

D.5.2.2. Intermodal transport Policy action plan on intermodal solutions in the Italy-Croatia area

WP5 Transport strategies and results Roll-out

A.5.2 Harmonised services for passengers

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PP No.5 KIP
Status: Final
Distribution: Public
Date: 17/12/2021

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2 Introduction

WP5 “Transport strategies and results roll out”, led by the Autonomous Region Friuli-Venezia Giulia, focuses on making the lessons learned during ICARUS available in the Italy-Croatia area and beyond, while at the same time becoming synergistic with the Macro regional strategies – EUSAIR, EUSALP and EUSDR. The work package will largely benefit from the results of the previous two work packages.

Within this work package, ICARUS partners created three policy papers on preparing action plans for each of the main pillars of the project. The three main pillars of the ICARUS project are:

- ICT solutions in transport;
- Intermodality;
- Behavioural change.

This particular policy action plan focuses on intermodal transport solutions in the Italy-Croatia cross border area. This policy action plan elaborates the lessons learned from ICARUS pilot actions with the aim of providing policy recommendations to improving the current state of intermodality in the ICARUS regions through further transferability and scalability of the pilot actions. The key aspects of this document are the same as the main goal of the entire work package, to make the knowledge and skills gained during the ICARUS project available across the Italy-Croatia area as well as beyond it.

During the project lifetime, the project partners have developed and implemented 7 pilot actions, a case study and a feasibility study. The pilot actions are intended towards introducing new solutions in ICT and improving the current state of intermodality across the involved Italian and Croatian regions. The pilot actions are being implemented in Friuli Venezia Giulia region, the Metropolitan City of Venice, Emilia Romagna Region and Abruzzo Region for Italy, and in the Istrian region and Primorje Gorski-Kotar region in Croatia.

3 Contribution of pilot projects

3.1 Intermodal passenger transport

Intermodal transport can be defined as using a combination of at least two modes of transport to reach the destination point of the journey from the starting point of the journey. It is more commonly used in freight transport, although in recent years, it has seen application in passenger transport as well. This is done either through enabling integrated public transport services between two or more providers of public transport using different transport modes, or by enabling users to combine public transport services with active transport options, such as cycling, allowing them to store bicycles within the bus, train or ship while using that transport mode.

This approach intends to highlight the strengths and offset the weaknesses of each used transportation mode. In this approach lower speed, more precise modes are reserved for the very beginning and end of the journey, while higher speed modes are used to cover the most distance and get the user as close to the end point as possible. If organised and developed properly, intermodal passenger transport offers a safer, greener and possibly cheaper way of travelling.

3.2 ICARUS Pilot Actions

The seven pilot actions of ICARUS all focus on fostering sustainable mobility by developing solutions related to one or more the three main pillars of the ICARUS project – ICT solutions in transport, intermodality, and behavioural change. Each pilot action contributes to at least one of the three specific goals of the ICARUS project, those being:

- 1) Capacity building via better knowledge, skills and Cross-border dialogue
- 2) Behavioural change towards a harmonized transport system for passenger services
- 3) Defining long-term vision & regional policy planning in intermodal mobility in IT-HR

The following table summarizes each of the seven pilot actions, its focus and achievements.

Table 1: ICARUS pilot actions, main activities of the pilots and contributions to the specific objectives of the project

Name of the pilot action	Region the pilot focuses on	Developed by	Main activity of the pilot	Contribution to specific objectives
Intermodality bike-train development from hinterland to the coast in FVG Intermodal rail/bike solutions to strengthen and link the CAAR cyclepath	Friuli Venezia Giulia region	Friuli Venezia Giulia region	28 wheeling ramps installed across 10 stations in FVG region – almost all along the CAAR cycle path	This pilot contributed most to specific objective 2 by removing infrastructural barriers for cyclists in the form of staircases in railway stations. The pilot is easily replicable in the whole region which would help strengthen bike-friendly infrastructures, thus also contributing to the specific objective 3 at the regional and cross-border level.
Cross-border intermodal services put in place Cross-border bike & bus service to connect Poreč and CAAR	Friuli Venezia Giulia region, Istria region	Friuli Venezia Giulia region	Cross-border bike-bus service was conducted over a period of four months. A total of 54 bus round trips between Trieste and Poreč. A total of 615 passengers and 597 bikes made use of the service.	This pilot highly contributed to all three specific goals, with the highest being to the third goal. Firstly, it is focused on testing a new cross-border service for cyclist, with the lessons learnt, data and feedback collected providing a valuable contribution to capacity building. Secondly, the new intermodal service encouraged users to visit the territory by bicycle. Thirdly, the success of the newly introduced service saw a rising number of passengers for all four months of the service, providing valuable input for long term planning of intermodality and transport policies at the regional and cross-border levels.
Boosting intermodal solutions through ICT Web/mobile application for the promotion of intermodal passenger transport	Main focus on Primorje Gorski-Kotar region, contains information on	Intermodal Transport Cluster	Developing a web-platform (icarus-mobility.com) for public transport users and users of active modes of transport, enabling	This pilot contributed to all three specific objectives, with the highest contribution being to the first. The platform provides a large amount of data on regional and local public transport, integrated transport, cycling etc. improving the knowledge pool as well as giving the general public insight into the project activities. The platform unites

	all ICARUS partner regions		easy access to relevant information about all forms of transport in the region.	the pool of information all into one place making it much easier to be accessed. This enables the general public to discover and find optimal transport solutions for their needs, and gives insight to policy makers into all the currently available transport options, as well as ones that are lacking. Having this information allows decision makers to improve the intermodal transport system by introducing new intermodal transport options in the future.
Dynamic travel planner for seamless intermodal solutions IT solutions for an integrated mobility	Emilia Romagna region	Emilia Romagna region	Development of the RogerAmbiente tool for estimating air pollution emissions, linked to the dynamic travel planning app Roger.	This pilot contributed to all three specific objectives, with the highest contribution being to the second. The objective of the developed web platform is to raise awareness among users, policy makers and transport operators about emissions generated by each trip, thus promoting initiatives for behavioural change towards sustainable mobility. Extending the lifespan of the web platform through project PREPAIR enables a long-term life of the platform with the possibility of expanding into the regions of North Italy.
Sustainable intermodal solutions between coast and hinterland area in Istria with main focus on bike and train	Istria region	Istrian Development Agency	In cooperation with HZPP, introduce a new intermodal service in Istria focusing on combining bicycle and train transport	This pilot highly contributed to all three specific objectives. This has been done by introducing a bike and train transport option in the region, intended for bike tourism and sustainable mobility fostering, as well as promoting the service through webinars, events, promotional foil on the train etc. leading to higher visibility and an increased chance for behavioural change among potential users. As the Istrian Development Agency is under the ownership of the Istrian region, its work within the project is aimed at introducing long-term sustainable transport options, with

				long-term mobility planning being shared during different sessions.
Fostering bike-bus-train-ferry intermodality in coastal areas and related hinterland Open data ICT platform	Metropolitan City of Venice	Metropolitan City of Venice	Improving the existing ICT platform through systematization and optimization of data and information related to transport mobility. Equipping the local buses with bicycle carriers	This pilot contributed to all three specific objectives, with the second being highlighted the most by providing a credible and efficient transport service while enabling a new option for transporting bicycles and providing data services which contribute to behavioural change. The optimized data services helped provide a high-quality base of knowledge which contributed to capacity building. Both the activities for ICT tools and the activities related to facilities were performed at the local level and are contributing to the long-term intermodal mobility vision for the Metropolitan City of Venice.
ICT Systems to better connect coast and hinterland Infomobility & integrated ticketing, real time check in and tracking for passengers	Abruzzo region	Regional Agency for Productive Activities ARAP Abruzzo	Development of the Happy Travel app which provides links to transport providers' websites and offers information on touristic destinations and services in the Abruzzo region	This pilot contributes to all three specific objectives. The app which was developed in this pilot promotes behavioural change by informing users about sustainable transport options available in the region, as well as promotes the connection between cross-border territories. The ICARUS project has contributed to strengthening the Abruzzo region's policy of restarting maritime connections between Italian and Croatian shores, thus helping shape the long-term vision and regional policy planning of the Abruzzo region. The activities planned at the regional level for a transnational strategy will be intertwined with the ICARUS pilot activities to promote and use multimodal methods of travel.

Source: Created by the author based on the Evaluation of the Pilot Actions Effectiveness

What can be concluded after analysing the pilot actions is that each pilot action falls into one of two categories – fostering sustainable mobility through ICT solutions, or fostering sustainable mobility by introducing physical improvements in the field.

Both pilot actions implemented in Friuli Venezia Giulia region belong to the second category as they include light infrastructure works and introducing a new bike-bus service. The same is true for the pilot action implemented in the Istrian region which launched a bike-train service. These pilot actions are focusing on field work and making intermodal passenger transport services come to life.

On the other side, the pilot actions developed in Primorje Gorski-Kotar region, Emilia Romagna region and Abruzzo region are the ones focused on increasing knowledge and informing the user about the existing intermodal passenger transport solutions as well as their benefits. These pilot actions focus on ICT solutions for bringing improvements to the transport system.

The pilot action performed in the Metropolitan City of Venice is therefore unique, as it consists of both parts, the improvement of the existing ICT platform through systematisation and optimisation of data, and improvements in the field by acquiring and installing bicycle carriers onto local buses.

Both approaches to improving sustainable mobility are valid and important. One offers an increase in knowledge by providing the user with information on the benefits of public transport, active modes of transport, micromobility, intermodal and integrated public transport, etc. Raising awareness and gaining knowledge are the first steps towards achieving behavioural change. Introducing improvements in the field allows the informed users to test out the new intermodal solutions and come to their own conclusions regarding the quality, usefulness of the service, their desire to use the service again etc. Testing new intermodal solutions gives an opportunity to project partners as well as transport service providers to gain new ideas on ways to improve and combine existing services into new integrated and intermodal ones, thus partially or completely resolving previously existing gaps in public transport and mobility. Introducing services which are not only greener, but also provide higher user satisfaction than previous services is the key to securing the successful future of sustainable intermodal transport. The knowledge gained and the

services introduced are not restricted to the territory they were tested in, but should also be expanded upon by sharing good practices with other regions, adapting the actions to those regions and implementing them there as well.

In the pilot satisfaction surveys users were given an opportunity to express their satisfaction with the service, their comments, suggestions for improvements, concerns etc. in order to enable the testing project partner further insight into what the users expect from their service, the areas in which it is lacking and to seek ways to improve the service according to the needs of the users. User feedback is crucial to learning the user's habits and preferences, and to improve the newly introduced services accordingly.

3.3 Contributions to Macro-regional strategies

The new intermodal solutions introduced and tested within ICARUS project are in line and contribute to the goals of the Macro-regional strategies as well. The ICARUS project involves partners from regions in the Adriatic-Ionian macro region, with MCVE from the Veneto region also belonging to the Alpine region, and the Croatian partners belonging to the Danube region, therefore contributing to the EUSAIR, EUSALP and EUSDR strategies.

EUSAIR¹

By analysing the topics and pillars of the EUSAIR macro-regional strategy, it can be concluded that the ICARUS pilot actions focusing on intermodal transport solutions are part of the 2nd pillar of EUSAIR – Connecting the region, further belonging to its second topic which is the Intermodal connections to the hinterland. The pilot actions implemented by IDA, MCVE and FVG (FVG's 2nd pilot action) all tested new intermodal services which provided coast and hinterland connections in their respective regions and, in FVG's pilot action case, intermodal cross-border round trips.

¹ EU Strategy for the Adriatic and Ionian Region: <https://www.adriatic-ionian.eu/>

These pilot actions also contribute to EUSAIR pillar 4 – Sustainable tourism. The pilot actions do so by developing and introducing new integrated and intermodal public transport options in the regions which promote responsible tourism behaviour focusing on the segment of bicycle tourism by enabling transport of bicycles on buses in FVG’s second pilot action and CMVE’s pilot action and on trains in IDA’s pilot action. FVG’s first pilot action contributes to the development of bicycle tourism, though not by introducing intermodal services directly, but rather by removing barriers at railway stations across CAAR cyclepath by installing bicycle ramps along staircases in those stations.

EUSALP²

By analysing the objectives listed in the EUSALP macro-regional strategy it can be concluded that the second objective of the strategy “Connectivity for all: in search of a balanced territorial development through environmentally friendly mobility patterns, transports systems and communication services and infrastructures” is relevant to the ICARUS project and its pilot actions regarding intermodality. This specifically regards the Action Group 4 of the strategy which aims to promote intermodality and interoperability in passenger and freight transport. As ICARUS partners tested regional and cross-border intermodal services, they have directly contributed to the goal of this action group by both introducing new intermodal lines and services and by promoting them through multiple different channels.

EUSDR³

By analysing the pillars and priorities listed in the EUSDR macro-regional strategy it can be concluded that the ICARUS project activities belong to the first pillar – Connecting the region, and more precisely to priorities PA 1B Rail-Road-Air Mobility and PA 3 Culture & Tourism. As previously mentioned, the pilot actions implemented by IDA, MCVE and FVG (FVG’s 2nd pilot action) all tested new intermodal services in their respective regions and, in FVG’s pilot action case, intermodal cross-border round trips. Two of these pilot actions focused on road transport,

² EU Strategy for the Alpine Region: <https://www.alpine-region.eu/>

³ EU Strategy for the Danube Region: <https://danube-region.eu/>

more specifically enabling the transport of bicycles on buses, and one pilot action focused on rail transport enabling the transport of bicycles on trains, thus contributing to priority PA 1B Rail-Road-Air Mobility. Those pilot actions not only enable new intermodal services for the local population, but also encourage the development of bicycle tourism, thus contributing to PA 3 Culture & Tourism.

4 Recommendations to policy makers

The recommendations segment of this action plan refers to the transferability and scalability of findings and activities of the ICARUS pilot actions. In this case transferability refers to the ability to apply the tested pilot actions to other parts of the original region, as well as other regions in the Italy-Croatia Programme area, and potentially even further across Europe. Scalability refers to the possibility to apply the successful intermodal solutions tested within the ICARUS pilot actions to a wider territory around the initial testing area through upgrades and follow-up pilot projects. Each pilot action has different lessons that were learnt from it and thus has a different way of transferring to other regions or different parts of the original region and can be scaled differently through future projects.

Table 2: Transferability, scalability and lessons learnt from ICARUS pilot actions

Pilot Action	Lessons learnt	Transferability	Scalability
Intermodality bike-train development from hinterland to the coast in FVG Intermodal rail/bike solutions to strengthen and link the CAAR cyclepath	The implementation of the service/activity and its promotion are of equal importance. It is important to reach the public and raise awareness about the new solutions for sustainable transport.	This pilot action initiative is transferable to any of the Programme area regions as long as it is possible to come to an agreement with the railway infrastructure managers and the rail transport operators.	This pilot is scalable to the whole FVG region, as RFI, the only railway operator, is already aware of the activity. The same goes for the company which produces the ramps.

<p>Cross-border intermodal services put in place Cross-border bike & bus service to connect Poreč and CAAR</p>	<p>The success of the pilot action demonstrated the need for additional services aimed at cyclists along the Poreč cycle path. During the pilot, FVG has learned many smaller lessons (presence of electric bikes occupying a larger space, risk of service usage by people without bikes etc.) which will be useful in developing future services</p>	<p>This pilot action is transferable to other parts of FVG, as it is rich with cycle paths, and additional services/lines connecting FVG with Slovenia and Croatia can realistically be achieved to benefit tourists and citizens interested in cycling. The transfer to other regions in the Programme area might be possible if the proper criteria is met and a feasibility study is performed.</p>	<p>The pilot action service could be extended to the whole region thanks to careful transport planning carried out at the regional level. The monitoring surveys have shown that the majority of passengers would be willing to pay for this type of service, which is useful information for ensuring financial sustainability for the service in the future.</p>
<p>Boosting intermodal solutions through ICT Web/mobile application for the promotion of intermodal passenger transport</p>	<p>Including active modes of transport in the equation of intermodal and integrated transport. Promoting intermodality, raising awareness and achieving behavioural change are long-term processes which need to be carefully planned and organized in order to reach as many target groups as possible.</p>	<p>This pilot action includes the entirety of Primorje Gorski-Kotar region and serves as a valuable source of information in the region. It has the possibility to be transferred to other regions in Croatia and Italy through future upgrades and expansion of the pilot.</p>	<p>This pilot action can be scaled up through future projects and upgrades to include not only other Croatian regions but also cover detailed information on transport options in Italy and across Europe.</p>
<p>Sustainable intermodal solutions between coast and hinterland area in Istria with main focus on bike and train</p>	<p>Communication and cooperation between partners are key towards achieving the project goals. For future applications it is important to have</p>	<p>This pilot action is transferable to other parts of the Istrian region by developing and promoting other possible routes. The focus doesn't need to</p>	<p>The pilot is scalable to the entire region, but would need to be adapted depending on available modes of public transport. This means parts of</p>

	all strategies rolled out so that the lessons learnt can be developed and implemented.	be only on bike and train intermodality, and can instead include maritime connections, with the possibility of cross-border services to Italy.	the region would have bike+bus connections, while others would have bike+train or bike+ferry connections.
Fostering bike-bus-train-ferry intermodality in coastal areas and related hinterland Open data ICT platform	Cooperation with local stakeholders and institutions is essential to ensure collaboration among different actors and achieve a shared vision in order to avoid misunderstanding and delays to the implementation of activities	Both parts of this pilot action (those related to ICT and those related to the equipment) are transferable to the other parts of the region. The acquisition of bike carriers represents a one-off expense without the need for additional funding, and is therefore easily transferable to other regions in the Programme area as well.	The same considerations apply to scalability, making the systematized data platform even more efficient in the provision of information and support to intermodality on the regional level. The acquisition and installation of bike carriers is easily scalable at the regional level due to it being a one-off expense.

Source: Created by the author based on the Evaluation of the Pilot Actions Effectiveness

After analysing the pilot actions related to providing intermodal solutions in the field, it is possible to further split these activities into two categories:

- Actions that introduce infrastructural improvements or require acquisition of equipment
- Actions that introduce new intermodal services for cyclists

The first category includes the acquisition of bike carriers in the Metropolitan City of Venice and the installation of bicycle ramps in railway stations across the CAAR cycle path. These activities represent one-off expenses without the need for further funding. They are installed in order to

remove barriers for cyclist and to incentivise the usage of bicycles as an alternative to personal cars. This type of activity requires an agreement with the responsible institutions, such as the transport service providers and infrastructure managers, whose property would be modified to accommodate bicycles or enable easier usage of service for cyclists.

The second category includes the bike+bus cross-border service connecting Poreč and CAAR, as well as the bike+train intermodal service in Istria. To transfer these services to other regions, feasibility studies would need to be performed in order to assure such services are possible and are sustainable in the long-term, as well as a detailed analysis of customer demand and needs. As these services are continuous, they need to be financially sustainable, and the contracts with transport providers need to be regularly renewed to keep the service going. If multiple transport providers are performing the service, it is required to ensure a quality partnership between them and ensure their cooperation. Fares for the usage of these services are an important factor as well, especially if multiple transport operators are providing the service, meaning that tickets should be integrated, simplifying and encouraging their usage.

Even though the pilot action implemented in Primorje Gorski-Kotar region does not offer a new intermodal service in the field and doesn't belong in any of the two listed categories, it plays an important role for the future of intermodality in the region. It does so by offering information on all available public transport and intermodal transport options in the region, thus increasing the knowledge and raising awareness of transport providers, decision makers and policy makers. This means that the proper authorities are given insight into which transport options are highly represented, which transport options can synergise well with each other, as well as which transport options are lacking. Such insight opens the door towards planning, developing and implementing future integrated and intermodal transport solutions which would improve the travel experiences of all users of sustainable modes of transport. With regular updating of the web platform, the included information is kept up-to-date, and through future projects can be upgraded to not only cover a wider area, but also serve as a way to track mobility trends and mobility interests of sustainable transport users.

It is important to promote the efforts made in all of the mentioned pilot actions by marketing the initiative, thus informing the target audiences, raising awareness for newly achieved improvements, installations and services and encouraging their usage. For services it is important to provide sale channels as well as a customer assistance service which can offer help in greater detail and resolve any issues that have been encountered. It is important to present intermodal and integrated passenger transport and active transport as a greener and healthier alternative to the currently most used personal car, as it encourages physical activity through cycling, reducing traffic congestion, reducing the carbon footprint and reducing multiple forms of pollution, such as noise pollution and air pollution. It is highly encouraged that all involved organizations participate in promoting these new intermodal solutions in order to reach the widest possible audience.