DELIVERABLE 1.1.3 INTERNATIONAL BEST PRACTICE REVIEW ON GREENING LAST MILE

FINAL

10.2020

Index

1. Introduction: aim and focus of the analysis

There has been an increasing attention on how to enhance efficiency and sustainability by investing in integrated transport system also considering the last mile transport in the context of cities and regions. This report is focused on identifying the solutions and initiatives developed in the freight transport and specifically oriented to implement innovative forms for managing and financing green last mile logistics.

The analysis carried out in the Activity T1.1 to prepare the deliverable D.1.1.3 is aimed at mapping the relevant **EU and international best practices related to innovative funding or institutional solutions** for effective promotion of sustainable freight transports and last mile in Central Europe.

The study intends to inform Inter-Green Nodes project activities on the alternative institutional and funding schemes that can be implemented for increasing multimodal environmentally and friendly freight solutions. Within WPT1, the study supports the outline of the guidelines on developing green, intermodal, last mile freight transport. The output related to the identification of best practices will also sustain the outline of regional actions within a stakeholder engagement framework.

Within the project, D.1.1.3 outputs will enable the definition of tools for selecting institutional strategies and funding opportunities (D.T1.2.1) oriented to align the needs of different stakeholders and at different territorial levels.

The identification of best practices under the **two perspectives of funding and stakeholder engagement** to promote innovative last mile projects is also directly connected to WPT2 dealing with the spatial planning part of integrating a green last mile in nodes. It will elaborate the spatial needs of urban nodes respectively in ports and terminals for implementing the green last mile and its effects in urban nodes.

Besides project partners, beneficiaries that can exploit the insights of deliverable D.1.1.3 are mainly local and regional public authorities as well as infrastructure and (public) service providers.

2. Methodology

The methodology applied to identify the 12 best practices included in this deliverable is as follows:

Step 1. A questionnaire has been prepared to gather information at the partner level on initiatives concerning innovative last mile solutions the partners might be involved in or knowledge related to the topic in the partner's areas. Moreover, a specific focus has been made in relation to port operations.

Step 2. Partners have been asked to fill the questionnaire to collect an initial list of best practices.

Step 3. Following the best practices gathered from the partners, a desk analysis has been carried out to identify the list of best practices. The analysis has been implemented by considering four specific criteria of innovative solutions:

- Funding mix
- Innovative decision-making process
- Innovative / effective public partnerships
- Public-Private schemes

For each best practice three main information are provided:

- Contract scheme
- Funding
- Project description.

A comprehensive table to compare the case studies has been included at the end of this report to analyze the characteristics of the practices and compare them, consistently with the aim of this deliverable. The projects are presented according to the **contractual partnership scheme** implemented (see table 1, section 4).

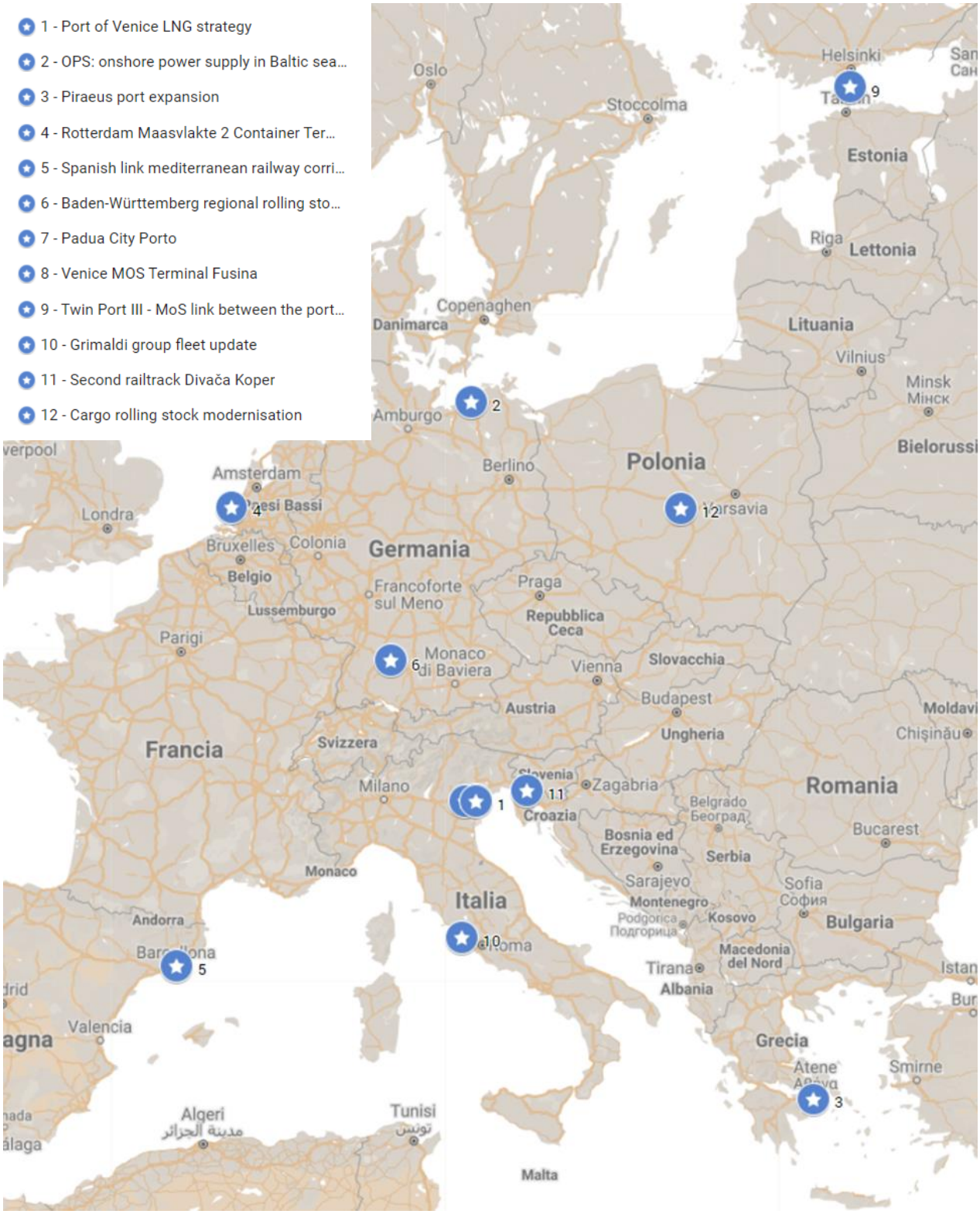

Figure 1 – Location of the 12-international best-practices

3. Best Practices

3.1. Port of Venice LNG strategy

Figure 2 – Port of Venice: Location of LNG facilities (source: Port of Venice)

The project for the implementation of a logistics chain of LNG at the port of Venice is interesting for the shared approach, in the investment planning phase, between public and private entities.

The initiative started from the studies carried out by the Port System Authority that in the investment planning phases exploited Interreg and CEF funding to study the market demand and the different project hypotheses and then continued with the direct involvement of a private entity that developed the operational parts of the investment. CEF funding projects have contributed both to provide a fundamental economic support for the implementation of the terminal and to provide an institutional framework of cooperation between public and private entities. It is interesting to note that although outside of a PPP scheme, cooperation between subjects has been fundamental for the achievement of the common objective.

Contract scheme

Private - Public approach for decision making process

Funding

Funding mix: Interreg, CEF, Private. CEF Project: POSEIDON MED, POSEIDON MED II, VENICE LNG

Project description

The project "LNG Facility in the port of Venice" contributes to the development of the EU Directive 2014/94 that sets out the deadline of 31st December 2025 for the realization in the European maritime ports of an adequate number of LNG refuelling points for LNG powered vessels

for inland and maritime navigation. The project is coordinated by the North Adriatic Sea Port Authority and participated by the private company Venice LNG SpA.

For the port of Venice, the company Venice LNG realizes one LNG multi-modal facility with a storage capacity of about 32,000 m^3 for LNG storage, supply and distribution, that is foreseen to start operating in 2023.

The LNG facility is included in the port three-year Operational Plan in full agreement with the National Port and Logistics Plan. It is also recognized as "European interest project" as listed in the work plans for the Baltic-Adriatic and Mediterranean corridors for the development of the priority European Transport Network (TEN-T) to be completed by 2030.

The project of the private company Venice LNG is co-financed for the 20% by European CEF funds:

- 1^ phase of LNG terminal construction with the GAINN4SEA project
- 2^ phase of LNG terminal construction with "LNG Facility in the port of Venice" project

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Private - Public approach for decision making process</td><td colspan="3">YES, in planning stage for definition of standards and demand analysis</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4" rowspan="3">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">Cooperation among Public and Private since the very first stage of planning. Public provided general framework study and then private foster the investment</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
<tr><td></td><td>●</td><td>●</td><td>●</td><td>●</td><td></td></tr>
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3.2. OPS: onshore power supply in Baltic seaports (Aarhus, Copenhagen, Rostock, Stockholm, Helsinki)

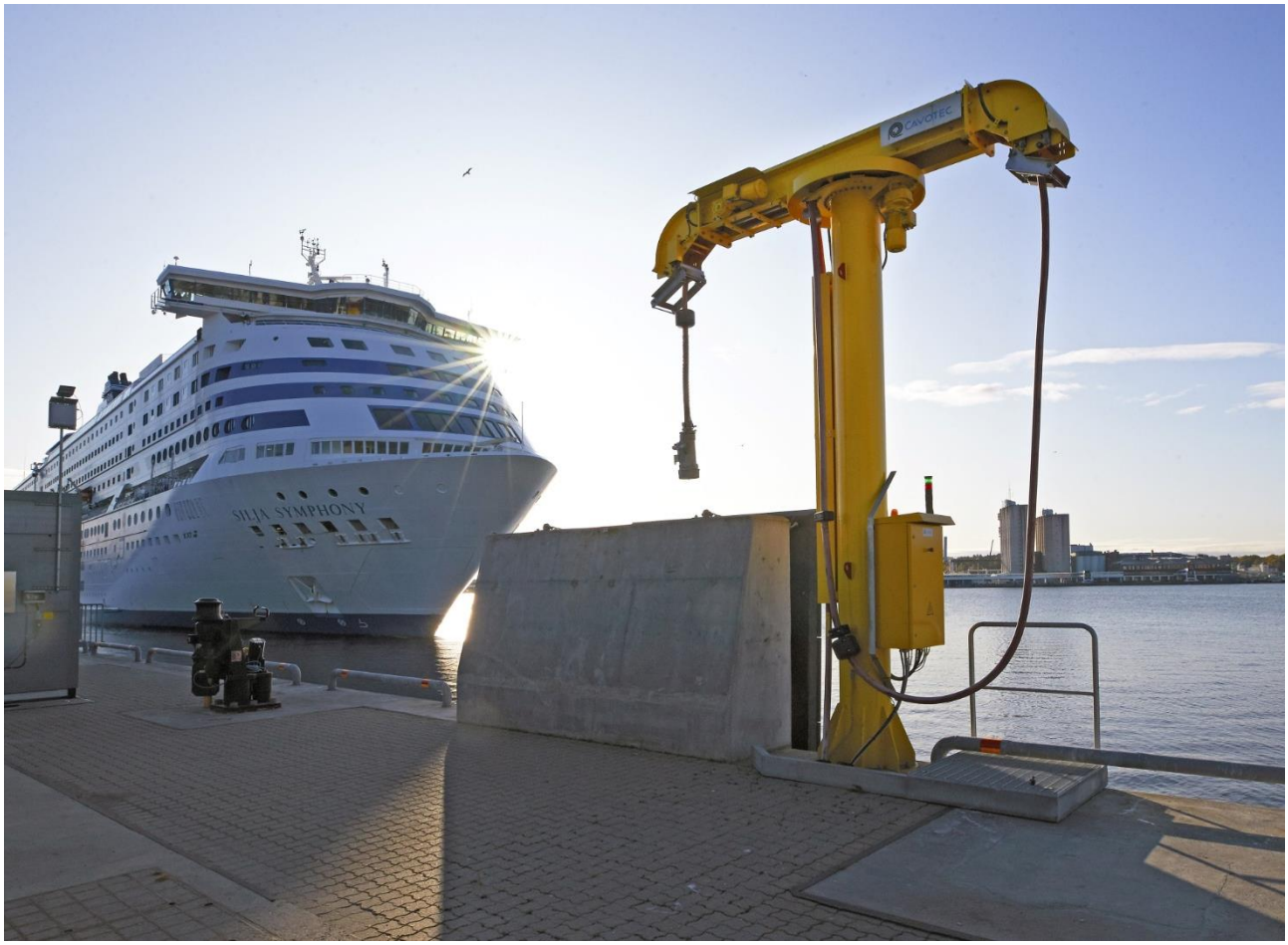

Figure 3 – Port of Stockholm: OPS facilities (source: baltictransportjournal.com)

When ships are in port, on-board diesel generators currently provide the electricity needed for lighting etc. Five Baltic ports (Aarhus, Copenhagen, Rostock, Stockholm and Helsinki) are working together in this project to replace these generators with onshore power supply. Between them, these ports currently see more than 800 passenger ships annually, and 200 ferries weekly, making the potential emissions reductions significant.

Contract scheme

Public for further private concession

Funding

National funding, EU grants (CEF programme)

Project description

More than 90% of European ports are located in urban areas with their passenger terminals located on the doorsteps of the city centres and citizens living in their proximity. Raising public concern for the health threat of maritime emissions, global awareness for climate change and increasing environmental legislation puts pressure on European port authorities to take action.

The TEN-T Core Network maritime ports of Aarhus (Denmark), Copenhagen (Denmark), Rostock (Germany), Stockholm (Sweden) and Helsinki (Finland) have made air quality one of the top priorities on their environmental agendas. The five Baltic seaports form a strategic consortium to commonly foster the shift towards a low-emission transport system by provisioning on-shore power to Ro-Pax and passenger vessels during their stay in port.

OPS shall reduce the environmental impact of national and international ships in port. While alongside berth, ships require electricity for hotel demand, cargo handling, heating, lighting and other onboard activities, electricity is traditionally supplied by onboard diesel generators running on fossil based marine fuels and emitting among others GHG emissions (CO_2) and air pollutants, which have in return an impact on climate change and human health. SOx and NOx cause acid deposition, which can be harmful to the natural environment (e.g. lakes, rivers, soils and biodiversity of flora and fauna) as well as the built environment (e.g. natural heritage). At the same time ship generators provide a high level of noise and disturbance affecting nearby port residents. The five Baltic Sea ports of Copenhagen, Aarhus, Stockholm, Helsinki and Rostock are strategically connected via the Scandinavian – Mediterranean core network corridor. They are frequently visited by passenger ships (more than 800 calls per annum) and provide high frequent Ro-Pax ferry connections (about 200 calls per week) between the European mainland and peripheral Scandinavia.

The project partners will address these challenges collectively to benefit from each other's experiences and knowledge. The proposed Action will be implemented from 2020 to 2023 and has an indicative budget of EUR 76.38 million. It will result in an estimated net-benefit of EUR 342.32 million achieving a cost-benefit ratio of approx. 3.35.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="2">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">OPS: onshore power supply in Baltic seaports (Aarhus, Copenhagen, Rostock, Stockholm, Helsinki)</td><td colspan="2">Public for further private concession</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="2">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">Cooperation among ports for definition of standard and planning of further services</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
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3.3. Piraeus port expansion

Figure 4 – Port of Piraeus (source: Port of Piraeus)

The project concerns the expansion and upgrade of several areas of the port of Piraeus, Greece. The main project components include the expansion of the car terminal, the improvement of infrastructure of the ship repair zone, the development of a new port logistics centre, the construction of a new cruise passenger handling facility and the acquisition of new container terminal equipment. It also includes the renovation and upgrade of miscellaneous other port and electromechanical (E/M) equipment and installations to achieve the required service levels for the port operations.

Contract scheme

Public for further private concession

Funding

Public with EIB loan (EIB 140 million € on a total cost 281 million €)

Project description

The port of Piraeus is the main sea gateway of Greece and one of the largest in the Mediterranean, since its geographical position makes it a focal contact point between the islands and the mainland, as well as an international marine tourism and transit trade centre. The project includes several components, some of which are part of a circa EUR 300m compulsory investment programme and others in addition to this that have been selected to upgrade the port's infrastructure and services.

The project is developed by Piraeus Port Authority S.A. ("PPA"), in the context of the existing concession agreement between PPA and the Hellenic Republic. According to this agreement, PPA has the exclusive right of use and exploitation of land, building and infrastructure of the port land zone of the Port of Piraeus until 2052. The project consists of a number of components that PPA will develop according to the provisions of the concession agreement and other components identified by PPA's strategic department for the improvement and upgrade of the coastal area of the port and the services provided.

Specifically, the project includes the construction of a new quay wall and reclamation for the expansion of the car terminal, the construction of new car parking, logistics warehouse and cruise passenger centre buildings, the upgrade of the ship repair zone infrastructure and other smaller scale upgrade interventions in the port area. It also includes the procurement and installation of new port equipment, including electrical passenger ECO buses to interconnect the port's ferry and cruise terminal gates and the upgrade of the port lighting system to a lower consumption LED based system.

The full EIA was submitted to the competent authorities in September 2017 and the decision and updated environmental terms is currently pending. According to the EIA, during construction dredging and other similar marine operations (involving excavation, transport, relocation), an increased suspension of sediment is expected to lead to a temporary alteration of the physical characteristics of the water with negative effects on marine and terrestrial habitats, mainly around the location of the works.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Public for further private concession</td><td colspan="3">Partially.
For international demand</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">National commitment supported by important BEI loan. No single project but wide master-planning</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
<tr><td>●</td><td></td><td></td><td>●</td><td></td><td>●</td></tr>
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3.4. Rotterdam Maasvlakte 2 Container Terminal

Figure 5 – Project of the new Maasvlakte 2 Container Terminal

The project for the construction of the new container terminal MAASVLAKTE2 in the port of Rotterdam is a classic public investment, aimed at a subsequent private concession; it has been developed also thanks to financing from the European Investment Bank.

Although the investment dates back to a few years ago, and the terminal has already been operational for years, it is considered useful to propose this example for the size of the financing of about 900 million euros out of a total investment of about 2.100 million euros. Furthermore, the project is also important for the considerable complexity for the environmental balance.

Contract scheme

Public for further private concession

Funding

Public with EIB loan (EIB 900 million € on a total cost 2.100 million €)

Project description

The project consists of the construction of the external maritime defence works, land reclamation and the internal basic infrastructure of an extension to the Port of Rotterdam in the North Sea, forming part of the so-called Delta Plan. The project expands the capacity of the Port of Rotterdam to accommodate future growth mainly in container and chemicals traffic. The premises

are situated in deep water, which will greatly benefit these sectors. Rotterdam port is the main import/export gateway for industries near the river Rhine. Therefore, the project will improve transport links within the EU and between the EU and third countries.

The European Investment Bank has agreed to provide the final part of EUR 900m overall funding to support investment by the Port of Rotterdam Authority in port infrastructure, of which Maasvlakte2 is by far the most important. The European Union's long-term lending institution has funded land reclamation and construction of container and specialist facilities to expand port capacity at Europe's largest port.

Construction of Maasvlakte2 started in 2008 and will expand capacity essential to meeting the growing demand for space in the years ahead and to allow the port of Rotterdam to maintain its leading role in Europe. Rotterdam port currently does not offer any space for further growth and efficient and modern port facilities in Rotterdam are of crucial importance to the Dutch and northwest European economy. Waterways, railway tracks, motorways and pipelines connect Europe's largest port with destinations all over the continent.

The European Investment Bank is providing a long-term loan over 30 years, at attractive conditions, eliminating the need for the Port of Rotterdam Authority to refinance investment over the period and is the leading external source of funding for Maasvlakte2.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Public for further private concession</td><td colspan="3">NO</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">Strong national commitment combined with important BEI loan.</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
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3.5. Spanish link mediterranean railway corridor

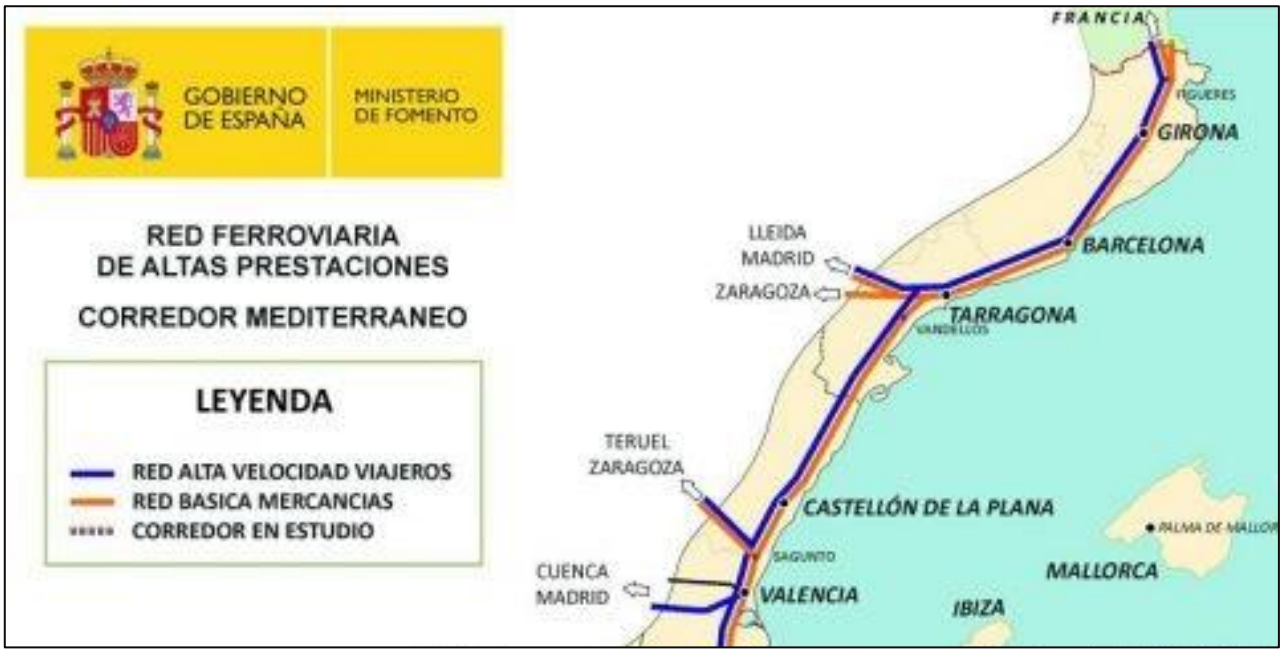

Figure 6 – Map of the Spanish link Mediterranean railway corridor

The project concerns the implementation of an interoperable dual gauge railway line along the Spanish Mediterranean coast from Castellbisbal (Barcelona) to Almussafes (Valencia), and the construction of a connection with the high-speed line Madrid-Barcelona-French border.

Contract scheme

Public for further private concession of services

Funding

Public with EIB loan (EIB 700 million € on a total cost 1.400 million €)

Project description

The project is promoted by the Kingdom of Spain, through its Ministry of Public Works and Transport ("Fomento") and concerns the implementation of an interoperable dual gauge railway line along the Spanish Mediterranean coast from Castellbisbal (Barcelona) to Almussafes (Valencia), and the construction of a connection with the high-speed line Madrid-Barcelona-French border.

The project aims at ensuring railway interoperability for rail traffic between the French border and Algeciras in southern Spain along the Spanish Mediterranean coast. It is expected to decrease the negative impacts associated with road traffic and have positive impacts on the environment thanks to the modal transfer to rail.

The project will make it possible to improve rail service reliability, quality and will help to promote sustainable transport. At the same time, it will have a positive impact on jobs, as it is estimated that it will involve the temporary employment of approximately 2.200 people to manufacture the rolling stock, together with 60 permanent positions for its operation.

The Mediterranean Corridor is a key component of the European rail network and part of the Trans-European Transport Network that will connect the main cities of the Spanish Mediterranean via interoperable rail lines able to accommodate high-speed trains.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="2">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Public for further private concession of services</td><td colspan="2">YES /
Investment directly coordinated under EU framework</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="2">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">The project is part of wider EU approach, under the coordination of EU corridor coordinator. Project is insert on EU project workplan</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
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3.6. Baden-Wurttemberg regional rolling stock & Ertms

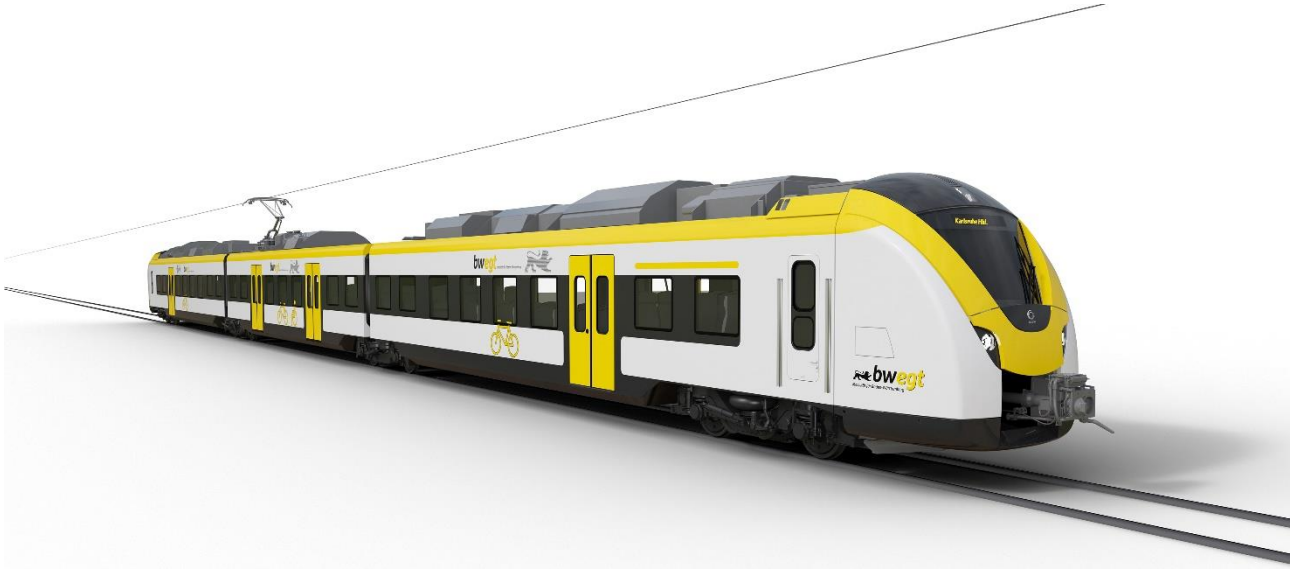

Figure 7 – Baden-Wurttemberg regional rolling stock

The project consists of the acquisition of 120 new trainsets for regional rail services in Baden-Württemberg and the retrofitting with European Railway Traffic Management Systems (ERTMS) and Automatic Train Operation (ATO) equipment of 118 existing vehicles.

The project is expected to increase the modal share of rail and have positive environmental impact in terms of safety, accessibility of transport, energy savings, air pollution and noise and CO_2 emissions.

Contract scheme

Public run by private operator

Funding

Public with EIB loan (EIB 850 million € on a total cost 1.950 million €)

Project description

The project consists of the acquisition of 120 new trainsets for regional rail services in Baden-Württemberg and the retrofitting with European Railway Traffic Management Systems (ERTMS) and Automatic Train Operation (ATO) equipment of 118 existing vehicles. The capacity of the Baden-Württemberg regional fleet operated in the Stuttgart Region will be doubled.

The ETCS and ATO equipment will allow shorter train headway and by this means a 33% increase in the infrastructure capacity. The project will respond to the growing demand for regional rail services, increase their frequency, reduce overcrowding in rush hours, and by this means further increase their attractiveness. In the absence of such investments, the existing regional rail services

would not be able to cope with the growing demand thus encouraging the use of private cars. The new rolling stock will be equipped with state-of-the-art technology in terms of energy efficiency.

The new rolling stock will also be in conformity with the EU Technical specifications for Interoperability concerning noise and accessibility for persons with reduced mobility and persons with disabilities. The arrangements for the maintenance of the new rolling stock are to be defined by the supplier, who will also provide full-service maintenance.

In the case of construction of new depots or modification of existing depots, the supplier will follow the relevant environmental approval procedures. In addition to the capacity increase, the project also includes replacement of some of the existing rolling stock, which will be redeployed on other lines.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Public run by private operator</td><td colspan="3">YES,
in planning stage for definition of standards and demand analysis</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">National commitment combined with relevant BEI loan finalized to further tender for the service provider</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
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3.7. Padua City Porto

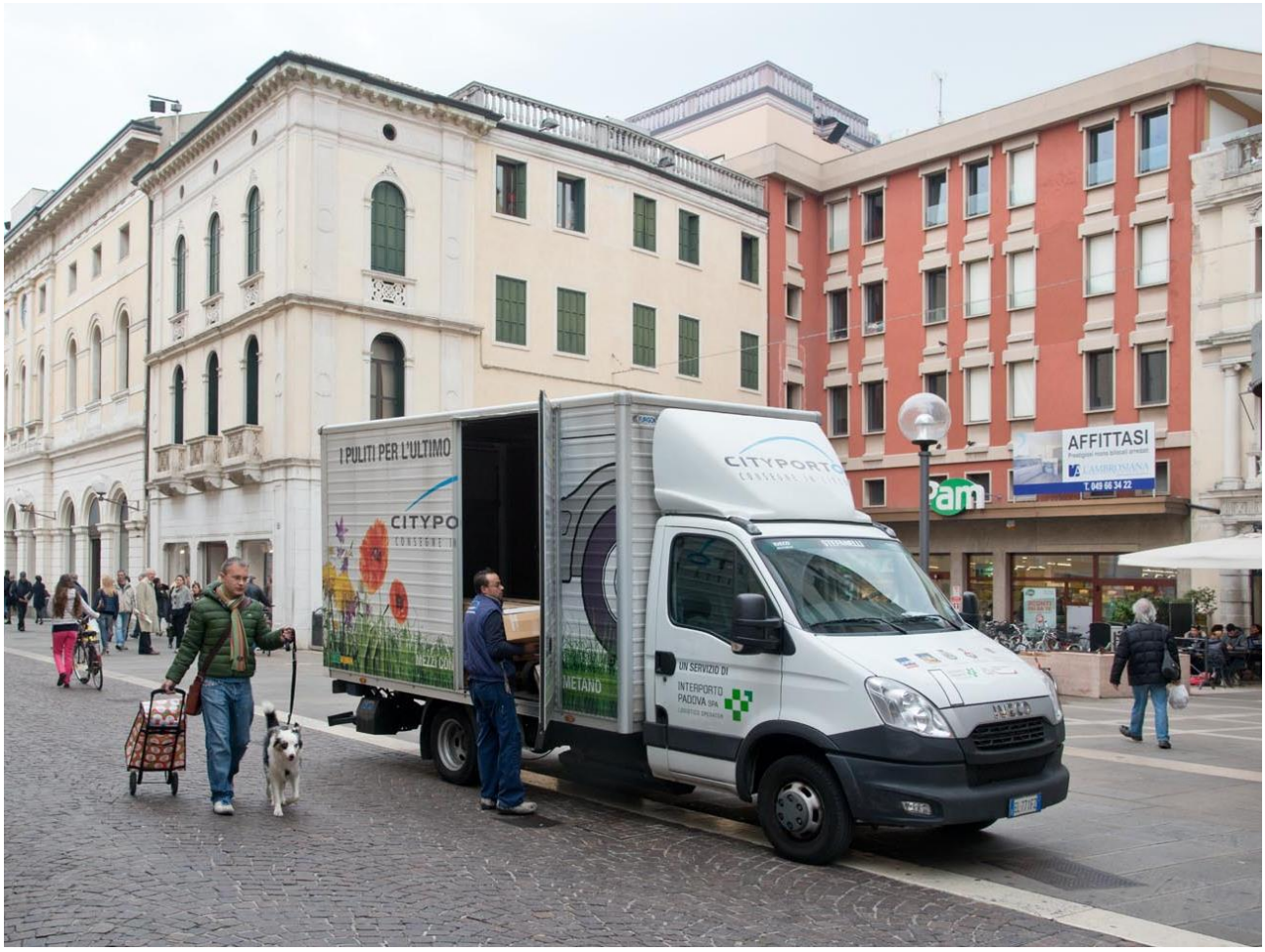

Figure 8 – City Port truck in operation

In Padua, Italy, a local service of urban freight distribution with eco-friendly vehicles, called City Porto and managed by Interporto Padova, is working since 2004 and is considered one of the most successful experiences of city logistics. The service is managed by Interporto Padova Spa, the manager of a Freight Village in the outskirts of the city, and after a start-up phase during which it benefited grants by local Authorities and stakeholders (such as the Municipality of Padua, the Chamber of Commerce and the Regional Authority) it has achieved a financial self-sustainability that allows them to plan the development into new areas of activity.

Contract scheme

Public-Private

Funding

National funding (Italian Ministry of environment) + private funds. Additional funds from European Projects (Interreg, Horizon2020).

Project description

The City Porto project was implemented in 2004 on the basis of a framework agreement between the local major stakeholders, including the Padova municipality, the Padova province, the chamber of commerce, the multiutility company APS Holding and the freight village operator Interporto Padova, and thanks to a shared operational and industrial plan, incentivizing regulation and a public grant. The initiative consists in a consolidation centre located just outside the city and a last mile delivery service to the city centre by mean of bi-fuel vehicles.

Interporto Padova provided the experience in the logistic sector and the warehouse where is located the Urban Freight Terminal. The Public Stakeholders provided funding during the first 4 years for a total amount of € 360.000, further than the first 4 vehicles of the eco-friendly fleet provided by the local public transport company in free use to the UFT during the first 4 years (after, the vehicles were bought by Interporto Padova).

The freight terminal (both the land and the facilities) is owned by Interporto Padova and operated by the dedicated business unit City Porto. The location of the terminal inside Interporto Padova, where most of the logistics operator that are potential customer of City Porto have their warehouses too, is a critical success factor of the initiative since it avoids long and expensive intermediate reloading. The customers are mainly logistics operator having their warehouse inside the freight village Interporto Padova too.

The local administration of Padua developed an incentive system that favours the City Porto's vehicles, such as allowing a 24-hour access to the city centre, the use of the bus lanes and the provision of reserved parking zone.

The last revision of the regulation concerning the access of vehicles to the LTZ states the possibility to enter the LTZ only during certain time windows and only paying a permission. Special conditions are applied to the vehicles of City Porto: they can enter the LTZ without time restrictions 24h/day and they are also allowed to use reserved lanes for buses and taxis.

The public funding was issued only at early stages of the service. The main peculiarity is the existence of a freight village operator, owned by public stakeholders, that therefore shares the overall objectives of the public administration while seeking profitability, and is capable to provide not only the terminal but also the contacts with customers whose business is suitable for the various services of the city logistics scheme. The manager of City Porto is therefore neutral with regards to the market environment it operates in, and this is a remarkably facilitating element in order to attract the other operators.

Some relevant success factors can be outlined from the Padua case: In the planning and start-up phase, it is fundamental to have a continuous contact with the stakeholders and public associations and to establish regular city freight committees/technical meetings. In the maturity stage, achieving a financial self-sustainability is a remarkable outcome, but it generates the risk that stakeholders perceive the UCC service as a private, independent service.

The neutrality of the service manager was the key for the success of City Porto, because Interporto was not seen as a competitor but as a logistic player with skills and experience and a direct contact with Public Stakeholders who gave fundamental financial and governmental contribution in the start-up phase. The role of Interporto Padova was crucial because it is a joint-stock company whose major shareholders are the public; since the company is managed and works as a corporation, then it guarantees to be a neutral subject and to meet efficiency needs of private while meeting the needs of the public.

After 10 years of service the manager of City Porto has a specific knowledge; however, for the first 4-5 years the feasibility study has proven to be correct. Revenues include contracts (with carriers, couriers, freight forwarders and logistics companies working "on its own account" but not in competition with the transport operators) that give City Porto revenues for each delivery made according to weight, volume, and ancillary services (extra services like: deliveries to lower and upper floor, etc.).

The inclusion of new types of commodities into the scheme needs to be planned accurately, possibly with pilot phases, and need to consider the different requirements that some types of deliveries may imply. For instance, an express courier-like service requires deliveries in time windows that may have not been scheduled previously (e-commerce needs a delivery service often provided in the evening or at lunch or dinner time, so the time windows of delivery need to be enlarged, and as a result the costs of service increase); soft drinks involve the reverse logistics of bottles; food may require refrigerated vans[1].

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Public- Private</td><td colspan="3">YES,
in planning stage for demand analysis</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4" rowspan="3">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">Investment on last mile service. National and local funding applied both on soft infrastructures and management of service</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
<tr><td>●</td><td>●</td><td>●</td><td></td><td>●</td><td></td></tr>
</table>

[1] For references: project "Promoting Sustainable Freight Transport in Urban Contexts: Policy and Decision-Making Approaches (ProSFeT)", funded by the H2020-MSCA-RISE-2016 programme and project SMARTSET funded under the Intelligent Energy Europe Programme

3.8. Venice MOS Terminal Fusina

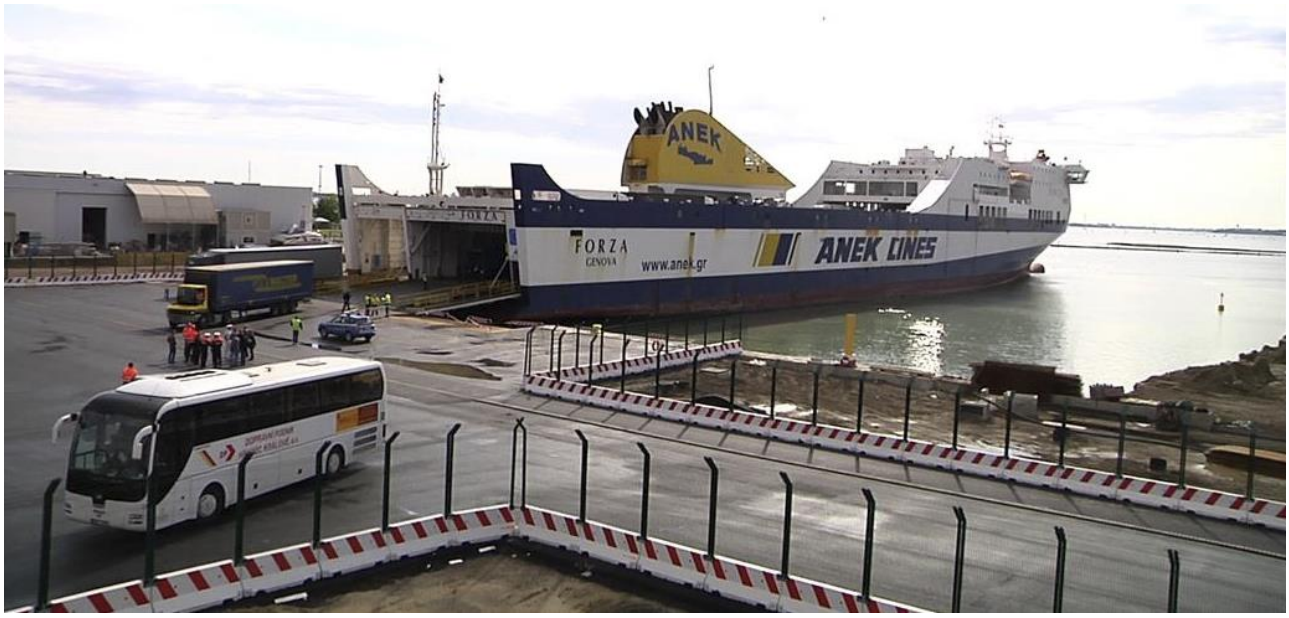

Figure 9 -Venice MOS Terminal Fusina

The new terminal of the motorways of the sea was built at the port of Venice using the classic scheme of project financing, with a contract of collaboration between public and private.

It has been financed with a mix of funding resources as TEN-T Motorways of the Sea (MoS), Project: ADRIAMOS, CEF Programme project MoS Venice-Patras, National co-financing, private.

Contract scheme

Public-Private DBFO (Design-Build-Finance-Operate)

Funding

TEN-T Motorways of the Sea (MoS), Project: ADRIAMOS TEN-T Programme (ADRIAMOS Project) CEF Programme (MoS Venice-Patras), National co-financing, private co financing Venice Ro-Port MoS S.C.p.A.

Project description

The Action aims at enhancing a viable, regular and reliable sea-based transport service integrated in the logistic chain along the Adriatic-Ionian transport corridor between the port of Venice and the Ionian Sea/West Greece port cluster (Igoumenitsa and Patras) and so contributing to reduce economic, social and environmental costs related to port and logistics activities.

More precisely the Action's objectives are:

- Reducing congestion through modal shift

- Streamlining freight flows
- Improving interoperability & co-modality
- Facilitating coherent traffic quality and logistic chain integration

The Action consists in infrastructure and facilities investments (works and studies) necessary to remove bottlenecks and to improve efficiency of the logistic chain on the Adriatic-Ionian corridor. The Action intends to support the transport of trucks, unaccompanied trailers and cars by Roll on-Roll off (RoRo) and Ro-Pax ships between the north Adriatic area and the cluster of Greek ports of Igoumenitsa and Patras. This strengthens the efficiency of transport services between the two areas and further foster modal shift from road to maritime transport.

In the Port of Venice, the intervention regards the realisation of a new RoRo terminal in the Fusina area in order to move traffic away from the city centre. The new terminal hosts all the RoRo vessels calling the port of Venice and plays a central role as logistic park linked to rail network to collect and distribute goods loaded and unloaded from the vessels. Regarding the port of Igoumenitsa, the action foresees the completion of preliminary studies for the establishment of a freight village in the Thesprotia region, serving freight transport to and from the Adriatic.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Public-Private DBFO (Design-Build-Finance-Operate)</td><td colspan="3">YES / Cooperation with other member states for market quote</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">Cooperation among Public/Private and financial mix of funding and loan. Cooperation among member states (Italy and Greece) for services implementation</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
<tr><td>●</td><td></td><td></td><td>●</td><td>●</td><td></td></tr>
</table>

3.9. Twin Port III - MoS link between the ports of Helsinki and Tallinn

Figure 10 -Port of Tallin (source: Port of Tallin)

The project is part of developing and upgrading the MoS link between the ports of Helsinki and Tallinn, thus connecting the North Sea-Baltic to the Scandinavian-Mediterranean Core Network Corridors. It foresees investment in ports infrastructures and on ferry vessels.

Contract scheme

Public and Private beneficiaries of EU Co-finance

Funding

Public with 30% EU fund Co-financing under CEF Transport Programme. EU contribution €18 millions on a total eligible costs of 61 millions.

Project description

This Projects is the third stage of a global project developing and upgrading the MoS link between the ports of Helsinki and Tallinn, thus connecting the North Sea–Baltic to the Scandinavian-Mediterranean Core Network Corridors. It follows the CEF & TEN-T funded Actions TWIN-PORT II (2014-EU-TM-0087-M) and TWIN-PORT (2012-EU-21011-P).

In the Port of Helsinki the project foresees a new multimodal terminal for bus traffic, a side ramp at the Katajanokka terminal, lengthening of the pier, as well as the provision of On-Shore Power Supply (OPS) and automooring.

In the Port of Tallinn, the Action will involve the construction of sewers enabling vessel discharge as well as safety and security upgrades in Terminals. OPS and automooring solutions will also be installed in five and three quays respectively.

Finally, three shipping lines operating the route will retrofit 5 vessels enabling the use of OPS in ports thus diminishing their environmental impacts.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Public and Private beneficiaries of EU Co-finance</td><td colspan="3">YES / Key link of Motorways of the see. 2 countries involved</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">Cooperation among countries for development of efficient MOS line. Interaction Public /Private for integration port infrastrucutre-private vessels lines. Efficient fundraising of EU funds (CEF funds in linked steps)</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
<tr><td>●</td><td>●</td><td></td><td>●</td><td></td><td></td></tr>
</table>

3.10. Grimaldi group fleet update

Figure 11 – Grimaldi group fleet (source: Grimaldi)

The project, promoted by Grimaldi Group SPA involves the retrofitting of sulphur oxide (SOx) exhaust gas cleaning systems (scrubbers) to 10 passenger/vehicle (RoPax) ferries, 17 container/vehicle (ConRo) vessels, 11 roll on - roll off cargo (RoRo Cargo) vessels and 6 vehicle carriers (total 44 vessels) of the Promoter's fleet.

It is an example of private initiative financed by European investment bank based on the eligible criteria for environmentally friendly eco-print.

Contract scheme

Private

Funding

Private with EIB loan (EIB 70 million € on a total cost 152 million €)

Project description

The Promoter is Grimaldi Group SPA, a private investment group based in Italy. Established in 1947, Grimaldi is a multinational logistics group specialising in maritime transport of cars, rolling cargo, containers and passengers. It provides maritime transport services between North Europe, the Mediterranean, the Baltic Sea, West Africa, and North and South America and passenger services within the Mediterranean and Baltic Sea. The company also provides liner services, such as car carriers, Ro/Ro, and container services, and short sea shipping across the Mediterranean, Northern Europe and the Baltic Sea

The aim is to ensure that the promoter's vessels comply with International Maritime Organisation (IMO), International Labour Organisation (ILO) and EU regulations governing the cleaning of exhaust gas emissions. The vessels concerned by this project will be outfitted with wet exhaust gas cleaning systems designed to remove harmful sulphur and exhaust particulates from the vessels engine emissions. The resulting emissions will meet future more stringent international regulations and as such the project will contribute to a significant improvement of the environmental performance of the fleet.

The project does not require an Environmental Impact Assessment (EIA) under the Directive 2014/52/EU amending the EIA Directive 2011/92/EU. The Promoter and the shipyards possess all valid IMO, ILO and EU environmental and social certification for the operation and service/maintenance of general cargo vessels. The vessel works will be classed according to EU or IACS classification society that establishes and maintains technical standards for the operation and service/maintenance of all vessel's types involved in the project.

The company will also validate that shipyard works are according to these standards and carry out regular surveys in service to ensure compliance with the standards. The project is expected to contribute to the reduction of air emissions and have a positive impact for the Promoter's fleet.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Full Private</td><td colspan="3">YES in planning stage for definition of standards and demand analysis</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">Full private investment supported by BEI loan. Use of EU funding for preliminary stage and market analysis</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
<tr><td></td><td>●</td><td></td><td>●</td><td></td><td>●</td></tr>
</table>

3.11. Second railtrack Divača Koper

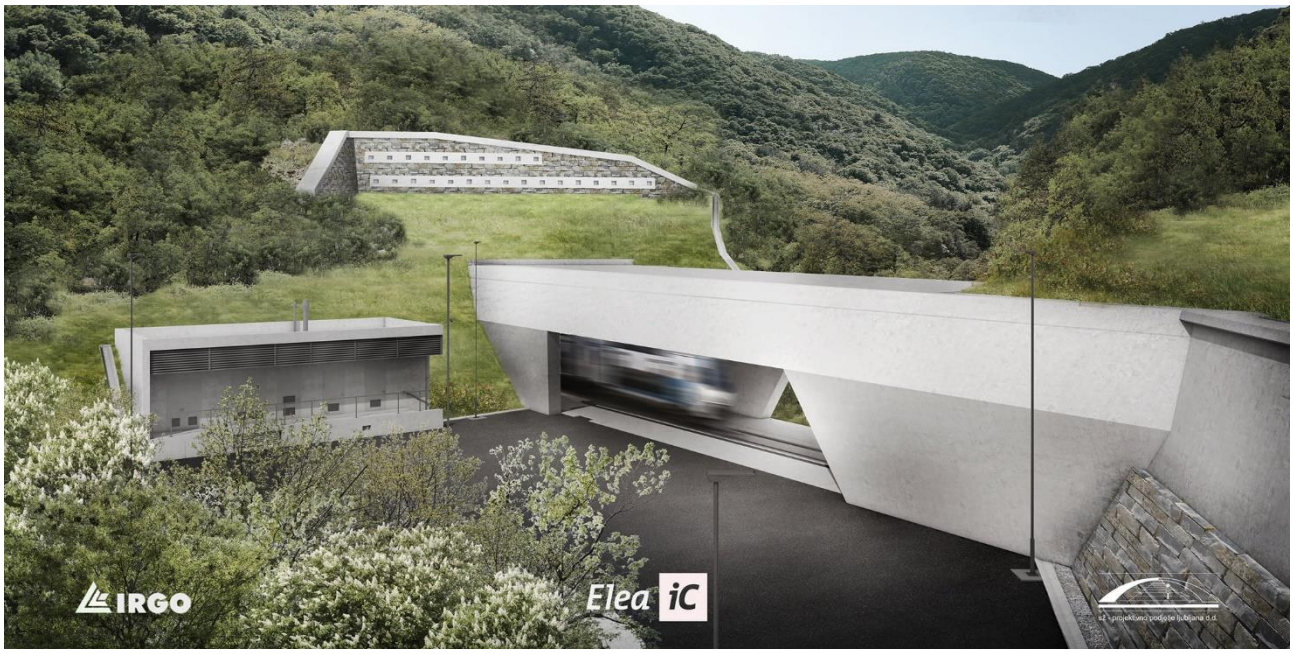

Figure 12 - Railtrack Divača Koper: New rail tunnel project (source: EleaIC)

The Project consists of construction and management of the 27km railway section between Divača and Koper, which forms a part of the Mediterranean and Baltic-Adriatic core TEN-T corridors. The Project is aimed at streamlining railway cargo transport in Slovenia and enabling unrestrained and sustainable development of Slovenian and Central-European transport and logistics industries.

Contract scheme

Full Public

Funding

Funding-mix: the project will be financed through a combination of different financial instruments, including equity investments of one or two countries, non-refundable EU funds, bank loans (EIB) and revenues from Railway Mark-up.

Project description

The Project is considered a key priority for improving competitiveness of Slovenian railway network within the Transport Development Strategy of the Republic of Slovenia until 2030 (TDS).

In EU context, the Second Track Divača – Koper connects the core maritime Port of Koper (PoK) with two core TEN-T transport corridors, namely the Mediterranean and the Baltic-Adriatic corridors.

The Project is expected to have a positive impact on the Slovenian Transport and Logistics industry, which is a key sector of the economy with €5.6bn turnover and 51,000 employees per year-end 2016. A key beneficiary within the industry is PoK, the second largest employer in the Slovenian coastal region and a leading industry player. As growth of PoK is dependent on the maritime cargo flows, we examined relevant global trends in maritime trade, which indicate a full recovery from the 2008 financial crisis whereby total port's throughput grew at 6.9% over the last decade (2009-2018). Given their superb central geographic position on the European continent and relative specialization, ports within the North Adriatic Ports (NAPs) have managed to grow at 6.4% CAGR in the 2008-2016 period.

Contrary to the aim of European and national policies, road is increasingly becoming the preferred mode of transport, regardless of the route distance. As the A1 motorway from Koper toward the Northeast Slovenia is already over-utilised on several sections, especially sections between Postojna and Ljubljana and the Ljubljana Ring Road, roads cannot serve as an alternative for increasing cargo transportation from Port of Koper. Preventing further saturation of the Slovenian road network thus points at the importance of improving Slovenian railway infrastructure.

Apart from the Project, there were three key bottlenecks identified within the TDS issued in 2017, namely the Maribor – Šentilj and Ljubljana – Jesenice sections and the Ljubljana railway hub. The bottlenecks are expected to be removed by 2030. To cater to the requirements of PoK, cargo transport on the Divača – Koper railway section has increased by 58% in the last decade.

Since 2010, the track has been constantly modernized with the aim to reach the maximum normal throughput capacity of 90 trains per day and 14.0 m net tons of cargo per annum. In 2017, the normal daily capacity in number of train was already surpassed while the annual cargo throughput was at 12.8 m net tons, resulting in track overutilization. Definition of objectives As an integral part of the TDS, the Project is in line with its general objectives for development of railway transport mode in Slovenia:

- Increasing economic competitiveness, reducing travel times, eliminating traffic bottlenecks, reducing transport costs;
- Harmonising and integrating the Slovenian railways with the EU railway network (e.g. observance of TEN-T standards);
- Improving accessibility of individual regions;
- Improving traffic safety and traffic management; and
- Reducing the environmental burden.

The project will be financed through a combination of different financial instruments, including equity investments of one or two countries, non-refundable EU funds, bank loans and revenues from Railway Mark-up.

Total amount of required financing equals €1,194m. Almost half of the funding will consist of equity, namely €522m. The main capital investment of Slovenia will be €200m, while additional capital from Slovenia will be provided from Highway Mark-up collected during the construction period, which will be invested annually into the equity of 2TDK (€122m). In total, Slovenia will thus contribute a minimum of €322m in capital. By 2019, Slovenia has already invested €21m in 2TDK, while the remaining amount will be ensured throughout the construction period.

Additional €200m of capital will be contributed either by a hinterland country of Slovenia. The final decision will be made on the basis of negotiations with hinterland countries, which have

shown an interest in participating in the project. The investment of an additional €200m is expected between 2021 and 2022, implying that the potential agreement with a hinterland country should be achieved no later than 2020. In so far as Slovenia decides to provide the capital financing for the project by itself, the €200m will be obtained from the national budget of the Republic of Slovenia.

EU support totalling €250m will consist of various grants for investment projects in the transport sector, namely:

- Contract on the subsidy CEF Action 2016-SI-TMC-0151-M, within the perspective of the Connection Europe Facility instrument 2014 – 2020 (CEF), in the amount of €44.3m, for preparatory work;
- Contract on the subsidy CEF Action 2017-SI-TM-0016-W, within the perspective of the Connection Europe Facility instrument 2014 – 2020 (CEF), in the amount of €109m, for cofinancing tunnels;
- Cohesion funds, within the framework of the Operating programme for implementing European cohesion policy 2014 – 2020, in the amount of € 80m;
- Other funds, at least up to the total amount of €250m (i.e. at least €16.7m), will be ensured through upcoming grants within the CEF 2021-2027 perspective. If more than €250m will be collected, debt financing will be reduced proportionately.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">Full Public</td><td colspan="3">YES both for definition of stnadard, demand, building</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">European commitment to improve core port railways link</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
<tr><td>●</td><td></td><td>●</td><td>●</td><td></td><td></td></tr>
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3.12. Cargo rolling stock modernisation

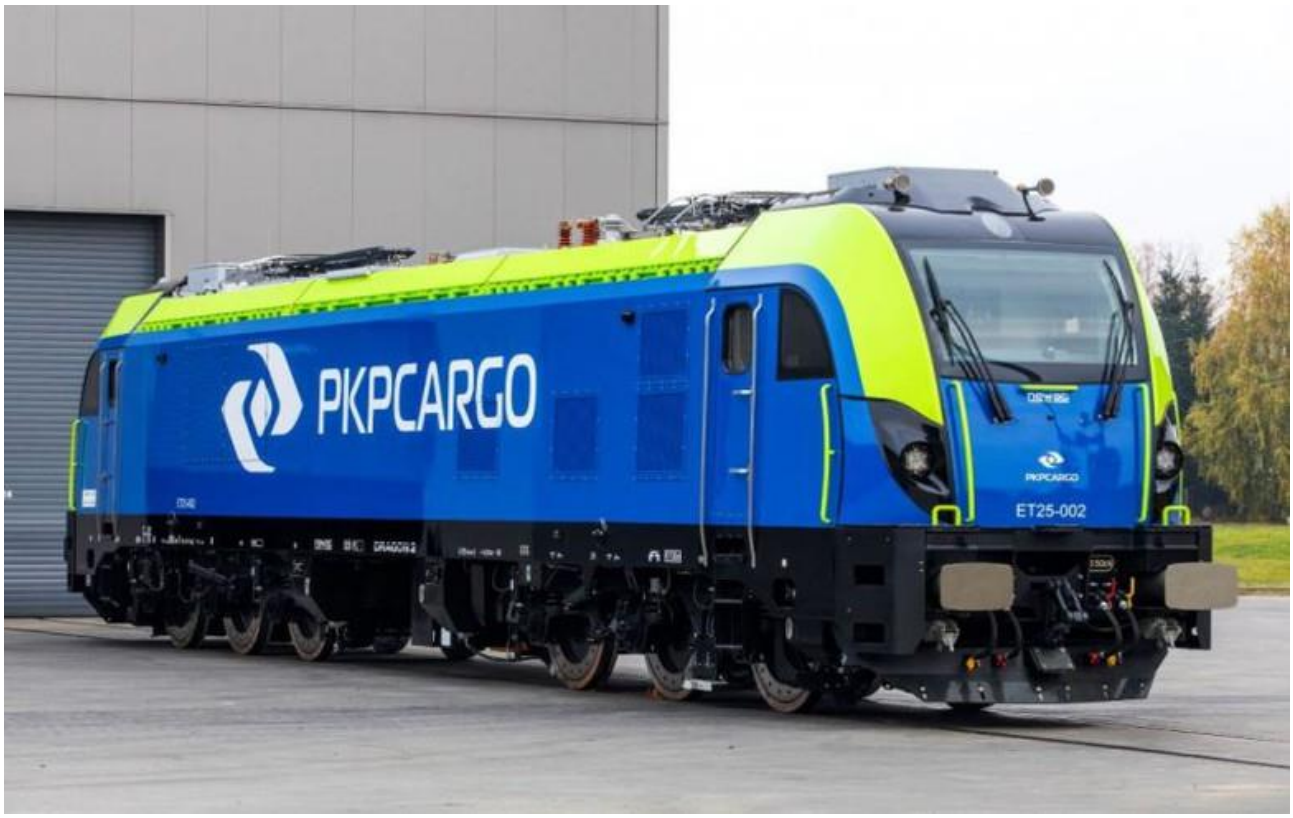

Figure 13 – PKPCargo rolling stock (source: PKP Cargo)

Modernization of rolling stock for state-owned railway cargo operator. Improvement of rail fleet with 1.000 new wagons and upgrade of existing wagon in particular with the focus on efficiency, noise reduction and environment improvement.

Contract scheme

State-owned company investment

Funding

State-owned company with EIB loan (EIB 200 million € on a total cost 412 million €)

Project description

PKP Cargo, the state-owned Polish railway cargo operator, is buying 1.000 new wagons and locomotives and carrying out an acoustic modernisation of the existing fleet. The project will increase the quality of the freight transport services provided and will thereby promote sustainable transport solutions in line with EU objectives. Furthermore, the rolling stock will provide services predominantly to a Convergence Region, and thereby facilitate regional development.

The project is expected to have a positive environmental impact by helping the railways to maintain modal share in key sections of the cargo market that are most appropriately met by rail.

Summary

<table>
<tr><th colspan="4">CONTRACT SCHEME</th><th colspan="3">EU COOPERATIVE APPROACH</th></tr>
<tr><td colspan="4">State-owned company</td><td colspan="3">Partuially just for standard</td></tr>
<tr><th colspan="4">FINANCIAL APPROACH</th><th colspan="3">HIGHLIGHTS</th></tr>
<tr><td colspan="4">FUNDING</td><td colspan="2">LOAN</td><td rowspan="3">Cooperation among public and private with the control of state owned company preliminary to a focalized investment for the cargo company</td></tr>
<tr><td>National</td><td>Private</td><td>Interreg</td><td>CEF (TEN)</td><td>Private</td><td>BEI</td></tr>
<tr><td>●</td><td>●</td><td></td><td></td><td></td><td>●</td></tr>
</table>

4. Conclusions

The review of case studies and the identification of 10 best practices at the European level is summarized in table 1.

Public-private partnership scheme and dynamics

The best practices highlight the implementation of **public-private co-operations**, where only two practices included in the report are fully private or fully public. The public-private partnership has been implemented both for decision-making process and as innovative strategy for service development and funding (DBFO, Design-Build-Finance-Operate).

The best practices highlight how it is crucial for the success of the initiatives implemented to build effective forms of cooperation among public institutions and private partners (firms with different specializations and role within the last mile logistics solutions developed), as demonstrated by the experience of the Padua City Port or the two projects promoted by the two ports of Venice (LNG strategy) and Rotterdam.

Best practices show that in some projects the public-private partnership is characterizing the whole project since its beginning, while in other best practices the role of the public institution is driving the following involvement of private partners in the management of the logistics infrastructure. It is also important to highlight that best practices show often positive outcomes rooted in the national and international cooperation among ports as well as the positive opportunities for sustainability also at the urban level.

The role of the European framework

Moreover, the co-operation has been developed within a **European scheme**, aiming at comparing the project with the European scenario in the definition of standards and demand analysis. The European framework becomes relevant to set the standards and have a point of reference (benchmarking) for the following investments activities. In one case (Venice MOS terminal Fusina) the EU framework – cooperation with another country - is relevant for increasing market quote and enhance sustainability at the terminal and urban level.

Except for 2 best practices, in general most of the best practices identified show important orientation towards EU. It is evident how the development of last mile initiatives has to take into account the institutional and funding context of the European Union, as well as the practices already developed in other countries and regions.

Innovative funding mix

From a **funding opportunity perspective**, Table 1 shows the variety of solutions that have been implemented, where not just one source of funding is predominant on the others: national funding and CEF (TEN-T) funding opportunities are used in most of the cases. Private and Interreg funding have been also used. Private loans are also used to sustain public investments.

When considering for loans, BEI – the European Investment Bank – is often a provider for funding, stressing the relevance of the projects to be developed, also with large implications at the European level. It is interesting to note that also a fully private last mile initiative can be sustained

by public funds, as the Grimaldi best practice highlights. In this case study a private company was able to get access to BEI funds, but also to have public funding support in the pre-investment phase. The column “Highlights” provides a short description of the innovative solutions characterizing each of the best practices.

CASE-STUDIES		CONTRACT SCHEME	EU COOPERATIVE APPROACH	FINANCIAL APPROACH						HIGHLIGHTS
				FUNDING				LOAN		
				NATIONAL	PRIVATE	INTERREG	CEF (TEN)	PRIVATE	BEI	
1	Port of Venice LNG strategy	Private - Public approach for decision making process	YES, in planning stage for definition of standards and demand analysis		●	●	●	●		Cooperation among Public and Private since the very first stage of planning. Public provided general framework study and then private foster the investment
2	OPS: onshore power supply in Baltic seaports (Aarhus, Copenhagen, Rostock, Stockholm, Helsinki)	Public for further private concession	YES, in planning stage for definition of standards and demand analysis	●			●			Cooperation among ports for definition of standard and planning of further services
3	Piraeus port expansion	Public for further private concession	Partially. For international demand	●			●		●	National commitment supported by important BEI loan. No single project but wide master-planning
4	Rotterdam Maasvlakte 2 Container Terminal	Public for further private concession	NO	●	●				●	Strong national commitment combined with important BEI loan.
5	Spanish link moditerranean railways corridor	Public for further private concession of services	YES / Investment directly coordinated under EU framework	●			●		●	The project is part of wider EU approach, under the coordination of EU corridor coordinator. Project is insert on EU project workplan

CASE-STUDIES		CONTRACT SCHEME	EU COOPERATIVE APPROACH	FINANCIAL APPROACH						HIGHLIGHTS
				FUNDING				LOAN		
				NATIONAL	PRIVATE	INTERREG	CEF (TEN)	PRIVATE	BEI	
6	Baden-Wurttemberg regional rolling stock & Ertms	Public run by private operator	YES in planning stage for definition of standards and demand analysis	●					●	National commitment combined with relevant BEI loan finalized to further tender for the service provider
7	Padua City Porto	Public- Private	YES in planning stage for demand analysis	●	●	●		●		Investment on last mile service. National and local funding applied both on soft infrastructures and management of service
8	Venice MOS Terminal Fusina	Public-Private DBFO (Design-Build-Finance-Operate)	YES / Cooperation with other member states for market quote	●			●	●		Cooperation among Public/Private and financial mix of funding and loan. Cooperation among member states (Italy and Greece) for services implementation
9	Twin Port III	Public and Private beneficiaries of EU Co-finance	YES / Key link of Motorways of the see. 2 countries involved	●	●		●			Cooperation among countries for development of efficient MOS line. Interaction Public /Private for integration port infrastructure-private vessels lines. Efficient fundraising of EU funds (CEF funds in linked steps)

CASE-STUDIES		CONTRACT SCHEME	EU COOPERATIVE APPROACH	FINANCIAL APPROACH						HIGHLIGHTS
				FUNDING				LOAN		
				NATIONAL	PRIVATE	INTERREG	CEF (TEN)	PRIVATE	BEI	
10	Grimaldi group fleet update	Full Private	YES in planning stage for definition of standards and demand analysis		●		●		●	Full private investment supported by BEI loan. Use of EU funding for preliminary stage and market analysis
11	Second railtrack Divača Koper	Full Public	YES both for definition of stnadard, demand, building	●		●	●			European commitment to improve core port railways link
12	Cargo Rolling Stock modernization	State-owned company	Partuially just for standard	●	●				●	Cooperation among public and private with the control of state owned company preliminary to a focalized investment for the cargo company

Table 1 – Description and cross-case analysis of the identified best practice