

INTERREG SUPPORTING Green and Smart Ports

Interreg 2021-2027 projects in support of the
'Green and Smart Ports' flagship of the EUSAIR
Pillar 2 on Transport



IPA ADRION

STEP

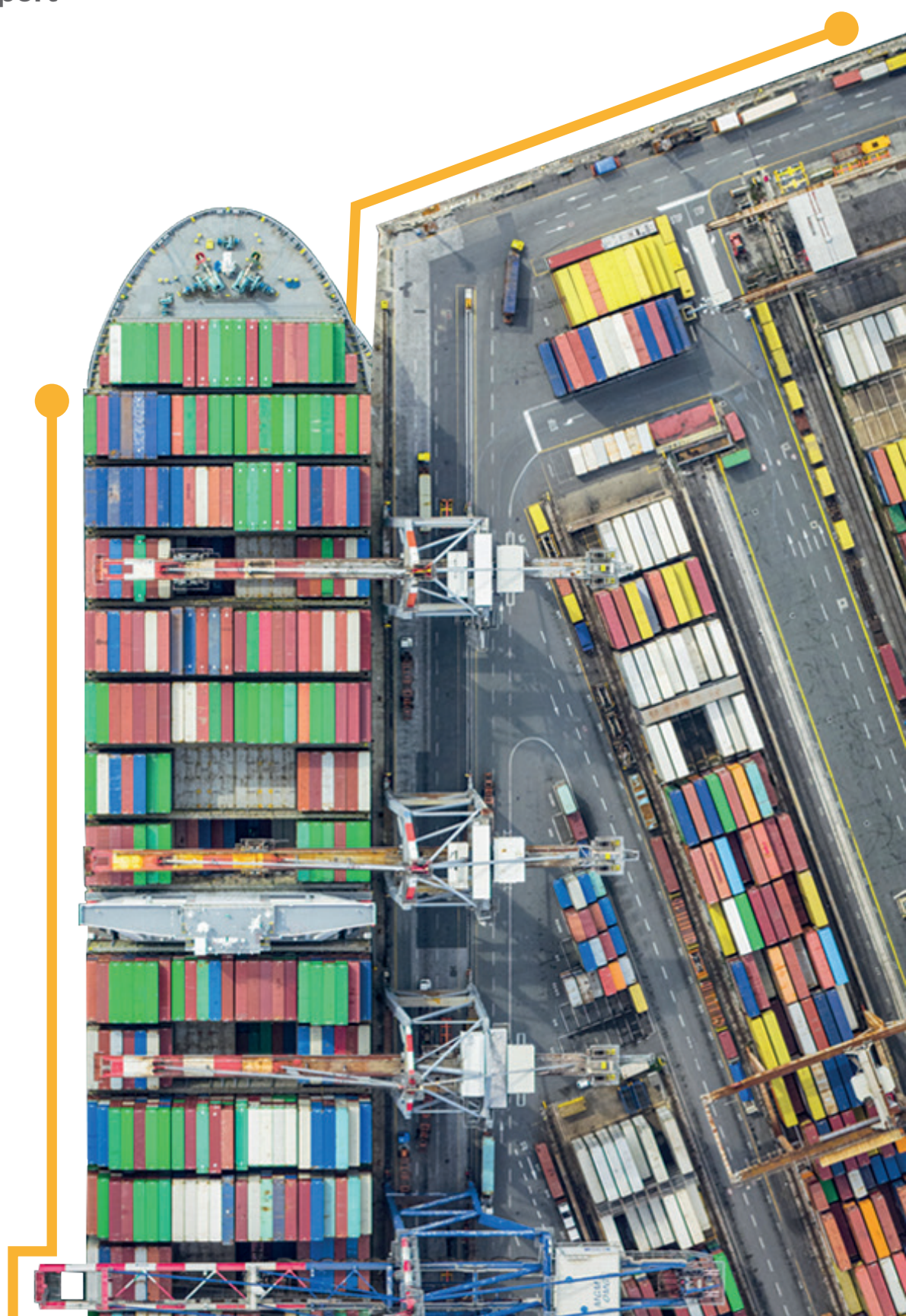


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Foreword

The present booklet has been prepared within the framework of the **EU Strategy for the Adriatic and Ionian Region (EUSAIR)**, with specific reference to **Pillar 2 on Transport**. It aims to provide an overview of how **Interreg programmes** operating in the **Adriatic-Ionian Region** have addressed and integrated the concept of 'Green and Smart Ports', one of the key priorities identified in the EUSAIR Action Plan.

The rationale behind this study lies in the ongoing process of 'Embedding', through which EUSAIR Pillars monitor how their strategic priorities are received and translated into concrete actions by European cooperation programmes. In this context, the concept of 'Green and Smart Ports' stands as a flagship initiative for Pillar 2, symbolising the ambition to promote more efficient, sustainable, and technologically advanced port systems across the macro-region.

The idea of '**Green and Smart Ports**' combines environmental responsibility with innovation and digital transformation. Ports play a central role in regional connectivity and economic development, functioning as crucial nodes in complex networks where goods, vehicles, and people converge. Managing such complexity requires effective governance mechanisms and a strong commitment to mitigating environmental impacts on surrounding territories. Through technological progress, digitalisation, and the deployment of intelligent systems,

ports can become cleaner, more resilient, and better integrated into sustainable mobility chains, thus contributing directly to the green transition of the Adriatic-Ionian Region.

It is important to recall that **macro-regional strategies such as EUSAIR do not come with dedicated EU funding**. Rather, they rely on the strategic use and alignment of existing European, national, and regional resources. In this regard, **Interreg programmes** play a fundamental role, acting as both a **financial and operational mechanism** to support EUSAIR objectives. Their capacity to translate macro-regional priorities into tangible projects and collaborations makes them essential to the success of the Strategy.

This study, supported by the **StEP project** (financed by Interreg IPA ADRION), represents an important contribution to understanding how EUSAIR priorities are being embedded into ongoing cooperation programmes. It also highlights the need for continuous monitoring of how such priorities are being addressed, and the outcomes they generate, in order to further strengthen the implementation of the EUSAIR Action Plan and its vision for a more connected, sustainable, and innovative Adriatic-Ionian Region.

Prof. Pierluigi Coppola
*Coordinator of EUSAIR Pillar2 on
Transport*

Acknowledgements

Sincere and due thanks go to the Marche Region who acted as Lead Partner of the StEP project for Italy. The Marche Region had the role of promoter of this booklet. This report would not have been possible without the initiative and commitment displayed by Ms Donatella Romozzi, Ms Anna Torelli, and the StEP team.

Thanks go to the Italian Coordinator of EUSAIR Pillar 2 Connecting the Region, prof. Pierluigi Coppola of the Ministry of Infrastructure and Transport and to the Managing Authorities of the Interreg projects that have given access to data related to the projects granted and by means of their participation in the Action Lab meeting have stimulated the discussion and contributed to the conclusions of this booklet.

Finally, the support and advise by the EUSAIR National Coordinators from the Ministry of Foreign Affairs and International Cooperation of Italy and the Department for Cohesion Policies and the South of the Presidency of the Council of Ministers has been essential to ensure that achievements and outcomes were accepted and adopted by the concerned administrations from the EUSAIR participating States.



The EU Strategy for the Adriatic and Ionian Region (EUSAIR)

The **EU Strategy for the Adriatic and Ionian Region (EUSAIR)** is a macro-regional strategy adopted by the European Commission and endorsed by the European Council in 2014. It involves four EU Member States – Croatia, Greece, Italy, and Slovenia – five EU candidate countries – Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia – and one non-EU country, San Marino.

The Strategy's overarching goal is to foster effective multi-level and cross-sectoral cooperation, aimed at creating a **prosperous, inclusive, well-connected, integrated, green, and liveable Adriatic-Ionian Region**.

The Strategy is structured around five thematic Pillars. **Pillar 2 – Connecting the Region**, structured in two sub-groups - one on Energy Networks and one Transport - that are directly related to the scope of this booklet.

This pillar aims to enhance connectivity, integration, and cohesion within the Adriatic-Ionian Region and with the EU, particularly in the fields of transport and energy. Joint efforts focus on infrastructure development and the coordinated management of transport and energy systems.

Specific objectives include:

- Enhancing safety and security of transport and energy infrastructure networks
- Developing a macro-regional integrated transport system with efficient multimodal connections
- Integrating regional and urban transport systems into the TEN-T (Trans European Network – Transport)
- Promoting the transition to decarbonised and resilient transport and energy systems, prioritising renewable energy and energy efficiency.

Topics:

- **Topic 1:** Maritime transport
- **Topic 2:** Multimodal connectivity
- **Topic 3:** Urban nodes
- **Topic 4:** Energy networks
- **Topic 5:** Decarbonising energy systems

Embedding

With the 2021-2027 programming period, the **incorporation of the priorities** of macro-regional and sea basin strategies into the programmes funded by Cohesion Policy has been mandated by Article 22.3(a)(viii) of Regulation 2021/1060. This method is named '**embedding**' and it has been introduced by the European Commission to indicate the need to finance, within the Cohesion Policy programmes, projects aligned with the priorities of macro-regional strategies. Indeed, macro-regional strategies, supported by Interreg projects, have emerged as **key tools** for promoting sustainable development and territorial cohesion through interregional cooperation and to strengthen multi-level coordination¹ .

1. Department for Cohesion Policy and Southern Italy. LINEE GUIDA: Esperienze e strumenti (GUIDELINES: Experience and tools), pp. 7, 10. Accessed here: https://www.politichecoesione.gov.it/media/k0odgatr/linee-guida_esperienze-e-strumenti.pdf



2

The flagship 'Green and Smart Ports'

EUSAIR Flagships are strategic priorities eligible for support under the EU's European Structural and Investment Funds (ESIF) and the Instrument for Pre-Accession Assistance (IPA). Among these, the 'Green and Smart Ports' concept envisages a fully integrated and interconnected port network from Greece to Italy, spanning all EUSAIR countries and including all relevant TEN-T core and comprehensive network ports.

The '**Green and Smart Ports**' flagship aims to promote sustainable development in line with the European Union's decarbonisation goals, the European Green Deal, and the objectives of the TEN-T policy. Its main ambition is to transform traditional seaports into future-ready strategic infrastructures, aligned with the environmental, economic, and connectivity priorities of the Adriatic-Ionian macro-region.

At the core of this vision is the creation of an integrated and efficient network that connects all the ports in the EUSAIR area included in the TEN-T network, both core and comprehensive, strengthening their role as logistical and energy hubs. A key element of this transformation is the ecological transition of the port sector. **Ports are seen as essential actors in reducing emissions through the adoption of green technologies such as cold ironing (shore-side electricity) and the promotion of hybrid vessels.** At the same time, **ports are expected to play an active role in fostering the circular economy** by enabling resource reuse and waste reduction.

Beyond environmental sustainability, the flagship places strong emphasis also on **innovation** and **digitalisation**. It supports the full digitalisation of the supply chain, encouraging the use of advanced technological solutions to optimise traffic flows and improve operational efficiency. Information and Communication Technologies (ICT) are fundamental in enabling real-time data exchange, smart data management, and the mapping of connectivity needs at both local and macro-regional levels. In fact, ports can be hubs of innovation for testing advanced technologies for increasing efficiency (e.g., through automation of handling processes) and for improving safety and security. Also, they play a key role for integration of Sea-land connections as well as for regional economy development.

This booklet explores Interreg-funded initiatives related to the component '**Green and Smart Ports**' within the **Topic 1 - Maritime Transport of Pillar 2 - Connecting the Region** (Transport sub-group). This focuses on enhancing port safety and building a competitive, interconnected macro-regional port system.

2. The EU Strategy for the Adriatic and Ionian Region (EUSAIR)

Key investment areas include:

- Innovation and modernisation of infrastructure.
- Reduction of procedural and bureaucratic barriers (especially in port operations).
- Promotion of safe and efficient maritime traffic.

Expected activities under this topic are:

- Strengthening port safety and resilience through maritime traffic monitoring systems and investments to increase port capacity, interconnection, and protection.
- Enhancing maritime transport efficiency and competitiveness by improving the interoperability of port IT systems and developing Port Community Systems.
- Greening ports and maritime transport, with a focus on increasing the number of certified ports (ISO 14001, PERS, EMAS).
- Removing barriers to investment in sustainable maritime transport projects.

These objectives are addressed through specific actions such as:

- 1. Improving and harmonising traffic monitoring and management**, especially through the expansion of Vessel Traffic Monitoring and Information Systems (VTMIS).
- 2. Enhancing interoperability of Information and Communication Technology - ICT solutions in ports**, including the development or upgrade of Port Community Systems.
- 3. Improving environmental quality monitoring in ports**, focusing on emissions, water, and air quality.

Given the broad nature of the 'Green and Smart Ports' concept, a crucial first step was to clearly define the relevant thematic areas. This definition is grounded in the EU Strategy for Sustainable and Smart Mobility and the technical report '*EUSAIR – Pillar 2: Technical Assistance for the Development and Implementation of the Flagship Project 'Green and Smart Ports²*', which identifies and details the thematic priorities necessary to implement this ambitious vision.

Below is the list of themes included in the 'Green and Smart Ports' concept, as defined in the technical report mentioned above. This list also serves as the methodological basis for identifying the projects and specific topics addressed in this booklet.

2. [6-gsp_finalreport_230731.pdf](#)

2. The EU Strategy for the Adriatic and Ionian Region (EUSAIR)

Table 1 – List of themes and subthemes included in the ‘Green and Smart Ports’ concept

Theme	IMPROVING SUSTAINABILITY IN MARITIME VESSELS OPERATIONS
Subtheme	<ul style="list-style-type: none">● Improvement of the energy efficiency and reduction of emissions of vessels, including:<ul style="list-style-type: none">⦿ Deployment of Liquid Natural Gas (LNG) fuelled vessels⦿ Test and deployment of full electric vessels and tugs● Creation of a comprehensive network of recharging and refuelling infrastructure, including:<ul style="list-style-type: none">⦿ Construction of LNG depots and facilities⦿ Deployment of LNG bunkering vessels● Deployment of renewable and low-carbon fuels and powering stationed vessels with renewable power, including:<ul style="list-style-type: none">⦿ Electrification of quays and deployment of onshore power supply systems (cold ironing)

Theme	PORTS AS GREEN HUBS
Subtheme	
<ul style="list-style-type: none">● Promotion of ports as new clean energy hubs for integrated electricity systems, hydrogen and other low-carbon fuels, including:<ul style="list-style-type: none">⦿ Use of renewable energy sources to feed the power system of ports and terminals⦿ Deployment of new, more efficient port lighting systems⦿ Creation of green hydrogen sites for production and distribution of hydrogen power⦿ Creation of central power management systems to regulate the energy network of the port⦿ Deployment of public charging points for electric vehicles● Greening ground port services and operations, including:<ul style="list-style-type: none">⦿ Deployment of low emission cranes, front-loaders and other service vehicles⦿ Deployment of Mobile LCNG Stations serving the purposes of refuelling CNG fuelled port heavy duty vehicles and buses⦿ Greening port spaces⦿ Optimisation of port operations to reduce ground vehicle mobility⦿ Deployment of innovative handling systems to reduce the impact of port operations on air pollution● Promotion of ports as testbeds for waste reuse and the circular economy, including:<ul style="list-style-type: none">⦿ Use of secondary materials in production and construction⦿ Deployment of waste-to-energy facilities⦿ Reconversion of industrial and port areas into eco-districts, exploring possibilities to set up ship decommissioning operations	

2. The EU Strategy for the Adriatic and Ionian Region (EUSAIR)

Theme	SAFETY IN PORTS
Subtheme	
<ul style="list-style-type: none">● Enhancing transport safety and security, including:<ul style="list-style-type: none">⦿ Improvement of infrastructure resilience and deployment of measures to contain the impact of extreme weather events⦿ Planning and implementation of measures to reduce the impact of pandemics and other sanitary emergencies	
Theme	DIGITALISATION IN PORTS
Subtheme	
<ul style="list-style-type: none">● Development of efficient capacity allocation and traffic management systems, including:<ul style="list-style-type: none">⦿ Further deployment of Vessel Traffic Monitoring and Information Systems (VTMIS)⦿ Deployment of solutions for enabling multimodal travel planning⦿ Safe deployment of automated and autonomous maritime operations● Diffusion of innovation, data and AI for smart mobility and cybersecurity, including:<ul style="list-style-type: none">⦿ Diffusion and integration of Port Community Systems at the port, port cluster, and national levels⦿ Diffusion of Maritime Single Window solutions and deployment of automated and paperless procedures and solutions to speed up processes (incl. custom, security, phytosanitary checks etc.)⦿ Deployment of IT solutions for planning and management of rail traffic within the port⦿ Diffusion of solutions involving virtualisation (digital twin), Internet of Things, Artificial Intelligence, automated/unmanned terminal operations and blockchain⦿ Deployment of IT solutions for the improving the effectiveness of port operations, including infrastructure maintenance and waste management	

Source: Final report EUSAIR – Pillar 2: Technical Assistance for the Development and Implementation of the Flagship Project ‘Green and Smart Ports’



3

Programmes and projects identified

3. Programmes and projects identified

Within the area covered by the EUSAIR macro-regional strategy, several Interreg and Interreg IPA programmes³ are currently implemented, involving the countries of the Adriatic-Ionian region in various configurations:

- Cross-Border Cooperation (Interreg A) between neighbouring regions (NUTS 3) to promote integrated regional development between neighbouring regions with sea and land borders in two or more Member States.
- Transnational Cooperation (Interreg B) of larger transnational territories (NUTS 2), involving national, regional and local partners and including cross-border maritime cooperation.
- Interregional cooperation (Interreg C), supporting regions across the whole Europe in sharing knowledge and tackling common challenges

To identify the projects from the 2021-2027 period that can be linked to the 'Green and Smart Ports' flagship component, all relevant Interreg and Interreg IPA programmes in the area were analysed. This analysis focused on the programme documents to identify specific objectives aligned with the core features of the flagship – namely, objectives aimed at transforming seaports into modern infrastructures from an environmental, economic, and connectivity perspective within the macro-region. The analysis implied:

- In-depth reading of the programmes: A detailed reading of the programmes was carried out to ensure a comprehensive understanding of their priorities and objectives.
 - **Search for references to the EUSAIR strategy:** Each programme was examined for references to the EUSAIR strategy, with particular attention to the 'Green and Smart Ports' flagship component. Given the mandatory structure of the programmes, EUSAIR is usually cited explicitly.
 - **In the absence of explicit references:** In cases where explicit references to the flagship component were not found, the analysis proceeded by identifying, within the various Specific Objectives (SOs), elements connected to maritime transport and to interconnections between ports and road or rail transport.
 - **Comparison between contents and actions:** Whenever relevant themes were identified, a comparison was conducted between the contents addressed in the sub-themes and the actions foreseen by the programme's SOs.

³ Financed by the European Regional Development Fund with a total amount of almost EUR 10 billion for the 2021-2027 programming period, Interreg projects aim to foster economic and social development and tackle the obstacle of borders.

3. Programmes and projects identified

From the analysis of the programmes, with particular attention to those showing a clearer reference and alignment with both the EUSAIR strategy and the specific topics addressed by the 'Green and Smart Ports' flagship component, many projects were identified that, in different ways, address themes related to environmental sustainability, safety, technological innovation, and port digitalisation.

In the table below, the identified projects are listed together with their respective financing programmes and their potential contribution to both EUSAIR and the 'Green and Smart Ports' flagship component.

Table 2 – Summary of the potential contributions of the programmes to EUSAIR and the flagship initiative 'Green and Smart Ports' with identified projects

Programme	Interreg IPA ADRION
Overall potential contribution to EUSAIR	
Main driver supporting the implementation of the EUSAIR macro-regional strategy. The selected objectives and actions are aligned with the EUSAIR flagship initiatives.	
Potential contribution to 'Green and Smart Ports' component flagship	
Strong conceptual and operational correspondence with the 'Green and Smart Ports' flagship.	
Identified projects	
ADRIREC, CIRASIM, AIMPRESS, GREENROUTES, SUPERALFUEL, WATERBRIDGING	

Programme

Interreg VI-B Euro-MED

Overall potential contribution to EUSAIR

Promotes green transition, climate resilience and sustainable development in the Mediterranean, with an impact mainly on Pillars 1, 3 and 4, and potential support for Pillar 2 through innovative projects and synergies with ADRION.

Potential contribution to ‘Green and Smart Ports’ component flagship

No constant and explicit references to the flagship of the component, but it offers a design environment compatible with the objectives of Pillar 2 of EUSAIR.

Identified projects

RENEWPORT

Programme

Interreg VI-B Central Europe

Overall potential contribution to EUSAIR

The Programme explicitly acknowledges its role as a connector among the four EU macro-regional strategies – EUSDR, EUSALP, EUSAIR, and EUSBSR. This strategic positioning underscores the programme’s openness to the macro-regional framework.

Potential contribution to ‘Green and Smart Ports’ component flagship

The Programme does not prioritise the ‘Green and Smart Ports’ flagship or related themes like port sustainability, digitalisation, or integration into Adriatic-Ionian multimodal corridors.

Identified projects

ACCESSMILE

3. Programmes and projects identified

Programme	Interreg IPA CBC Italy-Albania-Montenegro (South Adriatic)
Overall potential contribution to EUSAIR	
EUSAIR serves as the strategic framework for the Programme. Each SO of the Programme is consistent with the priorities and flagships of EUSAIR.	
Potential contribution to ‘Green and Smart Ports’ component flagship	
Alignment with the ‘Green and Smart Ports’ component of the flagship initiative on connectivity, particularly through a focus on the main ports in the area considered to be strategic hubs for intermodality, ecological transition and port digitalisation.	
Identified projects	
SA Connectivity	
Programme	Interreg VI-A Italy-Croatia
Overall potential contribution to EUSAIR	
The Interreg Italy-Croatia programme is potentially aligned with the EUSAIR macro-regional strategy, integrating its objectives into a strategic vision that recognises the Adriatic Sea as the main driver of development in the area.	
Potential contribution to ‘Green and Smart Ports’ component flagship	
The ‘Green and Smart Ports’ component is explicitly mentioned in relation to RSO 3.2. Among the project evaluation criteria, there is an explicit requirement for proposals to clearly and coherently contribute to the objectives of the EUSAIR macro-regional strategy pillars and their related Flagships.	
Identified projects	
CRESPORT CROSSCONNECT CROSSFREIGHT DIGITPORTS, TransH2, TRANSPONEXT, MILEPORT, PRESPORT	

Source: Own elaboration

3. Programmes and projects identified

Each of these projects was analysed to highlight its main characteristics and the expected results. For each one, the most relevant thematic area was identified and linked to the broader concept of 'Green and Smart Ports', as outlined in the introduction and defined by the methodology set out in the aforementioned technical report '*EUSAIR - Pillar 2: Technical Assistance for the Development and Implementation of the Flagship Project 'Green and Smart Ports'*'.

The findings of the analysis are presented in the next section.



**How the projects
contribute to 'Green and
Smart Ports'**

4. How the projects contribute to 'Green and Smart Ports'

To analyse the contribution of Interreg Programmes to the 'Green and Smart Port' concept, each project selected in the previous chapter has been linked to one or more 'Green and Smart Ports' themes. The results of this classification are presented in the figures below, which illustrate the distribution of the analysed projects across the thematic areas relevant to the component addressed in this booklet.

The analysis reveals that the most frequently covered theme is 'Digitalisation in ports', with its subthemes 'Diffusion of innovation, data and AI for smart mobility and cybersecurity' being the most represented. This is followed by the theme 'Ports as green hubs', with a balanced representation of its two main subthemes: 'Greening ground port services and operations' and 'Promotion of ports as testbeds for waste reuse and circular economy.' The 'Safety in ports' theme is less represented, appearing in only two projects.

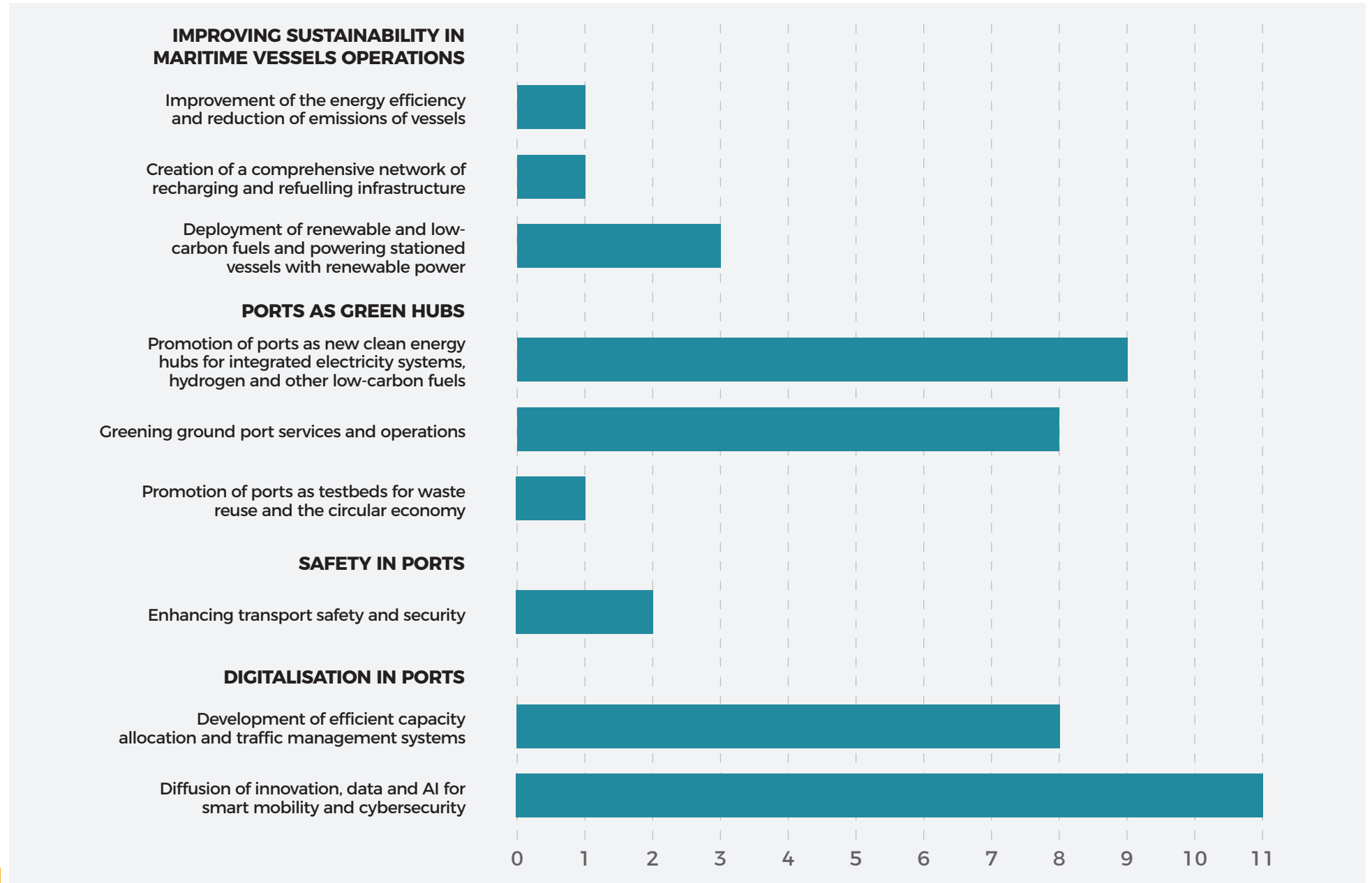
Within the theme of **port digitalisation**, the two subthemes are represented in roughly equal measure, with a slight prevalence of the 'Diffusion of innovation, data and AI for smart mobility and cybersecurity' component. In contrast, within the **ports as green hubs** theme, there is a clear predominance of projects focused on promoting ports as clean energy hubs and on reducing the environmental impact of ground port services and operations. Projects exploring the role of ports as testbeds for waste reuse and circular economy solutions, however, are comparatively less common.

The figure below illustrates that **the analysed projects are primarily associated with four subthemes** (Diffusion of innovation, data and AI for smart mobility and cybersecurity; Development of efficient capacity allocation and traffic management systems; Promotion of ports as new clean energy hubs for integrated electricity systems, hydrogen and other low-carbon fuels; Greening ground port services and operations), which are distributed across the two most prominent thematic areas.

4. How the projects contribute to 'Green and Smart Ports'

Figure 1 – Number of projects across themes and subthemes

Source: Own elaboration



4. How the projects contribute to 'Green and Smart Ports'

The following table provides an overview of all analysed projects, indicating the relevant Interreg IPA or Interreg funding programme and specifying the corresponding theme and subtheme associated with each project.

Table 3 – Thematic affiliation of the projects analysed

PROJECT NAME and PROGRAMME	IMPROVING SUSTAINABILITY IN MARITIME VESSELS OPERATIONS			PORTS AS GREEN HUBS			SAFETY IN PORTS	DIGITALISATION IN PORTS	
	Improvement of the energy efficiency and reduction of emissions of vessels	Creation of a comprehensive network of recharging and refuelling infrastructure	Deployment of renewable and low-carbon fuels and powering stationed vessels with renewable power	Promotion of ports as new clean energy hubs for integrated electricity systems, hydrogen and other low-carbon fuels	Greening ground port services and operations	Promotion of ports as testbeds for waste reuse and the circular economy	Enhancing transport safety and security	Development of efficient capacity allocation and traffic management systems	Diffusion of innovation, data and AI for smart mobility and cybersecurity
ADRIREC – Interreg IPA ADRION				X					
AIMPRESS – Interreg IPA ADRION			X	X	X			X	X
CIRASIM – Interreg IPA ADRION			X						
GREENROUTES – Interreg IPA ADRION		X							
SUPERALFUEL – Interreg IPA ADRION			X	X					
WATERBRIDGING – Interreg IPA ADRION				X				X	X
RENEWPORT – Interreg Euro-MED				X	X				
ACCESSMILE – Interreg CENTRAL EUROPE								X	X
SA-Connectivity – Interreg IPA South Adriatic				X	X	X	X		X

4. How the projects contribute to 'Green and Smart Ports'

PROJECT NAME and PROGRAMME	IMPROVING SUSTAINABILITY IN MARITIME VESSELS OPERATIONS			PORTS AS GREEN HUBS			SAFETY IN PORTS	DIGITALISATION IN PORTS	
	Improvement of the energy efficiency and reduction of emissions of vessels	Creation of a comprehensive network of recharging and refuelling infrastructure	Deployment of renewable and low- carbon fuels and powering stationed vessels with renewable power	Promotion of ports as new clean energy hubs for integrated electricity systems, hydrogen and other low-carbon fuels	Greening ground port services and operations	Promotion of ports as testbeds for waste reuse and the circular economy	Enhancing transport safety and security	Development of efficient capacity allocation and traffic management systems	Diffusion of innovation, data and AI for smart mobility and cybersecurity
CRESPORT – Interreg Italy- Croatia							X		X
CROSSCONNECT – Interreg Italy- Croatia				X	X			X	X
CROSSFREIGHT – Interreg Italy- Croatia					X			X	X
DIGITPORTS – Interreg Italy- Croatia								X	X
MILEPORT – Interreg Italy- Croatia					X			X	X
PRESPORT – Interreg Italy- Croatia				X	X			X	X
TransH2 – Interreg Italy-Croatia	X			X					
TRANSPONEXT – Interreg Italy- Croatia					X			X	X
Total per subtheme	1	1	3	9	8	1	2	8	11
TOTAL PER THEME	5			18			2	19	

Source: Own elaboration

4. How the projects contribute to 'Green and Smart Ports'

In line with the substantial concentration of projects within the observed cluster funded by the **Interreg Italy-Croatia Programme**, this programme emerges as the most prominent contributor across the identified thematic areas, followed by the **Interreg IPA ADRION Programme**. In both cases, the thematic orientation is primarily focused on digitalisation and environmental sustainability, whereas references to other thematic areas by the ports appear limited and sporadic.

Reflecting the geographical scope of the programmes under analysis, **the countries most actively involved across the various thematic areas are Italy and Croatia**, where these topics appear most frequently in the project portfolios. More broadly, countries with direct access to the Adriatic Sea, such as Montenegro and Albania, are also prominently represented in project partnerships. Greece also plays a significant role, although its involvement tends to focus on the broader Mediterranean context rather than exclusively on the Adriatic dimension. It should be noted, however, that the inability to analyse the projects financed under the Interreg Greece-Italy Programme constitutes a limitation in the current assessment, particularly in terms of the representation of Greek participation.

Moreover, the analysis highlights the **active engagement of non-EU countries**, particularly those participating as IPA beneficiaries, which play a substantive role in several projects. **This is primarily due to the role of the Interreg IPA ADRION Programme** in supporting projects involving IPA countries.

4. How the projects contribute to 'Green and Smart Ports'

Table 3 – Themes of projects by programme

		INTERREG ITALY-CROATIA	INTERREG IPA ADRION	INTERREG IPA SOUTH ADRIATIC	INTERREG EURO-MED	INTERREG CENTRAL EUROPE	PROGRAMME NAME
		INTERREG A - CROSS-BORDER	INTERREG B - TRANSNATIONAL	INTERREG A - CROSS-BORDER	INTERREG B - TRANSNATIONAL	INTERREG B - TRANSNATIONAL	PROGRAMME TYPE
IMPROVING SUSTAINABILITY IN MARITIME VESSELS OPERATIONS	Improvement of the energy efficiency and reduction of emissions of vessels	1					
	Creation of a comprehensive network of recharging and refuelling infrastructure		1				
	Deployment of renewable and low-carbon fuels and powering stationed vessels with renewable power		3				
PORTS AS GREEN HUBS	Promotion of ports as new clean energy hubs for integrated electricity systems, hydrogen and other low-carbon fuels	3	4	1	1		
	Greening ground port services and operations	5	1	1	1		
	Promotion of ports as testbeds for waste reuse and the circular economy			1			
SAFETY IN PORTS	Enhancing transport safety and security	1		1			
DIGITALISATION IN PORTS	Development of efficient capacity allocation and traffic management systems	6	1			1	
	Diffusion of innovation, data and AI for smart mobility and cybersecurity	7	2	1		1	

Source: Own elaboration

4. How the projects contribute to 'Green and Smart Ports'

As illustrated in the following figure, the differentiation in thematic priorities between transnational and cross-border programmes warrants particular attention.

Cross-border programmes are designed to foster cooperation between adjacent regions across national borders, with the primary objective of addressing shared challenges specific to border areas. In contrast, transnational programmes operate across broader geographical areas, facilitating cooperation among territories that, while not necessarily contiguous, face common challenges and opportunities. These programmes aim to support the development of joint strategies and projects at a wider scale, involving multiple countries and regions.

While **cross-border projects generally mirror the previously observed trends**, with a concentration in the four most represented subthemes, **transnational projects exhibit a more pronounced focus on the theme 'Improving sustainability in maritime vessel operations'**, with four out of the five projects registered under this theme falling within transnational programmes. Specifically, three transnational projects contribute to the subtheme 'Deployment of renewable and low-carbon fuels and powering stationed vessels with renewable power'. Additionally, under the theme 'Ports as green hubs', five transnational projects are associated with the subtheme 'Promotion of ports as new clean energy hubs for integrated electricity systems, hydrogen and other low-carbon fuels'.

4. How the projects contribute to 'Green and Smart Ports'

Figure 2 – Themes and subthemes of projects by Interreg programme typology

Source: Own elaboration



Indicators

From the analysis, it emerged that, for projects under the 'Green and Smart Ports' framework, the most recurrent result indicators are:

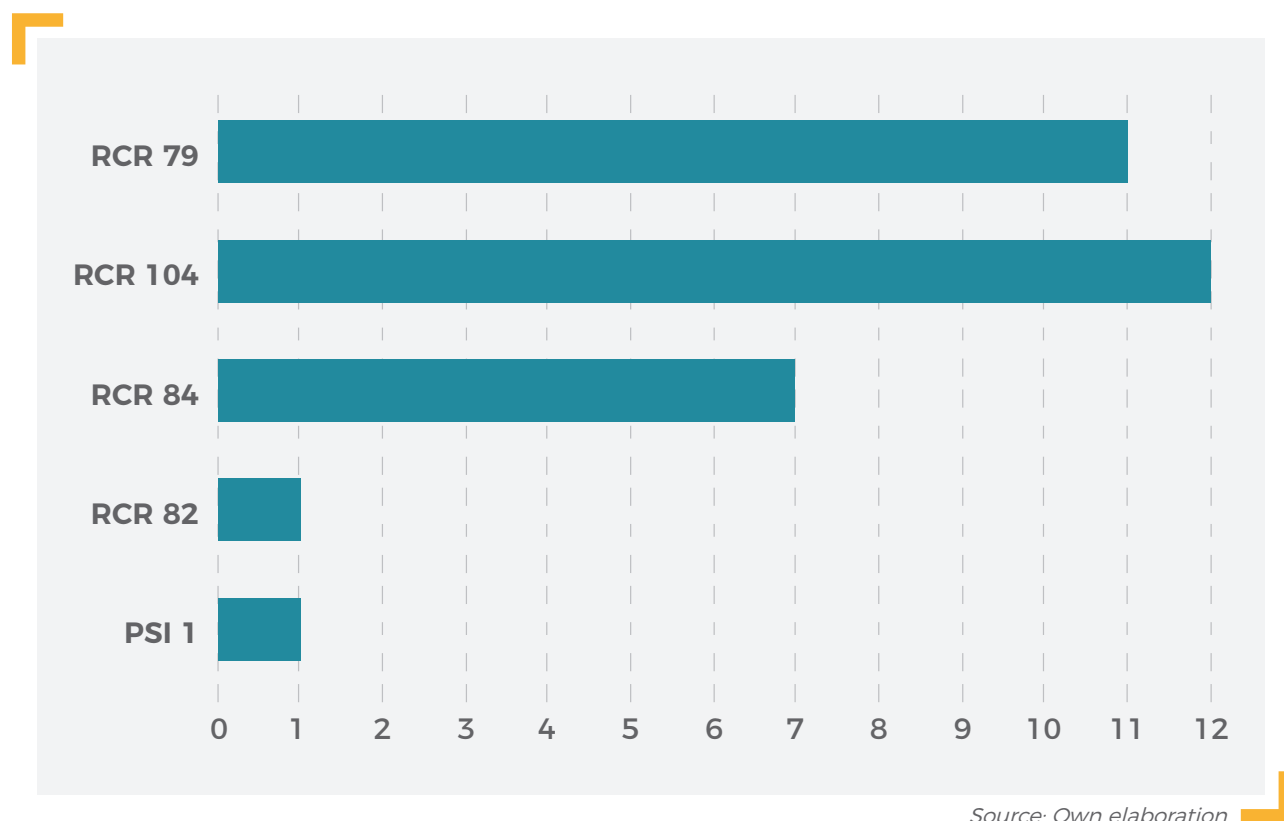
- **RCR 79** - *Joint strategies and action plans taken up by organisations* - measures the number of jointly developed strategies and action plans that are adopted and implemented by organisations during or shortly after project completion.
- **RCR 104** - *Solutions taken up or up-scaled by organisations* - measures the number of non-legal or non-administrative solutions jointly developed within supported projects that are adopted or scaled up during or shortly after project completion, regardless of whether the adopting organisations were project participants.
- **RCR 84** - *Organisations cooperating across borders after project completion* - indicates the number of organisations that continue cross-border cooperation, based on a formal agreement, after the supported project ends. This cooperation may address topics different from those of the original project, but must result from the joint work carried out within it.

Two other result indicators showed a much more limited use:

- **RCR 82** - *Legal or administrative obstacles across borders alleviated or resolved* - refers to legal or administrative barriers (rules, laws, or procedures) that hinder the development potential of cross-border cooperation and that are alleviated or resolved.
- **PSI 1** - *Organisations with increased institutional capacity due to their participation in cooperation activities across borders* - measures the number of organisations that, by actively participating in cross-border cooperation activities, have enhanced their institutional capacity in the project's thematic area.

The figure below presents the use of result indicators by those projects for which this information was available.

Figure 3 – Result indicators chosen by the projects



In particular, indicator **RCR 104** results the most frequently used among the sampled projects. It measures whether, and to what extent, the solutions tested through pilot actions within the cooperation framework are subsequently adopted both within and beyond the partnership. More significantly, it assesses whether these solutions are scaled up, meaning they are implemented on a broader scale, thereby exceeding the limited scope and duration typically associated with cooperation projects. On the other hand, indicator **RCR 79** captures the number of jointly developed strategies and action plans that are formally adopted and implemented by participating organisations during or shortly after project completion. This indicator reflects the capacity of cooperation projects to generate strategic policy frameworks that extend their impact beyond the lifetime of the funded intervention. By measuring the uptake of jointly elaborated outputs at the institutional and policy-making level, the indicator also signals the ability of projects to achieve political relevance and institutional commitment, thereby contributing to the sustainability and long-term governance.



5

Key findings
of the analysis

The analysis of the projects under the 'Green and Smart Ports' component highlights a **clear prioritisation of environmental issues and digitalisation transformation of port systems**. The topics are strongly interconnected. In fact, digital innovation is not merely a stand-alone theme but a crucial enabler of green initiatives. The deployment of advanced data systems, artificial intelligence, and smart mobility solutions directly enhances operational efficiency while reducing emissions in port activities. This synergy between digital and green strategies is evident in many projects, where these themes often emerge as complementary pillars of the same transformative process.

Some of the selected projects aim to enhance the intermodal transport capacity of ports along the Croatian and Italian Adriatic coasts, making them greener, more digitally integrated, and better connected to their hinterland.

The obsolescence of transport infrastructure, inadequate maintenance, and lack of innovation are often major factors that not only diminish logistical efficiency but also significantly contribute to pollution.

Additionally, some projects underscore how inefficiencies in last-mile connections create traffic bottlenecks, increase transport costs, and lead to higher air pollution and CO₂ emissions, all of which impede economic growth and adversely affect the quality of life in local communities.

Moreover, the already mentioned distinction between cross-border and transnational programmes reveals key thematic nuances. **Cross-border projects generally reflect dominant trends in digitalisation and environmental sustainability, while transnational ones focus more on maritime vessel operations**, particularly the use of renewable and low-carbon fuels and the supply of renewable energy to stationed vessels. Their broader geographical scope enables more ambitious strategies that transcend local port issues and foster innovation across the Adriatic-Ionian macro-region.

An equally important aspect is the **active participation of non-EU countries**, such as those involved through the IPA framework, which demonstrates the pivotal role of cooperation in shaping a cohesive macro-regional approach. These countries contribute significantly to cross-border partnerships, reinforcing the idea that the success of the Adriatic-Ionian multimodal corridors depends on the collective effort of both the EU and pre-accession states.

Finally, the analysis of result indicators underlines that **cooperation and long-term scalability of solutions are at the core of the projects**. The frequent adoption of the RCR104 indicator, which focuses on the uptake and scaling of innovative solutions, reflects a strong ambition to ensure that the outcomes of

5. Key findings of the analysis

these initiatives are not only effective but also sustainable over time. This emphasis on shared strategies (RCR 79) and continued cross-border partnerships (RCR 84) further confirms that the overarching goal of these projects and programmes is to create durable synergies between ports and countries in the Adriatic Ionian region, extending beyond the individual project life cycles.



6

**Conclusions
and next steps**

The 'Green and Smart Ports' component is part of the Adriatic-Ionian Multi-Modal Corridors flagship under Pillar 2 – Connecting the Region of the EUSAIR strategy. Its objective is to strengthen port safety, operational efficiency, digitalisation, and sustainability, in full alignment with key EU priorities such as the European Green Deal, the TEN-T policy, and decarbonisation targets. Investment priorities focus on modernising port infrastructure, streamlining administrative and procedural processes, and promoting safe and efficient maritime traffic. Environmental sustainability plays a central role, with initiatives aimed at increasing the number of certified ports and significantly reducing the environmental footprint of port operations.

The 'Green and Smart Ports' concept is structured around four main themes: improving the sustainability of vessels (e.g., through the use of LNG, electrification, and renewable fuels), transforming ports into green energy hubs (based on hydrogen and renewable energy), enhancing safety and resilience (with a particular focus on extreme weather events and health emergencies), and accelerating digitalisation (through technologies such as artificial intelligence, advanced data management systems, blockchain, digital twins, and smart mobility solutions).

An analysis of projects funded under the Interreg 2021-2027 programmes highlights strong consistency with these themes. **Among the programmes, Interreg Italy-Croatia emerges as the most active, followed by Interreg IPA ADRIAN, both of which place clear emphasis on digitalisation and environmental sustainability.** Digitalisation, particularly the development of data systems, AI, and smart mobility solutions, is the most prominent theme, followed by projects aimed at transforming ports into clean energy hubs. Port safety, by contrast, appears only marginally addressed.

The analysis also reveals a shift to priorities such as decarbonisation, energy transition, and the digital transformation of port systems. **Digitalisation is no longer treated as a stand-alone objective but as an enabler for green initiatives, fostering a strong synergy between technological innovation and environmental sustainability.** The growing emphasis on ports as green energy hubs underlines their strategic role in achieving the EU's climate objectives. The adoption of renewable energy solutions, hydrogen technologies, and low-emission systems is transforming ports into key players in the pursuit of carbon neutrality and the implementation of the European Green Deal. In this context, cross-border and macro-regional cooperation is essential. Both EU and candidate countries are working together to develop common strategies and innovative projects. The success of the Adriatic-Ionian multimodal corridors will depend on this collaborative capacity, fostering an integrated, competitive, and sustainable port network for the future.

The projects analysed in this booklet are still in an early stage, some being in the pre-start phase and others during their implementation. To better understand how these projects contribute to the EUSAIR Strategy and its 'Green and Smart Ports' flagship component, **it is essential to acknowledge the importance of evaluation.** More specifically, it is important to recall that the actual achievement of objectives by the analysed European Territorial Cooperation projects will require confirmation through ongoing and ex post evaluations, both at the project and programme level. **The analysis presented in this booklet offers a foundation for the identification and preparation of evaluative case studies,** which can support future result-oriented assessments and contribute to enhancing the evidence base for policymaking in the context of 'Green and Smart Ports' interventions.

It is worth noting that this booklet was developed in the framework of the strategic project **StEP (Stakeholder Engagement Point), one of the governance project financed by Interreg IPA ADRION for the implementation of the EUSAIR Strategy.** As part of the StEP project, a cycle of three Action Labs was organised to enhance dialogue and coordination among Interreg programmes operating in the Adriatic-Ionian area. These Action Labs have served as structured spaces for reflection, exchange, and convergence, enabling Managing Authorities and stakeholders to work together on embedding EUSAIR priorities into programme implementation, promoting capitalisation of relevant projects, and strengthening monitoring and evaluation practices.

The insights gained through the Action Labs have clearly demonstrated that **enhanced coordination between programmes is essential to increase the macro-regional impact of interventions, particularly in complex and cross-cutting areas such as the 'Green and Smart Ports' component of the 'Adriatic-Ionian Multimodal Corridors' flagship.** Many projects analysed in this booklet share similar ambitions, supporting port decarbonisation, smart mobility, and intermodality, yet they are often implemented in parallel rather than in synergy. The Action Labs revealed **a shared interest in exploring further avenues for joint programming, knowledge exchange, and structured cooperation mechanisms.**

Looking ahead, one promising path could be the organisation of future thematic Action Labs focused specifically on the 'Green and Smart Ports' initiative. These would offer a dedicated space for aligning the efforts of different programmes and projects, identifying common challenges and opportunities, and involving project beneficiaries more directly. Such an initiative would not only improve strategic coordination but also help to identify practical areas for improvement in project implementation and governance, ultimately advancing the shared goal of a more sustainable, integrated, and innovative port system across the Adriatic-Ionian region.