

- The **"EU Sustainable and Smart Mobility Strategy** " (19/12/2020) lays the foundation for how the EU transport system can achieve its green and digital transformation and become more resilient to future crises. As outlined in the European Green Deal, the result will be a 90% cut in emissions by 2050, delivered by a smart, competitive, safe, accessible and affordable transport system.

- The document contains clear goals to reach by 2030 and 2050 and identifies a total of 82 initiatives in 10 key areas for action ("flagships"), each with concrete measures.

Source: The EU's 2021-2027 long term budget and Next Generation EU (Facts and Figures)

❑ Shaping Europe's Digital Future

The European Commission is working on the digital transition which will benefit all sectors and will focus on the following:

- invest in digital skills for all Europeans;
- protect people from cyber threats (hacking, ransomware, identity theft);
- ensure Artificial Intelligence is developed in ways that respect people's rights and earn their trust;
- accelerate the roll-out of ultra-fast broadband throughout the EU;
- expand Europe's super-computing capacity to develop innovative solutions for medicine, transport and the environment;
- strengthen the responsibility of online platforms by proposing a Digital Services Act and clarifying rules for online services;
- make sure that EU rules are fit for the digital economy;
- use technology to help Europe become climate-neutral by 2050;
- reduce the digital sector's carbon emissions;
- give citizens more control and protection of their data;
- create a "European health data space" to foster targeted research, diagnosis and treatment;
- fight disinformation online and foster diverse and reliable media content.

TOWARDS THE ELABORATION OF THE POSITION PAPER "SSS 2027 – CHALLENGES AND OPPORTUNITIES"

ESN: the road towards SSS in 2027

1

The importance of eco-incentives for SSS and the maritime sector including the necessity to revise the current guidelines on state aid in the maritime sector (25 May 2022)

2

Digitalization and environmental sustainability as drivers in the change of Short Sea Shipping (25 July 2022)

3

*Presentation of the **ESN position paper** elaborated on the basis of the outputs and operation conclusion of the 2 webinars during the ESN workhop "SSS 2027 - Challenges and opportunities"*
(Naples, 29 September 2022)

4

Postion paper will be shared with the European Commission (December 2022)

The main IT technologies adopted in the maritime transport sector by Member States involved in the ESN

First inputs

❑ Croatia

Best practice in the Port of Ploče

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Port Community Systems

- In Croatia, the regulation on the Unique Interface for Formalities in Maritime Traffic (CIMIS) (NN 119/2015) establishes the conditions for the coordinated delivery and exchange of documents and data on maritime transport through a single interface for formalities in maritime transport with the aim of reducing the administrative burden and improving the quality of public services by standardizing and rationalizing the official application procedure based on the principle of one-time delivery of documents and data.
- Each port has its own Port Community System that is being integrated in the CIMIS system and other applications. At the moment there is no one PCS system that can be considered as a national system that all ports are using, but it is being developed in the port of Rijeka, using the example of the PCS system created in the Port of Ploče.

- The Port Community System of the Port of Ploče is constantly upgraded in order to achieve harmonized, stable and reliable electronic platform for fast and safe exchange of data between all relevant stakeholders including shipping industry and port operators.

- **The PCS of the port of Rijeka is funded by the CEF programme**. The port of Ploce is using its own funds and EU projects when possible. Part of the works for the PCS of Ploce have been financed by the Interreg ADRION programme through the MultiAPPRO project.

❑ Cyprus

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IT Best Practices and Projects

ISEF model (Integrated Ship Energy Flowchart model)

- The ISEF model aims at providing reliable estimation of ship energy consumption for propulsion and power generation based on actual and (near) real-time data (including estimation of SFC based on ship characteristics, engine type & age, maintenance history, and weather conditions through a standalone Matlab/Simulink model that utilizes AIS data as well as field data).

PANGIA

- The general objective of the PANGIA project is to develop a service for stakeholders in the shipping industry. PANGIA enables the synergy between advanced data-driven analysis and expert human input to deliver reduced service and maintenance costs via proactive maintenance planning, protection of the natural environment through the reduction of fuel consumption and emissions via sea vessel performance optimization, health and safety of crew and passengers via early detection and mitigation of safety or health hazards.

Sea of Experience

- The Sea of Experience project aims at bridging the gap between educational options available in relation to the marine and maritime sectors and labour market needs. The project will develop highly innovative mentoring/training programmes by blending innovative face-to-face activities with digital technologies, thus enabling professionals and students to acquire new skills and diversify and expand their existing skills and competencies.

❑ Finland

SPC Shortsea Promotion Centre Finland

Strategic Initiatives in the field of autonomous shipping

- The **ONE SEA ECOSYSTEM initiative** is a strategic combination of top research, state-of-the-art information technology and business with the aim to **create an environment suitable for autonomous ships by 2025.**
- Ship owners and operators should consider when to take advantage of the lower capital and operating expenditure – with the better efficiency, reliability, safety and sustainability –that digitalization has brought into other areas of business and industry.
- The ecosystem ensures a well-researched, tested and highly capable autonomous shipping network.
- The co-creation ecosystem will also set the course for new industrial standards. With the leadership, participation and steering from the One Sea Autonomous Maritime Ecosystem, the new standards will correspond with the targets of minimizing accidents, decreasing the environmental footprint of marine traffic, and advancing possibilities for new commercial ventures.

https://www.oneseaecosystem.net/

❑ Ireland

Irish Maritime Development Office

National Programmes and funds for the Green Transition

- **The Climate Action and Low Carbon Development Act (2021) commits Ireland to a 51 per cent reduction in emissions by 2030 and Zero emissions by 2050.**
- The Climate Action Plan published on (November 2021) sets out how Ireland will take advantage of the potential of at least 30GW of offshore wind power to achieve these targets.
- The Department of Transport's policy statement (December 2021) identified the need for facilities to be developed at multiple ports, in a phased approach, to remove risks and support regional development.
- New port capacity for the offshore renewable energy sector is needed to facilitate development of the Irelands huge renewable energy resources
- **€65M National Challenge Fund established under the Government's National Recovery and Resilience Plan (NRRP), will address key national challenges in the areas of Green Transition and Digital Transformation**

❑ Italy

Investment Plans and Best Practices for the Digital Transition

Digitalization of the Logistic Chain

- The Italian Recovery and Resilience Plan "Italia Domani", (M3C2 "Intermodality and integrated logistics") foresees a total of 250 million euros for the digitalization of the logistic chain in the 2021 – 2027 period.
- This investment will lead to the creation of an interoperable digital system between public and private actors for freight transport and logistics, capable of simplifying procedures, processes and controls by focusing on the de-materialization of documents and the exchange of data and information.

Port Community Systems

- 45 million euros have been allocated within the Italian Recovery and Resilience plan for the implementation of PCS and ICT systems in order to reach the following target by June 2024: ***"At least 70% of the systems for the port operators of the single System Port Authorities must be interoperable and compatible with each other and with the national logistics platform"***

❑ Italy

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Investment Plans and Best Practices for the Digital Transition

Intermodal Fast Corridors

- Fast corridors are immaterial infrastructures that allow Customs procedures to be carried out not at the container terminal but at inland logistic nodes (road and rail).
- The Intermodal Fast Corridor Genoa Rivalta Scrivia Piacenza created by Ikea is still in place. Containers leave the Terminal of the port of Genoa via rail (Ikea sends the train manifest to the customs police) and arrive at the exchange node in Rivalta Terminal Europa Spa. Then Ikea notifies AIDA (Customs information System) requesting the containers be handled by the dryport, where they will be prepared for the road journey (Ikea must notify the PLN- National Logistic platform). All trucks are equipped with GPS connected to the PLN. When cargo arrives at the destination node located in Piacenza at the Ikea T.C. (temporary custody) warehouse, the mission ends.
- At this stage all Customs procedures and eventual inspection on the goods take place.

Digital Twin in the Port of Livorno

- A digital twin (DT) of a port or a terminal is a virtual representation that serves as the real-time digital counterpart of the physical port or terminal. The port of Livorno has implemented a DT by using smart sensors, 3D LIDARs and Wide Dynamic Range cameras that enable the collection of big data. The main tasks of the DT of the port of Livorno are: movement, tracking and positioning of freight; inventory of goods; orders of loading and unloading of ships; identify specific activities as “high risk” such as moving larger loads.

❑ Portugal

Innovation Agenda and Best Practices

NEXUS Innovation Agenda

The NEXUS innovation agenda develops the shared vision and innovation roadmap for ports and logistics ecosystem:

- development and exploitation of a portfolio of technologically advanced products and services.
- Open Data Collaboration Platform for Multimodal Transport Collaboration
- involvement of all end-users involved in multimodal port operations
- A Federated Systems approach and common interoperability mechanisms across solutions that enhance collaborative practices in the network
- A common innovation roadmap

The NEXUS Agenda will produce an ecosystem of products and services for Digital and Green Transition in the transport and multimodal sector.

LSW - Logistics Single Window

- It is a powerful tool to support the physical and digital corridors over the ports' hinterland and foreland. It also ensures end-to-end supply chain integration, by gradually connecting to the foreland and last mile operations. Finally, the digital environment offered by LSW promotes a streamlined digital process with the authorities, where, in a single platform, all stakeholders collaborate, align processes in real-time and synchronize operations. Moreover, the LSW allows the information sharing with Port Community Systems and electronic platforms from other countries, such as cargo marketplaces.

Drones

- Drones equipped with 5G transmission technology and CCTV cameras are used in the ports of Leixoes, Viana do Castelo and Douro to improve the awareness of pilots during entry and exit maneuvers. They can also be used to identify pollution sources and in emergency situations. The legislative framework on drones is still in evolution.

The main Green Solutions adopted in the maritime transport sector by Member States involved in the ESN

❑ Croatia

The strategic framework and projects

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The Croatian strategy for Hydrogen up to 2050

- The strategy emphasizes the advantages of developing the potential related to the hydrogen economy and is aligned with the goals of the European Hydrogen Strategy, as well as with the National Development Strategy of the Republic of Croatia until 2030.
- There are four strategic goals: increasing the production of renewable hydrogen, increasing the utilization of renewable energy source potential for the production of renewable hydrogen, increasing the use of hydrogen, and encouraging the development of science, research and development of hydrogen technologies.

The integrated national energy and climate plan

- The Plan for the period 2021-2030 builds on existing national strategies and plans. It provides an overview of the current energy system and the energy and climate policy. It also provides an overview of the national targets for each of the five key dimensions of the Energy Union and the appropriate policies and measures to achieve those targets, for which an analytical basis should be established.

The SUSPORT project

- The project will strengthen the institutional capacity and cross-border governance of the Adriatic ports of Italy and Croatia (Rijeka, Zadar, Split, Ploče, Dubrovnik, Trieste, Venice, Ravenna, Ancona, Bari), enhancing the environmental sustainability and energy efficiency.
- Through SUSPORT the ports will be able to share best practices and develop common methodologies for environmental sustainability and energy efficiency, to be tested in concrete pilot actions significantly improving the environmental performance of maritime transport in the whole Programme Area.

❑ Cyprus

Green Solutions: Strategies, Pilot Actions and Best Practices

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SEAchange 2030 - Strategic vision for Cyprus shipping

- In October 2021, the Shipping Deputy Ministry of the Republic of Cyprus announced its new Strategy for the shipping sector of the country. The Strategy covers 35 actions in total revolving around three core pillars: *Sustainable* (focuses on turning policies into sustainable actions and initiatives with a long-term perspective to support the strategy's vision), *Maritime Cybersecurity* (the creation of a framework / platform and facilities to better educate and train stakeholders as well as facilitation of information sharing), *Rewards and incentives for greening and sustainable investments* (e.g granting Green Achievement Awards for the proactive environmental ship performance).

BioCH4-to-Market

- Founded on innovative and breakthrough technologies, the proposed pilot action seeks to prove up to 80% reductions in lifecycle Green House Gas (GHG) emissions through the use of BioMethane as an advanced marine drop-in biofuel in comparison to current status quo; whilst facilitating small-scale decentralized biogas production a market access of added value within the maritime transportation sector.

A-ZEST (Autonomous Zero-Emission Sea Transporter)

- Design and manufacture an innovative vessel, which at its first version will be fully electric and serve numerous purposes, including testing new technologies of propulsion and autonomy and educational activities to promote ocean literacy.

❑ Finland

Environmental Innovation Solutions

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Environmental solutions promoted by ports and shipowners

- **Port of Helsinki:** cold ironing / onshore power is available in the South Harbour, for Helsinki – Tallinn (Estonia) and Helsinki – Stockholm (Sweden) ferry routes. Environmental solutions at the Port of Helsinki include also the possibility to discharge wastewater directly into the municipal sewer system, energy-efficient LED laps and lar panels installed on the roof of the passenger corridor.
- **Port of Turku:** an automatic vessel mooring system, based on vacuum technology, was installed as part of the project NextGen Link (2017–2021), co-funded by the Connecting Europe Facility (CEF). The environmental work of the Port of Turku continues in Ferry Port Turku project 2021–2024, incl. shore power readiness, also co-financed by EU CEF.
- **Port of Kokkola**: the project POWER-4-FUTURE, financed by EU CEF will focus on sustainable power transports. The project includes development of port infrastructure with a new quay with readiness for shore-side electricity supply.

Environmental innovations by the Finnish Shipowners

- reduction of emissions and enhance the energy efficiency of the vessels.
- choice of fuel technology, propulsion technology, the design of the vessel and optimization of different kinds.

In Finland there are **four dual-fuel ferries with liquefied natural gas (LNG) with possibility to utilize biogas:**

- Helsinki-Tallinn route Tallink's Megastar LNG-Fuelled Fast Ferry
- M/S Viking Glory, is a dual-fuel vessel with LNG, and several other technologies to increase energy-efficiency and environmental impacts.
- The ferry Aurora Botnia of Wasaline is operating between Vaasa in Finland and Umeå in Sweden.
- The first ever LNG driven icebreaker Polaris uses both LNG and low sulphate-containing diesel as fuel.

For more information, see https://shipowners.fi/en/responsibility/environment-and-climate/environmental-innovations/

❑ Greece

The Development of Intelligent, Green and Integrated Ports

AI Smart - Adriatic Ionian Small Port Network

The project, co-financed by the Interreg V-A Greece-Italy Programme, aims to develop a common port network in the Adriatic-Ionian area based on the concept of "intelligent, green and integrated ports" setting new green routes that can connect regional small ports. The project promotes the potentiality of the short sea routes, as integral and complementary part of intermodal TEN-T corridors, for a sustainable and inclusive transport services, in accordance with the objectives of the European 2030 Strategy for intelligent growth based on valorization of the natural and landscape resources of both coasts and hinterland. **The expected results of the project are:**

- Mapping of port services/facilities and their networking in a virtual cross-border platform
- Mapping of land transport services and the connections between them and the port hubs
- Set-up of ICT Platform Services for real time exchange information on multimodal traffic services
- Definition of set of indicators and high quality objectives (standards) for "green, sustainable and inclusive" transport services to be adopted by ports and port infrastructures at cross border level
- Definition of self-assessment tools for users with competences on port facilities of the Port Network
- Implementation of a Priority Matrix of infrastructural and non-infrastructural interventions as governance tools for the development of green corridors in the cross-border area
- Identification of legislative bottlenecks for land-sea transport services
- Key-infrastructural interventions of port areas (Mytikas, Nafpaktos, Nydri, Otranto, Mola di Bari)
- Creation of tourist multimodal itineraries for "green, inclusive and sustainable" tourism
- Promotion of two pilot actions for multimodal transport connection exploiting the potentiality of short-sea routes in the cross-border area
- Implementation of a permanent monitoring protocol of coastal and port areas addressing tourist pressure and monitoring tourism demand for short-sea connections.

❑ Ireland

Irish Maritime Development Office

National Programmes for the Green Transition and Digital Transformation

National programmes launched in 2021 for the Green Transition and Digital Transformation will build on success in Motorways of the Sea and EU programmes

€65M National Challenge Fund established under the Government's National Recovery and Resilience Plan (NRRP), will address key national challenges in the areas of Green Transition and Digital Transformation

International fast and secure trade lane (IFTSL) is a project co-financed by the CEF Programme 2014-2020 with the goal to provide maritime, ports and logistic actors of the MoS route between the TEN-T core port of Dublin and the comprehensive port of Cherbourg with an IFTSL toolkit improving the existing route. In particular, the project delivers:

- streamlined processes
- interoperable systems
- accurate, real-time data
- clear operational and governance model

❑ Italy

The strategic Investment Plans and other Initiative

Italian National Cold Ironing Plan

- Cold ironing is one of the measures indicated by the 2014/94 EU directive (so-called DAFI Directive, currently under revision), which establishes a common framework of rules for building an infrastructure for alternative fuels in the European Union to minimize dependence on oil and mitigate the environmental impact of the transport sector.

- The Plan, involves all the Port System Authorities The total of ports to be electrified is 34, of which 32 are part of the TEN-T network. 100% of the works will be launched by the second quarter of 2024 the installation of the total electrical power of 682 MW is foreseen and by the second quarter of 2026. The plan, under elaboration will be financed under the Italian RRF.

Green Ports

- The Italian Recovery and Resilience Plan includes in its M3C2 the Green Ports Project, which involves the nine Italian Center North System Port Authorities as actuators, aiming to make port activities sustainable and compatible with urban port contexts through the financing of interventions aimed at improving the efficiency and reducing energy consumption of port structures and activities.

- The environmental objective will be pursued through interventions to improve energy efficiency and promote the use of renewable energy in ports. The project is expected to make a contribution to reducing greenhouse gas emissions by 55% by 2030.

❑ Italy — The strategic Investment Plans and other Initiatives

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LNG funding

- The complementary plan to the Italian Recovery and Resilience Plan M3C2 (Investment line 20 “Energy efficiency”) has allocated 219 million euros in the 2021 – 2026 period to reimbursing no more than 50% of the total costs for the realization of LNG plants on the Italian territory, including the maritime sector, and the refueling stations in ports. Bunkering vessels will be eligible as well. Moreover, all works must be completed by 2026. Agreements with the System Port Authorities and with the Ministry are mandatory as well as a bank guarantee.

The GAINN Initiative

- The GAINN-IT Initiative has been launched with the aim of conceiving, defining, prototyping, testing, validating and deploying, in the 2015-2030 period, the Italian alternative fuels infrastructure network for transport as requested by Directive 2014/94/EU.

- The GAINN_IT Initiative mainly addresses liquefied natural gas (LNG) as an alternative fuel for both maritime and road transport.

- The initiative includes a number of national and EU projects, considered as best practices, financed under the CEF 2014 – 2020 programme, such as GAINN4MOS, GAINN4CORE and GAINN4MED.

❑ Portugal — *The Green Transition: The ports of Alveiro and Leixões*

The Energy Transition Strategy of the Port of Aveiro

- The Maritime logistics chains support 90% of the global movement of goods worldwide and as such Ports are important nodes that could make a significant contribution to net-zero carbon emissions by 2050, as set out by the European Green Deal.

- The Port of Aveiro, as a medium-sized port (SMP), has already initiated its action plan for the energy transition, having established as goals the reduction of greenhouse gases (GHG) in 55% by 2030, 75% by 2040 and 100% by 2050. The achievement of these goals represents a global investment of 27,7 million euros to promote the energetic transition and to develop and state the Port of Aveiro as a "Green and Smart Port". The strategic approach involves the creation of synergies within the ecosystem of the Aveiro port community, in which all partners are involved.

- Currently, the Port of Aveiro has applied, with some energy partners, for national funding to install a new mobile Onshore Power Supply (OPS) equipment.

Port of Leixões

- The implementation of the ONSHORE Power SUPPLY (OPS) system will allow ships to be connected to the inland network and reduce noise and greenhouse gas emissions. Electrification allows the use of renewable energy produced in the port itself and significantly reduces noise caused by ships and vehicles.

- The use of alternative green fuels with little or no environmental impact, such as biofuels, hydrogen, methanol, ammonia is encouraged. There is a project for the supply of alternative green fuels for ships; the development of a fuel supply protocol for regular customers and the incentive to replace petroleum-derived fuels from 2023 to reduce emissions.

- Photovoltaic panels capable of generating +6 GWh/year have been installed together with two wind turbines capable of generating +10 GWh/year. Wave power equipment capable of generating up to 18 GWh/year will also be installed in the Douro river mouth and other solutions may also be considered.

❑ ***Conclusion***

- All Member States are implementing sectorial policies through their national RRF plans and other EU funding programmes such as CEF, Horizon Europe and Interreg in order to face the climate and digital challenges, reaching the goals of Carbon Neutrality by 2050 and the intermediate goals of 2030 as indicated by the Green Deal and enshrined in the EU climate law.

- International Cooperation is the key to reach the set targets as demonstrated by the international cooperation projects and best practices illustrated.

- Digitalization and environmental sustainability are strongly interconnected and have many synergies, as indicated by the EU Sustainable and Smart Mobility Strategy.

- Increasing the use of SSS and the modal shift from road to sea are essential factors in reaching the environmental targets set for 2030 and 2050. Incentive schemes can also play a very important role.

Thank you for your attention