Report on pilot actions replicability

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Table of Contents

1   Introduction

The FRAMESPORT project was designed to promote sustainable development of small ports in the Adriatic area. To support the project's decision-making needs, the STEADFAST system was developed as a decision support system specifically tailored for the FRAMESPORT project. It provides targeted data, analysis, and a user-friendly interface to enhance decision-making processes.

This report aims to provide an overview of the pilot actions implemented through the STEADFAST DSS system. It will highlight the activities carried out, the results achieved, and the lessons learned from these pilot actions.

The replicability of pilot actions is crucial for the success and effectiveness of projects like FRAMESPORT. Being able to implement pilot actions in different territorial contexts allows for maximizing impact and promoting sustainable development of small ports in the Adriatic on a larger scale.

The report will evaluate the replicability of the pilot actions implemented through the STEADFAST DSS system. It will examine the factors that contribute to successful replication, including the transferability of methodologies, adaptability to different contexts, and the availability of necessary resources and expertise.

Guidelines and useful insights will be provided for future projects that wish to adopt similar strategies. The report will identify key considerations, challenges, and best practices to facilitate the replicability of pilot actions in other territorial contexts.

2   Pilot action in a nutshell

2.1   Contextualization

The FRAMESPORT DSS pilot action, known as STEADFAST, was implemented in the context of the FRAMESPORT project, focusing on the sustainable development of small ports in the Adriatic region. The project involved partners from Italy and Croatia, two prominent countries in the Adriatic area. The choice of this specific context was driven by the recognition of common challenges faced by

small ports in the region, such as inefficient business practices, limited access to renewable energy, and inadequate waste management solutions.

The Adriatic region holds strategic importance for the development of small ports due to its favorable location and potential for economic growth. The project's emphasis on sustainable development aligns with the broader regional and transnational goals of promoting environmentally conscious economic progress and fostering cooperation among the participating countries. By focusing on the sustainable development of small ports in this region, the project aims to contribute to the socio-economic advancement and environmental well-being of the Adriatic area.

The implementation of the STEADFAST pilot action within this territorial context is part of a collaborative initiative involving diverse stakeholders. This initiative aims to address multifaceted challenges and work towards achieving sustainable development goals in the region. By leveraging the expertise and resources of project partners, local authorities, and industry players, the FRAMESPORT project creates an environment conducive to sustainable growth, innovation, and improved decision-making processes in the small port sector.

Through the STEADFAST pilot action, specific issues related to the sustainable development of small ports in the Adriatic region are addressed. These include the adoption of more efficient business practices, integration of renewable energy sources, and implementation of effective waste management solutions. By tackling these challenges, the pilot action contributes to enhancing the overall sustainability and competitiveness of small ports in the region, leading to long-term success and positive impacts on the local economy and environment.

2.2 Overall vision of the pilot

The activities carried out within the FRAMESPORT project using the STEADFAST DSS can be summarized as follows:

- Tailoring the DSS: The STEADFAST DSS was specifically designed to meet the needs of the FRAMESPORT project. It was developed with various modules and functionalities that align with the project's objectives, integrating data to provide a comprehensive view of small ports and their potentials.

- Support the decision-making process: The main purpose of STEADFAST is to assist users in the formulation and decision of their journey route between the ports of the Adriatic area. The DSS used advanced analytical tools and techniques to enable users to assess the best port, considering various parameters including the environmental impact of the trip.
- Usability and Accessibility: The STEADFAST DSS emphasized usability and accessibility, ensuring that decision-makers at various levels of expertise could effectively utilize its capabilities. The user-friendly interface allowed for easy navigation among functions, enabling seamless access to critical information and facilitating in-depth analyses.
- Additional Supportive Features: In addition to decision support, STEADFAST also assisted in planning and management, implemented business models, enhanced training and skills, and incorporated tools and services from information and communication technologies (ICT). It served as a centralized platform for collecting, analyzing, and disseminating key data on small ports, fostering collaboration among stakeholders and ensuring alignment towards sustainable development goals.

Regarding the achieved results, the STEADFAST DSS successfully provided users with essential data, analysis, and a user-friendly interface to enhance decision-making processes and guide strategic actions. It enabled users to assess different scenarios, identify opportunities, and mitigate risks, thereby facilitating evidence-based decision-making. The DSS contributed to promoting the socioeconomic growth of small ports in the Adriatic basin by providing valuable insights and supporting the formulation and implementation of strategies for sustainable development.

However, it is essential to note any discrepancies with respect to initial expectations. These discrepancies could include challenges faced during data collection and integration, limitations in the analytical capabilities of the DSS, or difficulties in stakeholder engagement and participation. These discrepancies may have required adjustments or adaptations to the original expectations and plans, highlighting the need for flexibility and continuous improvement throughout the pilot action.

3   State-of-the-art and literature review

In the literature review conducted for the pilot action FRAMESPORT DSS, several best practices and key highlights related to ports and similar infrastructure areas worldwide were identified. These include:

- Global and holistic approach: The literature emphasized the importance of adopting a global and holistic approach in the development of small ports. This involves considering not only the infrastructure aspects but also the socioeconomic, environmental, and local community aspects. A comprehensive perspective ensures that the development is sustainable and addresses the diverse needs and impacts of the port.

- Adoption of advanced technological solutions: The review highlighted the significance of incorporating advanced technological solutions that promote port sustainability and resilience. These solutions enable active participation and collaboration of stakeholders, facilitating the implementation of sustainable practices and enhancing the port's efficiency.

- Adaptability of the DSS: The literature emphasized the need for the decision support system (DSS) to be adaptable to varying levels of data availability, resource constraints, and users needs. This adaptability ensures that the pilot actions can be scaled and replicated in different contexts. Customizability of the DSS is crucial to meet the specific requirements of each port and effectively manage available resources.

- Measurement of outcomes and impact: The review emphasized the importance of assessing the overall impact of pilot actions through the measurement of outcomes, socioeconomic benefits, and environmental implications. Specific indicators and metrics should be implemented to monitor and evaluate the achieved results. This evaluation provides tangible data to guide future decisions, track progress, and identify areas for improvement.

- Stakeholder engagement and collaboration: The literature highlighted the significance of stakeholder engagement and collaboration for the long-term success of small ports. Active involvement of port users, local communities, and other stakeholders in the decision-making process ensures that their needs and concerns are considered and addressed. This collaboration promotes the adoption of sustainable solutions and encourages the participation of local communities in port development and management.

By incorporating these best practices and key highlights from the literature review, the pilot action FRAMESPORT DSS aimed to develop a comprehensive and adaptable decision support system that addresses the specific needs of small ports, measures outcomes, and engages stakeholders for sustainable development.

4 Pilot action development and main obstacles

4.1 Step-by-step procedure

The accomplishment of the planned activities for the pilot action in STEADFAST can be summarized in the following chronological order:

1. Identification of obstacles: The initial step involved identifying potential obstacles that could affect the implementation and use of the DSS tool. One of the main obstacles identified was the collection of relevant data from various sources, along with challenges related to data integration and analysis. Additionally, stakeholder engagement was recognized as crucial but could present difficulties.

2. Data integration: After the data collection phase, the next step involved integrating the collected data from different sources into a unified system. This required harmonizing data formats, eliminating duplicates, and assigning appropriate metadata. Data integration was a complex process due to differences in data structures and inconsistencies in terminology used.

3. Data analysis: The collected data was subjected to analysis using appropriate analytical methods and techniques. The goal was to extract meaningful insights and generate useful results for decision-makers. This step demanded specialized skills in statistics, machine learning, and artificial intelligence.

4. DSS construction: The construction of the DSS involved identifying the participating ports in the Adriatic basin and defining specific objectives to be achieved through the implementation of the tool. Systematic data collection, integration, and analysis were conducted to support decision-making processes in the ports. Steps were taken to standardize data formats, resolve discrepancies, and ensure overall data quality.

5. Analysis and presentation of results: Using the analytical capabilities of the DSS tool, in-depth analyses were performed to assess potential scenarios, travel impacts, and other relevant variables for port decision-making processes. The results were presented in a comprehensible and meaningful manner for users.

6. Evaluation and improvement: At the end of the pilot action, a thorough evaluation of the DSS tool's performance and the achieved results was conducted. User feedback and

evaluation results were considered to make adjustments and improvements to the tool, aiming to better adapt it to the specific needs.

Through this step-by-step procedure, the pilot action in STEADFAST aimed to demonstrate the effectiveness of the DSS system in supporting decision-making for sustainable development in small ports. The process addressed obstacles, including data collection, integration, analysis, and stakeholder engagement, to achieve significant stakeholder involvement and overcome challenges.

4.2   Target groups and stakeholders

The target group of the STEADFAST pilot action focused on boaters and experienced users. The methodology used for stakeholder involvement consisted of conducting interviews and interactions with the identified stakeholders. These interactions provided a platform for sharing insights, gathering ideas, and understanding the needs and requirements of the stakeholders regarding an effective DSS. The engagement process facilitated the exchange of recommendations, best practices, and valuable examples that contributed to the development of the DSS.

The involvement of stakeholders was crucial in shaping the DSS and ensuring its relevance and usefulness. The inputs and recommendations provided by port authorities and other stakeholders enriched the system by incorporating their insights and requirements. This collaborative approach fostered a shared vision and a sense of collaboration towards achieving sustainable development in the Adriatic ports.

The presentations and recommendations shared by stakeholders served as valuable resources for policymakers, port authorities, and other interested parties. They provided a clear path towards sustainability and modernization goals within the broader initiative. The engagement with stakeholders not only raised awareness about the importance of sustainable development in Adriatic ports but also fostered a sense of collective responsibility and commitment towards achieving sustainability goals.

Overall, the methodology of stakeholder involvement played a significant role in the development of the pilot action and the DSS. It ensured that the system addressed the specific needs and requirements of the target group, making it more relevant and impactful. The collaborative efforts with stakeholders created a solid platform for future collaborations and actions, paving the way for a more sustainable future in the Adriatic ports.

4.3 Main obstacles

During the development of the STEADFAST pilot action, several obstacles were encountered. Below are the main obstacles and potential alternative methodologies that could have helped overcome or reduce their impact:

- Collection of relevant data: To overcome the challenge of collecting relevant data, alternative methodologies could include establishing partnerships or collaborations with data providers to streamline the data collection process. Creating standardized templates or data formats could facilitate the collection and aggregation of data. Additionally, leveraging automated data collection techniques or utilizing data scraping tools could help gather data more efficiently.
- Data integration: To address the obstacle of data integration, employing data integration platforms or tools that support multiple data formats and provide automated data mapping capabilities could streamline the process. Establishing data governance frameworks and standards early on could also ensure consistent data integration across different sources.
- Data analysis: Overcoming the obstacle of data analysis could involve implementing advanced analytics tools and platforms that offer built-in statistical and machine learning algorithms. Alternatively, collaborating with data scientists or experts in the field could provide the necessary expertise to perform complex data analysis tasks. Investing in training programs or workshops for team members involved in data analysis could also enhance their skills and capabilities.
- Stakeholder engagement: To encourage active stakeholder engagement, alternative methodologies could include conducting targeted awareness campaigns to educate stakeholders about the benefits of the DSS tool.
- Contextualization of key actors: To address the obstacle of contextualizing key actors, conducting in-depth interviews, surveys, or workshops with key stakeholders could provide valuable insights into their needs and requirements. Creating user personas or profiles that capture the characteristics and preferences of different actors could also aid in tailoring the DSS tool to their specific contexts.
- Sustainability and modernization: Overcoming the challenge of promoting sustainability and modernization could involve showcasing successful case studies or pilot projects that have implemented sustainable practices in other port contexts. Providing guidance and

recommendations on sustainable strategies and offering support for implementation could incentivize Adriatic ports to adopt modern and environmentally friendly approaches.

By implementing these alternative methodologies, the obstacles faced during the pilot action development could have been mitigated, allowing for smoother progress and improved outcomes.

4.4 Identified KPIs and related achievements

In this section, we suggest the most suitable Key Performance Indicators (KPIs) to consider during monitoring activities, justifying their selection. Specify which ones have been used and which ones would have facilitated the monitoring of the pilot action. Also, describe the results of the monitoring phase. Within the scope of the pilot action, several Key Performance Indicators (KPIs) have been identified to monitor the progress and success of the project. The identified KPIs include:

- Desk research: This KPI measures the extent of research conducted to identify the best tools, practices, and strategies for the development of the DSS. It involves evaluating the depth and breadth of the research conducted, including the number of sources consulted and the comprehensiveness of the information gathered.
- Development of a draft version of the best practices document: This KPI tracks the completion of a draft document that outlines the identified best practices for the development of the DSS. It assesses the progress made in compiling and organizing the information gathered during the research phase.
- Finalization of the document: This KPI measures the completion and refinement of the document on best practices. It evaluates the level of detail, accuracy, and applicability of the recommendations provided in the document.
- Presentation of results to stakeholders: This KPI assesses the successful dissemination of the project's results to stakeholders in the sector. It includes activities such as organizing presentations, workshops, or conferences to share the results and gather feedback from stakeholders.

These KPIs were used to monitor the progress and success of the pilot action. Through desk research, comprehensive documentation was created, including mockups and examples of best practices. A draft of the best practices document was developed and reviewed based on stakeholder

feedback. Finally, the results were presented to stakeholders during the VENICE BOAT SHOW in May 2023.

The pilot action yielded positive results, with stakeholders expressing satisfaction with the comprehensive approach and the identification of potential updates for future integration. Monitoring these KPIs helped achieve the project's objectives and contributed to the overall development strategy of the FRAMESPORT project and the long-term sustainability of small ports.

5   Final consideration, tip&tricks

The FRAMESPORT DSS is a tool specifically designed for the FRAMESPORT project, providing data, analysis, and an intuitive interface to enhance decision-making processes and guide strategic actions. The FRAMESPORT DSS assumes the role of a decision support system by integrating various modules and functionalities that align with the project's objectives. It integrates data from different sources to provide a comprehensive view of small ports and their potential. This extensive dataset serves as the foundation for generating valuable insights and guiding decision-makers in pursuing sustainable development of small ports in the Adriatic basin.

The primary purpose of the FRAMESPORT DSS is to assist decision-makers in formulating and implementing strategies that promote socioeconomic growth of small ports in the Adriatic basin. Through the use of advanced analytical tools, the DSS allows users to evaluate the impact of different scenarios, identify opportunities, and mitigate risks. It facilitates evidence-based decision-making by presenting clear visualizations, predictive models, optimization algorithms, and interactive dashboards.

Furthermore, the DSS emphasizes usability and accessibility, ensuring that decision-makers at various levels of expertise can effectively leverage its capabilities. Its intuitive interface enables easy navigation between available functions, offering a seamless experience to access critical information and conduct in-depth analyses. With a user-centered design, the DSS aims to provide intuitive tools that enhance the effectiveness of the decision-making process.

Additionally, the FRAMESPORT DSS assists in planning and management, implements business models, enhances training and skills, and incorporates information and communication technology (ICT) tools and services. By providing a centralized platform that collects, analyses, and disseminates

key data on small ports, the DSS bridges the gap between stakeholders, facilitating collaboration and ensuring alignment towards sustainable development goals.

Based on the success of this pilot action, several recommendations and suggestions can be made for replicating similar actions in other territories. Firstly, it is essential to conduct thorough desktop and field research to identify best practices and strategies for sustainable development in small ports. Consultation with industry professionals and stakeholders is also crucial to ensure that the identified best practices are relevant and applicable to the specific context.

Furthermore, it is crucial to monitor progress and successes through the identification and tracking of various key performance indicators. This ensures the achievement of goals and the contribution of the pilot action to the overall project strategy. Overall, the replication of the action in other territories can be successful if conducted with a comprehensive and detailed approach that takes into account the unique characteristics and context of the territory. Consultation with industry professionals and stakeholders is also essential to ensure the relevance and applicability of identified best practices.

Annex: Pilot action synthesis

Please fill the following table with the information related to your pilot action. Please, use concise bullet points where indicated.

Project partner		Pilot action number		Macro-theme*	
Pilot action name	"STEADFAST (System fosTEring sustAinable Development oF Adriatic Small porTs) - a pilot action implemented within the FRAMESPORT project - aims to promote sustainable development of small ports in the Adriatic area. Through the utilization of the STEADFAST decision support system, it provides targeted data, analysis, and user-friendly tools to enhance decision-making processes and guide strategic actions. The replicability of STEADFAST's pilot actions in different territorial contexts is crucial for maximizing impact and promoting sustainable development on a larger scale."				
Group of stakeholders involved (bullet points)	- Yachtsman: the user uses the decision-making system to choose the port of destination among the small ports of the Adriatic space. The system suggests the best port according to your needs. - Expert user: Use the support system to view all port information in the database. The experienced user needs a general vision and strategy to make strategic decisions.				
Main steps (bullet points)	- Identifying the ports in the Adriatic basin to participate in the pilot action. - Defining specific objectives to be achieved through the implementation of the DSS tool in these ports. - Collecting relevant data from various sources, ensuring reliability and usability within the DSS tool. - Integrating data from different sources into a single system, harmonizing formats, resolving discrepancies, and assigning appropriate metadata.				

	• Analysing the collected data using appropriate statistical, machine learning, and AI techniques to extract meaningful information for decision-making. • Engaging key stakeholders, including yachtsmen and experienced users. • Presenting the results of data analysis in a comprehensible and meaningful manner for decision-makers. • Evaluating the performance of the DSS tool and the achieved results, incorporating user feedback and making adjustments and improvements to better adapt it to the specific needs of small ports in the Adriatic basin.
KPIs (bullet points)	• Data collection efficiency: Measuring the effectiveness and efficiency of the data collection process, including the ability to gather relevant and reliable data from various sources. • Data integration accuracy: Assessing the accuracy and completeness of the data integration process, ensuring that data from different sources are harmonized, duplicates are eliminated, and appropriate metadata is assigned. • Analytical effectiveness: Evaluating the performance of the analytical methods and techniques used to extract meaningful information from the collected data and generate useful results for decision-making. • Stakeholder engagement: Measuring the level of active participation and collaboration from key stakeholders, including decision-makers and port industry experts, throughout the pilot action. • User satisfaction: Gathering feedback from users regarding the usability, accessibility, and effectiveness of the DSS tool, ensuring that it meets their specific needs and enhances the decision-making process. • Outcome evaluation: Assessing the impact and outcomes of the pilot action, including the socio-economic benefits, environmental implications, and overall contribution to sustainable development in small ports.

	• Replicability potential: Examining the potential for replicating the pilot action in other territorial contexts, considering factors such as adaptability, scalability, and transferability of the DSS system.
Main obstacles (bullet points)	• Collection of relevant data from various sources: Overcoming challenges related to data collection, including data scattered across different sources, heterogeneous data quality, and non-standardized data formats. • Data integration: Addressing complexities in integrating data from different sources into a unified system, including harmonizing data formats, eliminating duplicates, and resolving inconsistencies in terminology and data structures. • Data analysis: Overcoming challenges in analysing the collected data, requiring specialized skills in statistics, machine learning, and artificial intelligence to extract meaningful information and generate useful results for decision-makers. • Stakeholder engagement: Obtaining active participation and collaboration from key stakeholders, such as decision-makers and experts in the port industry, due to potential obstacles like time commitments, resistance to change, or lack of awareness about the benefits of the DSS tool. • Standardization and readiness for analysis: Ensuring the standardization of data formats, resolving discrepancies, and improving overall data quality to ensure reliable and usable data within the DSS tool. • Adjustments and improvements: Incorporating adjustments and improvements to the DSS tool based on user feedback and evaluation results to better adapt it to the specific needs of small ports in the Adriatic basin.
Advice and suggestions	• Ensure data availability and quality: Establish mechanisms for data collection, integration, and standardization to ensure the availability of reliable and comprehensive data. Invest in data management systems and technologies that facilitate data sharing, analysis, and reporting. Prioritize data quality and

	accuracy to enhance the effectiveness of decision-making processes.
	• Embrace a holistic approach: Take a comprehensive and holistic approach to sustainable development, considering not only infrastructure aspects but also socioeconomic, environmental, and community aspects. Addressing these multiple dimensions will contribute to the long-term success and sustainability of small ports.
	• Promote technological innovation: Embrace advanced technological solutions, such as decision support systems, predictive modelling, and optimization algorithms, to enhance the efficiency, sustainability, and resilience of small ports. Leverage the power of emerging technologies like artificial intelligence, Internet of Things (IoT), and data analytics to optimize operations and improve decision-making processes.
	• Ensure scalability and replicability: Design pilot actions and decision support systems that are scalable and adaptable to different contexts. Consider the specific characteristics and needs of each port while developing strategies and tools to ensure their replicability in other regions.
	• Evaluate and monitor outcomes: Implement evaluation frameworks with specific indicators and metrics to assess the outcomes and impacts of pilot actions. Regularly monitor and evaluate the effectiveness of the decision support system and use the obtained data to guide future improvements and decisions.
	• Continuously learn and adapt: Foster a culture of learning and continuous improvement. Encourage knowledge exchange, best practices sharing, and lessons learned among project partners and stakeholders. Adapt the decision support system and strategies based on feedback, evaluation results, and evolving needs and challenges.
Other comments	n/a

* Use the following acronyms:

- **ICT**: ICT application and service development
- **P&M**: Spatial planning and management
- **BSN**: Business oriented aspects
- **T&K**: Training and knowledge
- **E&E**: Environment and energy aspects