First mile corridor areas

Final report

Work Package 3 | Activity 3.1

May 2021

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#BSRAccess

Conclusions

The BSR Access platform facilitates linkages between smart transportation solutions traditional infrastructure nodes to further develop the TEN-T Core Network Corridors (CNC) and contribute to sustainable growth in the region.

Activity GoA 3.1 in BSR ACCESS is dedicated to first mile interoperability solutions, and tackles challenges, needs and improvement proposals for interconnectivity between the CNCs and so-called first mile areas. Such areas have never been defined or delineated in any of the EU-level policy documents.

First mile areas are defined as:

- areas located outside commuting distance of corridor hubs and nodes
- areas containing substantial export industries, thus dependent on international transport chains
- areas with scattered, low density, population settlement.

When applying the definition on Local Area Units only commuting distance can be calculated. If industries are 'substantial' and if areas have 'low density population settlement' has to be assessed arbitrary. Furthermore, freight of national or regional importance should be added to the definition.

A survey of projects financed by interreg programmes – and in one case Horizon 2020 – resulted in identification of 15 projects with possible relevance for first mile areas, whereof 11 have been further analysed. Only two of these explicitly address first mile issues. While TENTacle emphasizes the importance of multi-level governance structures to spread benefits from CNCs to first mile areas, the project SubNodes focus on how to expand the CNC hinterland.

With priority on implementing CNCs there is no or little attention to areas that will not benefit from accessibility improvements following the implementation of the CNCs. The territorial divide between nodes along the CNCs and areas outside can increase without policies addressing how developing CNCs and how they can contribute to sustainable growth in a larger hinterland. Among EU funded projects there are almost no findings on best practices. However, at national and regional level best practice solutions are to be found.

The GoA 3.1 Activity had the ambition to highlight best practice solutions for first mile areas. The findings after inventory of EU funded projects are however a general lack of knowledge and awareness of first mile issues. EU funding programmes should therefore support policy development by elaborating the concept on first mile areas in the corridor approach as well as promoting analysis of transport interoperability analysis. Furthermore, existing multi-level governance structures provides a framework for reaping benefits from CNC development and its contribution to sustainable growth. These structures can be called upon to develop first mile area policies and actions by promoting these issues in interreg programmes.

Based on the findings in this report the following recommendations can be suggested to the BSR Access partnership, and in extension to EU institutions (commission, secretariats for the programmes for territorial cooperation and coordinators of TEN-T core network corridors:

Increase awareness!
Since first mile issues are rarely addressed improved knowledge is essential. Building knowledge can be made by identify and analyse first mile areas that might be affected by the implementation of CNCs. The challenges might be about boosting potentials as well as mitigate relatively decreased accessibility. Furthermore, both best practice and learning examples should be identified among national and regional projects which are not to be found with Interreg or Horizon funding.

Develop the concept of first mile area!
Apart from "outside commuting distance from CNC hubs and nodes" is a criterion that is simple to calculate. Defining "substantial exporting industries" provides challenges to measure whether industries are to be regarded as substantial and to what extent production is aimed for non-domestic markets. At the same time the definition is excluding clusters of small and medium sized industries which together can be considered as substantial. Furthermore, the importance of freight hubs in first mile areas are not acknowledged. The perception of "dense population settlement" and "medium or large urban centres" might differ considerably between EU member states. Classifications as for example developed by ESPON can be misleading as they are often based on NUTS3 or NUTS2 administrative areas.

Formulate first mile policy!
In EU policy urban core nodes are considered connecting CNCs to its hinterland. However, along the corridors several nodes have the function connecting to a larger geographical area, whether classified as TEN-T, national or regional infrastructure. In EU policy, and especially regarding the CNCs, first mile connections need to be acknowledged and addressed in policy documents.

Clarify governance and responsibilities!
With the variety of preconditions in different areas first mile issue should be addressed with a bottom-up approach. The well-developed governance structures in the Baltic Sea Region provides a framework gathering national, regional and, many times, local actors. The interreg programmes can promote analysis of first mile issues by explicitly give priority to project applications with integrated first mile perspectives. Giving priority to first mile issues should be based on a clear policy formulation based on the interface between EU and national interests.

Contents

1. Introduction to TEN-T and BSR Access project platform

The BSR Access platform facilitates linkages between smart transportation solutions traditional infrastructure nodes to further develop the TEN-T Core Network Corridors and contribute to sustainable growth in the region. In this activity, the platform combines expertise from projects on transport interoperability in connection to the TEN-T core network corridors with a special focus on first and last mile solutions. (For more information please visit: www.bsraccess.eu)

The TEN-T Guidelines[1] stipulate that 'the trans-European transport network shall strengthen the social, economic and territorial cohesion of the Union, and contribute to the creation of a single European transport area which is efficient and sustainable, increases the benefits for its users and supports inclusive growth' (Art. 4). To contribute to cohesion, the TEN-T should, among all, help achieve accessibility and connectivity of all regions of the Union, including remote, outermost, insular, peripheral, and mountainous regions, as well as sparsely populated areas (Art. 4a).

Further, the TEN-T Guidelines inform that 'core network corridors (CNC) should help to develop the infrastructure of the core network in such a way as to address bottlenecks, enhance cross-border connections and improve efficiency and sustainability. They should contribute to cohesion through improved territorial cooperation' (paragraph 42). A natural categorisation of the trans-European transport network as a part of the EU transport policy makes it that any debate on the core network corridor (CNC) implementation usually focus on sectoral issues: closing infrastructure gaps, improving cross-border interoperability of national networks or eliminating funding constraints for infrastructural investment. The aspect of ensuring cohesion through a well-functioning trans-European transport network, with interlinked core network corridors, is regarded a domain of EU regional policy which makes implementation within the CNC an issue with low prioritization for the regions involved.

Activity GoA3.1 in BSR ACCESS is dedicated to first mile interoperability solutions, and tackles challenges, needs and improvement proposals for interconnectivity between the CNCs and so-called first mile areas. Such areas have never been defined or delineated in any of the EU-level policy documents and – therefore, need to be addressed in GoA3.1 for the purpose of proper understanding by the project team, the associated organisations and the identified target groups. As stated in the project description, GoA3.1 is expected to offer solutions to ease passenger and freight transport access to the TEN-T core network corridors, and thereby to improve the competitiveness of 'more remote' regions and cities. It should involve all platform partners in the joint work and 13 associated organisations (affiliated to the platform) as focus groups and multipliers to extend the platform's outreach and to create ground for a better representability of solutions to be promoted via the platform.

GoA3.1 is expected to have dialogue with ministries, regional development agencies, regional and local authorities, transport associations from eight EU countries in the Baltic Sea Region as well as with stakeholders from non-EU countries (Norway, Russia and Belarus, if relevant). The public and market decision-makers in the first mile areas of the Baltic Sea Region, national transport policy and planning authorities (e.g. via the EUSBSR PA Transport) and the European Coordinators represent the main target group for GoA3.1.

[1] REGULATION (EU) No 1315/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on Union guidelines for the development of the trans-European transport network

2. Defining First and Last mile

The Issues Papers of European Coordinators on 'TEN-T Corridors as forerunners of a forward-looking European transport system', presented at the TEN-T Days 2016 in Rotterdam, the Netherlands. These papers refer to the concept of first mile in the context of access to urban nodes. Among the priorities, TEN-T action is said to 'enhance multimodal connections in urban nodes and at the same time take account of connections with local and regional transport to ensure smooth first and last miles in passengers' and freight transport' (page 5). The terms of first mile' and 'last mile' are thus put on par in this formal stand by the European Coordinators, and – often presented inseparably in the research discourse as the so called 'first mile/last mile (FMLM) problem' in goods movement and public transport.

One of web articles[2] traces the FMLM problem back to telecommunications where it composed the costly final leg (or first leg) of the physical wire infrastructure to be traced between high capacity hubs and individual units, e.g. every household. FMLM was then used by logistics companies (FedEx, UPS, etc.) to describe their end point deliveries from centralised warehouses. Following that, the concept of FMLM has been gradually gaining interest in public transport policies to address challenges with getting to/from bus and rail stops e.g. through walking and biking.

Figure 1: First mile/last mile problem in public transport
Source: David A. King (2016)

The guidelines issued by the US Federal Transit Administration (FTA) present the FMLM problem in the access-related context. The Final Policy Statement on the Eligibility of Pedestrian and Bicycle Improvements Under Federal Transit Law[3], released in 2011, emphasises that 'the success of public transportation can often be limited by poor 'first and last mile' access to the system. It is essential to develop safe, secure, and appropriate pedestrian and bicycle infrastructure if the users of public transportation are to have safe, convenient, and practical access routes to public transportation systems across the country'. For that purpose, the Policy Statement employs the concept of catchment areas - located within certain radius of a public transportation stop or station – where pedestrian and bicycle improvements are eligible for FTA funding.

[2] David A. King, 2016, What do we know about 'the first mile/last mile' problem for transit?, https://transportist.org/2016/10/06/what-do-we-know-about-the-first-milelast-mile-problem-for-transit/, accessed on 2019-04-25
[3] https://www.transit.dot.gov/regulations-guidance/notices/2011-21273

The 'last mile' stretch in conveying goods and passengers between transport/interchange hub and the destination has been in focus of public policies and supply chain management patterns. In stark contrast to that, the first mile issue has never been paramount to consumer attention and rarely part of policy debate.

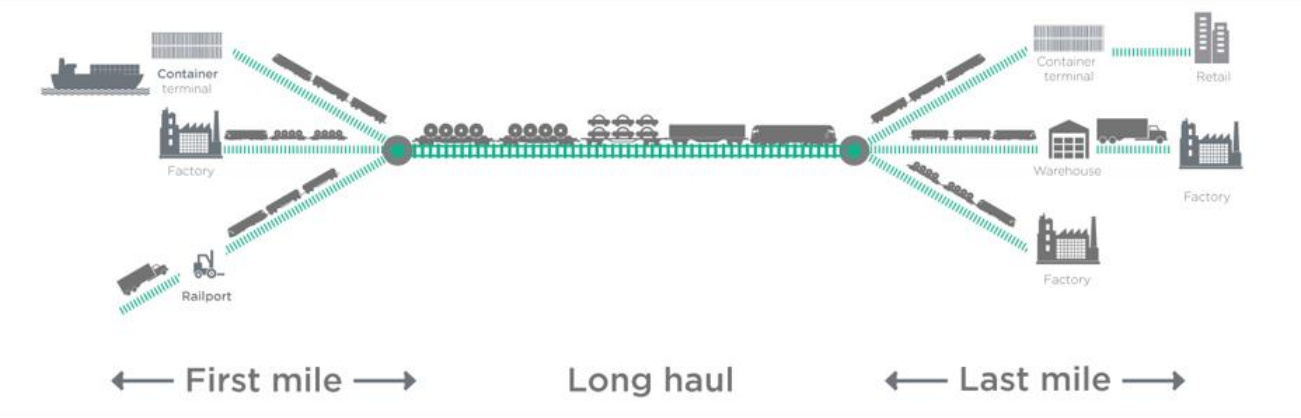

Figure 2: Illustration of first and last mile in the transport chain
Source: Marcelo Fincher (2017).

One reason for this lack of attention is the blurred interpretation of the concept, usually used interchangeably with the 'last mile' – as exemplified by Fincher in "5 Ways to Overcome Last Mile Delivery Challenges", *2017*: "Last mile" has also been used to describe the difficulty in getting people from a transportation hub, especially railway stations, bus depots, and ferry berths, to their final destination. When users have difficulty getting from their starting location to a transportation network, the scenario may alternatively be known as the "first mile problem". These issues are especially acute in the United States where land-use patterns have moved jobs and people to lower-density suburbs that are often not within walking distance of existing public transportation options."[4]

However, the first mile notion has become increasingly popular in the supply chain management where it can refer to its manufacturing stage and cover the flow of materials between the supplier and the outgoing distribution centres[5]. There are claims that the inbound logistics model for the entrance and flow of raw goods through a facility remains not optimised, invisible and inherently inefficient as it lacks the customer orientation[6].

[4] Fincher, Marcelo. "5 Ways to Overcome Last Mile Delivery Challenges". 10 September 2017.
[5] https://ottomotors.com/blog/first-mile-manufacturing-supply-chain
[6] https://www.supplychaindigital.com/logistics/driving-cost-out-first-mile

3. First mile areas in the TEN-T Corridor context

Arguably, in the transport planning domain the use of the first mile concept is presumably confined to the scale of urban areas and, thus, never explored in a broader geographic scale. Still, some functional characteristics of first mile derived from the supply chain management and public transport considerations may become helpful in substantiating this concept to be workable also for developing and governing international transport corridors.

The first mile:

- Covers the first leg of the route/chain for goods and/or passengers between the origin and the destination places.
- Collects goods and/or passenger from a larger (catchment) area.
- Offers access infrastructure to the nearest hub or interchange point.

Consequently, 'first mile areas' in the TEN-T context are the geographical areas located farther away from the core network corridors with dispersed population settlements and considerable manufacturing activities based on the local resources. The first mile areas feed freight and passenger transport flows into the core network corridors through the corridor access infrastructure (secondary road, rail and/or inland waterway links, and regional airports) connecting to the nearest corridor hub/urban node.

The working definition as above offers a flexible approach in delineating the first mile area. By using such terms as 'farther away', 'dispersed' and 'considerable' it does not operate with qualitative parameters but leaves room for identifying threshold values for: the size of corridor catchment area (physical distance to the corridor line), the population density and settlement patterns, and for the volumes/shares of manufacturing production in the local/regional economy depending on the local (place-based) specificities.

Still, with the help of categorical exclusions ('not if'), some general principles for designating the 'first mile areas' might be conceived. In that manner, the territories can NOT be reckoned for first mile areas IF:

- They are located within the **daily commuting distance** to corridor hubs and nodes
- They lie on the **primary road/rail links** which are going to be **integrated** (aligned) with the current core network corridors (through the EU Parliament decision)
- They represent a **dense settlement pattern** with many medium-to-large urban centres
- They lack substantial exporting industries and, thus, see **no international supply chains**

A geographical typology defining "first mile" corridor areas is needed on a reasonable level of detail. It is a judgement call for what is to be considered reasonable but can be guided by the scope – TEN-T Core Network corridors and availability of statistical data, e.g Eurostat. The methodology must rely on availability to data on macro level to be useful on a European scale. The methodology and definitions for assessment of "first mile" corridor areas are described in a previous report in WP3 A3.

4. Aspects of transport interoperability

The TEN-T Issues Papers outline five areas, which call for particular attention in integrating transport policy issues into further core network corridor development. They are not exhaustively embraced and – in the opinion of the European Coordinators – should stimulate further reflection and deeper analysis.

In line with this, the BSR ACCESS project platform picks up the five priorities of the TEN-T Issues Papers as a foundation for collecting, processing, discussing, and communicating the projects strongholds in transport interoperability. The following Figure 3 and Table 1 presents how the five interoperability areas are categorized within GoA3.1 to help identify available best practices and innovative concepts tested and deployed in the first mile areas. Figure 3 below presents how the key issues and scopes can be categorized in terms of public - private and first mile - last mile. Table 1 below describes the initial key issues within each interoperability area/aspect. All key sub-issues can be met within first mile solutions while some also are suitable focus issues for last mile solutions, such as collecting statistics and enhancing ITS or digitalization and automatization of vehicles.

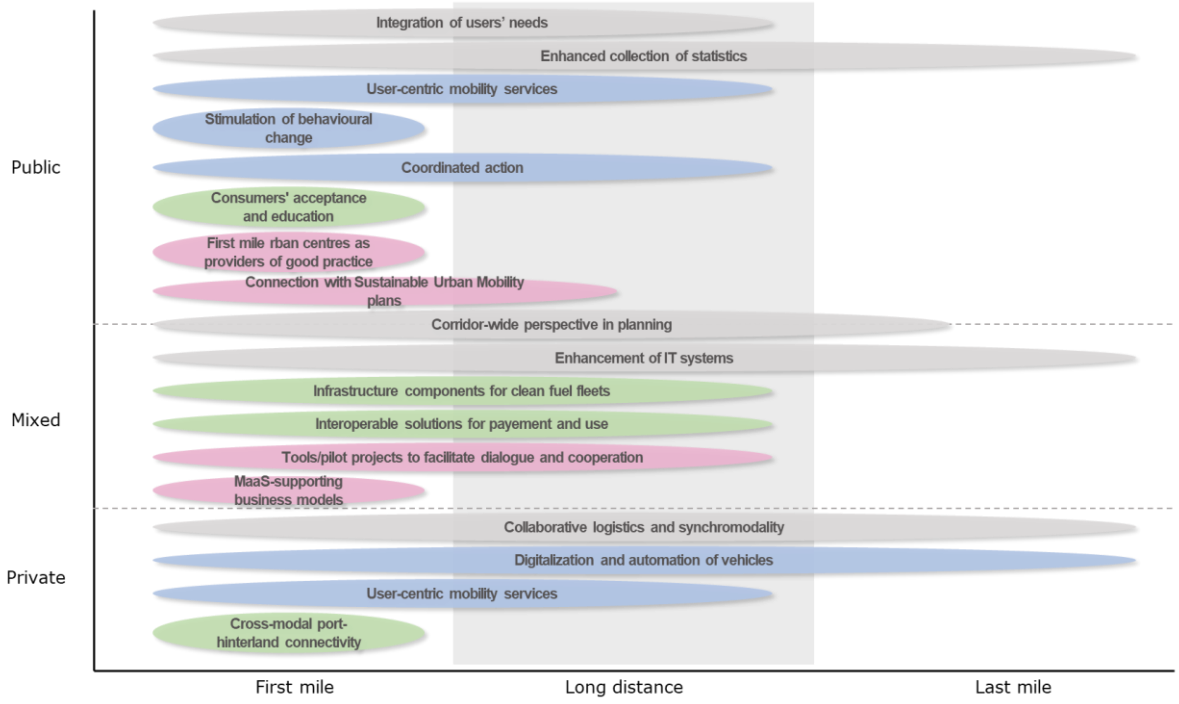

Figure 3. Initial key scopes of further analysis divided into transport chain segment and governance mandate.

Table 1. Description of Transport Interoperability Areas/Aspects and issues in relation to first mile areas

Transport Interoperability Area	Description of initial key sub-issues and scopes of further analysis for First Mile Areas
1. Multimodality and efficient freight logistics	• **Corridor-wide perspective in planning** of terminal infrastructure, terminal accessibility, and relevant ICT infrastructure • **Integration of users' needs** (**demand-driven infrastructure policy approach**) to align corridor investments with actual user requirements (e.g. via demand forecasts, effects of new infrastructure on traffic flows, economic, technological, societal and market trends, interdependencies between spatial planning that should cluster industries, infrastructure, environment and society) • **Collaborative logistics and synchromodality**[7] for an optimised use of transport resources and the existing infrastructure through cargo bundling, making logistics less costly and reducing possible adverse effects of freight transport • **Enhanced collection of cross-border multimodal transport statistics** (per modal combinations, loading units and transhipment terminals, volumes, performance, lengths, costs, origin/destination etc.) • **Enhancement of Data platforms and IT systems** for information on (cross-border) multimodal transport services, terminals, and logistics platforms (e.g. accessibility, availability, transhipment facilities, services offered, performance etc.)
2. Intelligent Transport Systems (ITS)	• **Digitalisation and automation of vehicles** (incl. on-board driver assistance technologies and access to in-vehicle data) • **Better fit-for-purpose user-centric mobility services** (incl. persons with disabilities or with reduced mobility) • **Stimulation of individual behavioural change** towards shared and sustainable mobility (from car ownership to car usership) • **Coordinated action** incl. regional and local authorities
3. Innovation and Clean Fuel infrastructure	• **Cross-modal port-hinterland connectivity**, leveraging innovation in communications technologies, hub design and logistics • **Infrastructure components for clean fuel fleets** (charging equipment for all main alternative fuel options - biofuels, electric, hydrogen, natural gas - compressed (CNG) and liquified (LNG)) and vehicles for testing purposes • **Consumers' acceptance and education** for a positive change in consumption patterns towards the sustainability, • **Interoperable solutions for payment and use**
4. Integrating urban nodes	• **First mile urban centres** as providers (not integrating) of good practice (e.g. forerunners of innovative and **low-carbon solutions** for mobility schemes of tomorrow), • **Connection with Sustainable Urban Mobility Plans** to ensure an effective multi-level governance (enterprises and companies, employers and workers, citizens, and relevant administrative bodies) in relation between transport and urban planning • **Communication tools/pilot projects to facilitate dialogue** (e.g. integrated strategies, platform(s) for exchange of experience, marketplaces for public and private actors), and actively involving urban nodes users and cooperation at different governance layers • **MaaS-supporting business models** (supporting the take-up of mobility as a service)
5. Cooperation with third countries	• **Promotion of the EU corridor approach** to the EU neighbours to ensure coherence in infrastructure planning • **Connections of maritime ports** with the EU neighbouring countries (MoS) • **New sustainable international multimodal transport corridors** and routes, with common vision, clear cooperation framework and innovative intermodal and multimodal supply chain solutions (i.e. green transport technologies)

[7] Synchromodality means the optimisation of logistic chains through the efficient combination of transport modes, the allocation of freight to various modes according to available capacities, possible time and cost savings, including the re-planning of the transport and the booking of alternative capacities/modes in case of events, while alerting electronically supply chain partners about the changes

5. Defining first mile geography

The definition of First mile areas is applied to Local Area Units in southern Sweden. The First mile areas (dark and light blue) are defined based on the criteria "substantial exporting industries". However, statistical data do not provide information for categorization of LAU[8]. The categorization is therefore made based on a general knowledge of local industry structure. Consequently, whether an industry is to be regarded as "substantial exporting industry" is arbitrary.

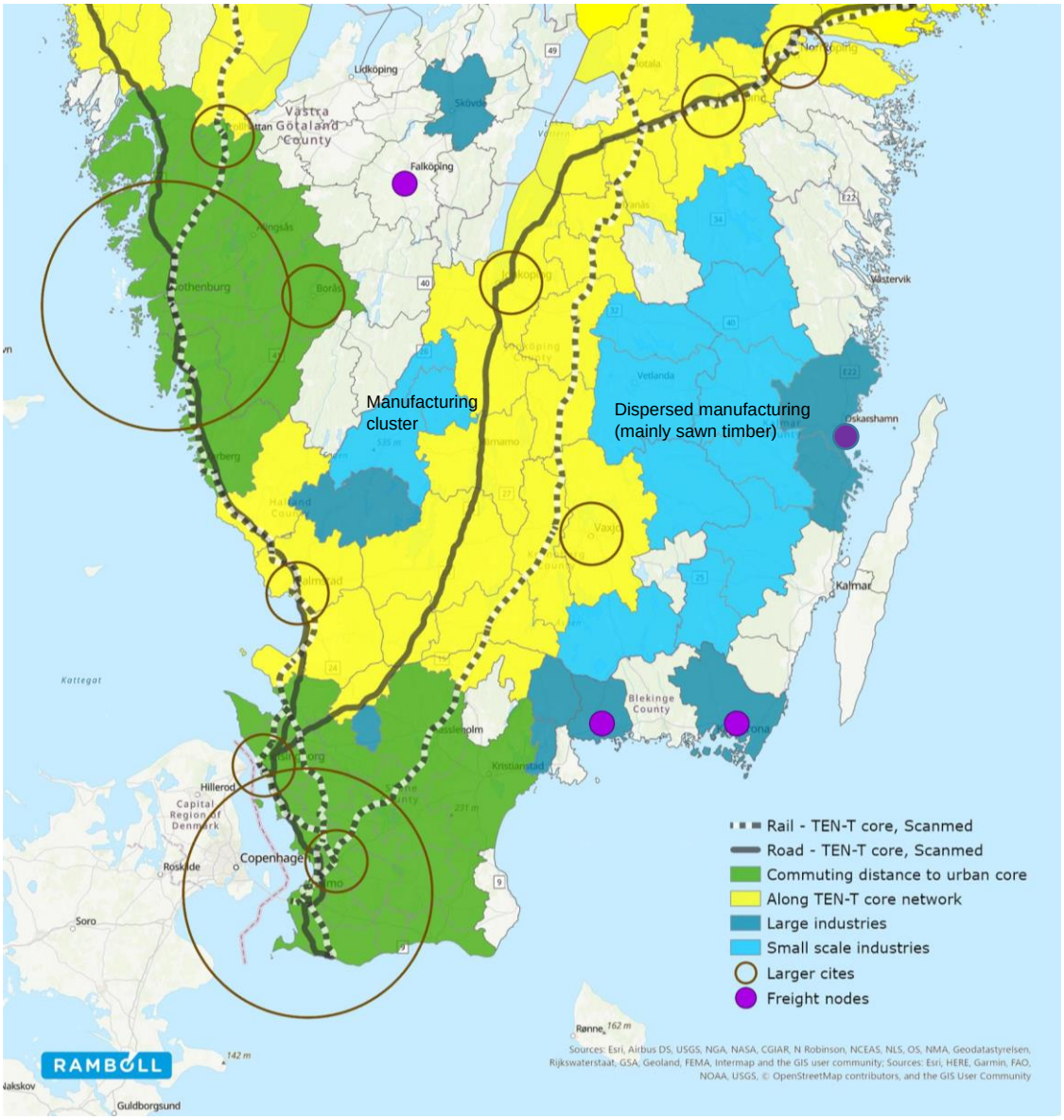

Figure 4: Example of area categorization, LAU, in the south of Sweden. Circles represent core nodes and major cities (> 50 000 inhabitants).

[8] LAU = Local Area Unit

Larger manufacturing industries are found within dark blue LAU area. The industries export large volumes to foreign costumers or are an integrated part of major exporting companies international transport chains (e.g Volvo in Skövde and Scania in Oskarshamn).

Even though smaller manufacturing companies cannot be considered as "substantial exporting industries" there are in some areas clusters of export dependent SME[9]. With the example from southern Sweden the identified manufacturing cluster is heavily dependent on transport relations to Port of Gothenburg (east-west direction) and thus do not entirely follow the transport logic of the ScanMed Core network Corridor which is aligned in north-south direction.

A third type of First mile area is as exemplified in Figure 4. Exporting industries consists mainly of sawn timber with large volumes, but also exporting SME, with dispersed location pattern. Weather single industries or clusters should be regarded as "substantial exporting industries" is arbitrary. Sawn timber is to a large extent exported via Port of Oskarshamn to markets outside Europe. Thus, the transport chains are to lesser extent dependent on connections to Core Networks Corridors.

Freight nodes outside core network corridors are not included in the definition of First mile areas. In the case of southern Sweden, the ports in Karlshamn and Karlskrona are strategic freight nodes for long haul trailer transport connecting the ScanMed corridor to Baltic-Adriatic (via Gdynia) and to North Sea Baltic (via Klaipeda). Since January 2021 Karlshamn is a freight node connecting container with block trains from Sweden to be shipped to Mukran and Klaipeda for further transport with railway to Xi´an.

The freight node of Falköping can be considered as a sub-node to Port of Gothenburg (container) and Port of Varberg (timber). With its function as dry-port both first and last mile access" connecting to Port of Gothenburg has improved and created opportunities for development as logistic centre promoting local/regional industrial development and warehousing.

[9] SME = Small end Medium Enterprises

6. Findings from workshops and project survey

The following chapter accounts for key findings from two workshops and a previous project survey[10], as well as a summary of relevant projects for the BSR Access based on relevance and approaches within the transport interoperability areas. From these areas or issues presented above and in the TEN-T Issues Paper, Ramboll has identified 16 projects which are relevant for further investigation, twelve of which were confirmed for collection and further analysis in a report. Eight of these were presented at webinars hosted by Region Blekinge (November and December 2020). The projects have been categorized in three groups: *Strategies and business models*, *Methodologies and toolboxes* and *Not presented*. The projects with respective project manager and short description are presented in Table 3 below. For more information on these projects see *Survey Report, Event Report 1 and 2*.

Table 2 Summary of main issues in project inventory

PROJECT MAIN ISSUES
• Methodologies to synergize on e-mobility among partners and stakeholders (E-MOPOLI), • Training materials on hydrogen deployment and guidance on hydrogen economy market entries (HYTREC2), • Technical systems for joint ticketing services and models for cross-border governance (INTERCONNECT), • Business models for port-to-port ferry operations (REFEC), • Strategies and regional frameworks for connecting rural and hinterland areas to corridor hubs by means of public transport services (RUMOBIL and SUBNODES), • Approach to increase the knowledge infrastructure in the cross-border region and harmonize cross-border transport infrastructure planning (E12 ATLANTICA BA3NET), • Methodology to reap benefits of the TEN-T core network corridors implementation for farther located territories (TENTACLE) • Methods to influence planning routines for green transport solutions and travel behavior in the local communities (DESTI-SMART, WHOLE GREEN ROAD), • Toolbox to assist chemical companies and logistics service providers in selecting multimodal alternatives to road transport in the planning of freight supply chains as (CHEMMULTIMODAL). • Action plans to ensure a focus on multimodal transport in national and regional infrastructure development strategies (CHEMMULTIMODAL).

[10] Szydarowski, Wiktor (2020). BSR Access/Ramboll Sweden AB. First mile corridor areas, Survey report.

Table 3. Description of surveyed projects

PROJECT DESCRIPTION
GROUP 1: STRATEGIES AND BUSINESS MODELS
INTERCONNECT
Aim • **Promote public transport services for regional and cross-border travels** through technical systems of joint ticketing services and models for cross-border governance. **Deliverables** • A common publication (future transport catalogue) presenting proposals for sustainable solutions for better regional and cross-border public transport services. • Set of new/enhanced methods, services and products for no-car passengers designed and tested in regional and cross-border travels both in and between the South Baltic partner areas • Guidelines on multi-level governance for public transport in the South Baltic area • New e-ticket system is in Klaipeda area (not considered first-mile area). • Situation with pilot cases in Pomeranian region in Poland and Rostock in Germany is well on their way in the project but they are both on a TEN-T corridor (not considered a first mile area). • A one ticket solution involving partners Region Blekinge and Innobaltica (Pomorskie Region) and associated partner Stena Line (Example of first mile access). **Success factors** • Using modern technology to exchange information (such as timetables) between different operators. • Collaborate using freeware and/or open source software between different regions • Make available travel planning and information exchange programs • Project and product information available in different languages (especially for consumers of applications etc) **Presenter: Mattias Andersson, Region Blekinge**
REFEC
Aim • **Relieve heavy traffic in the city centres of Tallin and Helsinki by creating a ferry connection** between the ports of Loviisa (FI) and Kunda (EE) and improving business models for port-to-port ferry operations in the Eastern Finland-Eastern Estonia transport corridor. **Deliverables** • Market analysis for cargo potential • Plans for port planning (masterplans, specific detailed plans) • Socio-economic, Environmental impact analysis after start of operations in the corridor (i.e. when ferry connection is realised) **Success factors** • Will to cooperate and share information between stakeholders **Presenter: Reima Helminen, University of Turku**

ROLLING BUS SHELTERS

Aim

- **Test feasibility of autonomous busses in rural areas** (Skellefteå, Sweden) through a pilot project using current autonomous bus technology as shelter for weather conditions while waiting for main bus.
- Develop knowledge, understand the oppurtunities and limits from a technical and behavioural standpoint.

Deliverables

- Working pilot for implementation of autonomous busses (first/last mile micromobility solution)
- Contact network between authorities, universities and manufacturers of autonomous busses
- Analysis of technical and behavioural limits
- Evaluation of implementation costs

Success factors

- Will to cooperate between regional planners (authorities) and private manufacturers
- Finding the best suitable route for implementation based on need and technical limits

Presenter: Lars Brümmer, Ramboll Sweden

RUMOBIL

Aim

- **Develop strategies and regional frameworks for connecting rural and hinterland areas to corridor hubs by regional public transport services** through a platform to exchange knowledge, generate learning and launching pilot applications of state-of-the art tools and solutions, and to revise their transport policies to better suit changing mobility needs in peripheral areas.

Deliverables

- Transnational RUMOBIL strategy based on analyzed good practices, learning from RUM BIL pilots (below), and state-of-the-art technologies.
- Pilot activities: New services for better connection between rural areas:
  1. New bus service (Citizen-Bus) operated by the local municipality and civil society in Saxony-Anhalt (DE)
  2. New bus service (dial-a-ride, midi-buses) to link peripheral towns in South Bohemia Region (CZ)
  3. New rail service to link rural areas and tourism points of interest for Croatian Rail Service (HR)
- Pilot activities: Improvement of access points to national and EU transport networks:
  1. New GPS-hardware in trains operating in the rural areas to provide real time data via an app, Mazovien (PL)
  2. New software allowing better direct on-demand bus services, Modena region (IT)
  3. Investment in a rural town's train station to a multimodal transport hub, Zilina region (SK)
  4. Investment in quality of bus stations to attract more transport users, Nagykallo (HU)

Success factors

- Good structure in partnerships which cover many thematic areas
- Sharing theoretical and practical experiences and inputs
- Feedback on pilot projects from the regions involved
- Exposure of the project by in local, regional, and national press.
- Structured face-to-face meetings with the whole partnership/organization with an inspiring and fruitful working atmosphere
- Adequate time periods for pilot projects and testing/demonstration

Presenter: Arne Ehritt, Ministry of Regional Development and Transport of Saxony-Anhalt

GROUP 2: METHODOLOGIES AND TOOLBOXES

E-MOPOLI

Aim

- **Increase synergies on e-mobility and alternative fuel** among partners and stakeholders by cretreating methodologies for improving policy instruments via enhanced governance and new projects.

Deliverables

- Regional Action Plans.

Success factors

- Active involvement of Stakeholders
- Exchange of experience and share good practices among partners
- A strict time plan and respect project deadlines

Presenter: Ilaria Leonardi, ALOT S.r.l

HYTREC2

Aim

- **Promote hydrogen deployment** by developing Hydrogen Fuel Cell Electric Vehicles and giving guidance training materials on hydrogen economy market entries.

Deliverables

- Number of hydrogen vehicles retrofitted/deployed and tested
    - Related to this publication of vehicle test result and operational efficiency improvements and a hydrogen transport rules and standards in the North Sea Region report
    - Deployment (demonstration and testing stage underway)
- Analysis and production of initial findings due end of 2020.
    - Projects deploying green hydrogen from wind and solar power (one of each, and business cases)
    - Related to this the business case and economic modelling for green hydrogen production and a distribution of hydrogen in isolated regions report
    - Deployment and demonstration of one project underway.
    - Analysis and delivery of initial findings due to commence Summer 2020.
- Development of Supply Chain and Training modules
    - Related to this the development of a supply chain map of hydrogen in the North Sea Region, transnational business to business meetings and training modules.
    - Phase 1 supply chain map of NSR delivered. Repeated at end of project. Business to business meetings exceeded. Training modules under development and at initial stage of deployment.

Success factors

- Defining clear activities and output indictors
    - Number of new and/or improved green transport solutions adopted.
    - Number of enterprises participating in cross-border, transnational or interregional research projects.
    - Number of research institutions participating in cross-border, transnational or interregional research projects.
    - Number of organizations/enterprises adopting new solutions by project end.
    - Number of organizations/enterprises informed about new solutions by project end.

Presenter: Louise Napier, City of Aberdeen

E12 ATLANTICA BA3NET

Aim

- **Harmonize cross-border transport infrastructure planning and increase the knowledge infrastructure in the east-west TEN-T E12** cross-border region through improved, sustainable transport and efficient exchange between the countries. Analysis of transport modelling and investment evaluation in national planning in SE, NO and FI

Deliverables

- Report on Infrastructure planning at cross-border transport projects in the Nordic.

Success factors

- Cooperation between stakeholders
- Cross-border perspective in transport modelling and evaluation
- Active involvement of financers and stakeholders in work processes

Presenter: Lars Westin, University of Umeå

TENTACLE

Aim

- **Improve territorial cohesion, growth, prosperity, and sustainability of farther located areas** ('corridor catchment areas' and 'corridor void areas') in the Baltic Sea Region by improving stakeholder capacity to reap benefits of the TEN-T core network corridors.

Deliverables

- Pilot cases (showcases), for core network corridor gains in diverse geographical locations (Especially in First mile areas cases of Blekinge (SE), Vidzeme (LV), Central Scandinavia borderland (SE/NO), Lahti–North Karelia (FI)):
    - Corridor node and transit areas - Fehmarnbelt Fixed Link (DE/DK), Westpomerania – Skåne (PL/SE), Gdynia transport node (PL)
    - Corridor catchment areas in Blekinge (SE), Vidzeme (LV)
    - Corridor void areas in Central Scandinavia borderland (SE/NO), Lahti - North Karelia (FI)
    - Corridor extension areas for goods transports from the northern areas to CNCs (logistics hub function of the Örebro region, Interactions between the CNCs and transport networks of the EU Eastern Partnership countries).

Success factors

- Designing optimum solutions for pilots
- Open private/public stakeholder interaction process, sharing goals and agreeing on best measures
- Promote awareness of the benefits of corridor infrastructure investments.
- Working towards the joint deliverable and taking part in
- Exchange experience and activities between pilots to find synergies between place-based policies, strategies, actions, logistics solutions for CNC.
- Different perspectives make it happen (to the EU Coordinators)
- Regional experiences can facilitate national planning (to the national planning authorities)
- There is no such thing as one-size-fits-all (to project developers)
- Design stakeholder-specific communication (to project developers)
- Consider the limited resources of lighter-weight players (to project developers)
- Extend reach to include the public (to project developers)
- Do not forget the low-hanging fruit (to project developers)
- Provide sufficient time to cope with expected and unexpected delays (to project developers)
- Ensure sufficient organizational and personal commitment (to project developers)
- Get the right leader on board (to project developers)

Presenter: Mattias Andersson, Region Blekinge

GROUP 3: NOT PRESENTED DURING WORKSHOP

CHEMMULTIMODAL

Aim

- **Promote multimodal transport of chemical goods** by coordinating and facilitating cooperation between chemical companies, specialised logistics service providers, terminal operators, and public authorities in chemical regions in central Europe.

Deliverables

- Tool for promotion of modal shift of chemical goods from road to multimodal transport
- Pilot Projects for the testing of tool for multimodal chem transport
- Strategy for promotion of multimodal chem transport
- Action Plan for the promotion of multimodal chem transport

Success factors

- The main success factor was the intense direct contact to the relevant stakeholders, especially chemical companies, and logistic service providers
- Exchange of experiences with multimodal transport in the chemical industry
- Regional stakeholder meetings
- Keep regular meetings after project for further development of strategies and funding programs on the part of politicians.
- Only in direct exchange the barriers in the access to multimodal traffic can be recognized and addressed. Looking at the joint strategy, it becomes clear that, although different levels of development in infrastructure in different regions, the challenges and approaches are still very similar. Multimodal transport must be economically successful in comparison to road transport. It is important to inform and promote possibilities and advantages of multimodal transport. It is crucial to promote the competitiveness for rail and multimodal transport, e.g. by lowering prices for track fees to ensure equal level playing field. The development and extension of rail infrastructure must be further strengthened in all countries, e.g. by developing funding guidelines for the development of infrastructure.
- The main success factor was the intense direct contact to the relevant stakeholders, especially chemical companies, and logistic service providers.

CONNECT2CE

Aim

- **Improve rail connections and smart mobility in peripheral and cross-border areas** of Central Europe to and from main transport networks and hubs through enhancement of public transport services.

Deliverables

- Territorial needs assessments
- Transnational tool

Pilot activities:

- New extending train connection between IT and AT
- Cross-border Public Service Obligation (PSO) between HR and SI
- Timetable harmonization between HU and AT
- Cross-border bus services between AT and HU
- Cross-border connections between DE and PL
- Cross-border integrated ticket Ljubljana-Trieste (IT-SI) (CEI + bus operator in Trieste)
- Tariff and informative integration in Pilsen region (pilot activity on ICT)
- Investments in upgrading integrated multi-language and multimodal information-system in Western Hungary

Success factors

- Positive Cooperation
- Balanced composition of partnership (research institutes, public transport operators, organizations, regional authorities, ...)
- Clear definition of tasks and roles
- Constant monitoring

DESTI-SMART

Aim

- **Improve the transport and tourism policies of EU destinations** by integrating strategies to "Deliver Efficient Sustainable Tourism with low-carbon transport Innovations: Sustainable Mobility, Accessibility and Responsible Travel."

Deliverables

- 6 feasibility Studies for Low-Carbon Mobility Options & Transport Systems, Accessibility provision, Intermodality improvements and Cycling/ walking facilities at partner destinations
- 9 Action Plans (no testing, demonstration, or deployment stage yet).

Success factors

- In previous interregional cooperation programmes several projects addressed the issues of sustainable mobility and sustainable tourism, but not in combination.
- Pressing issues are addressed, through interregional cooperation with innovations towards a low-carbon economy in EU destinations:
  A. Investments in and provision of low-carbon transport systems, with the needs of visitors explicitly taken into consideration, including internalisation and reduction of external costs of transport by mode shift to low-carbon travel solutions and E-Mobility.
  B. Interchange between long-distance travel and local transport services, including Intermodality facilities for visitors, multimodal connectivity improvements that would shift travel demand to low-carbon transport.
  C. Accessible tourism facilities for visitors with mobility difficulties (disabled, elderly, families with young children, etc).
  D. Cycling & Walking for Tourists, cycling routes provision, Shared bikes, CycloTourism, integration of cycling in tourism mobility strategies, promoting 'Greenways'.
- The project raises the importance of the collaboration among the EU projects on transport and mobility themes, including interoperability.
- In this direction, on behalf of the Major Development Agency Thessaloniki (MDAT) SA, we are looking forward to sharing your findings with us, and of course we hope to have the chance to develop a fruitful cooperation in the future.

SUBNODES

Aim

- **Connect the hinterland via sub-nodes to the TEN-T core network** by promoting the polycentric development in the public transport sector and intermodal integration of peri-urban hinterland regions.

Deliverables

SubNodes strategy:

Elaboration of a joint strategy for the development of sub-nodes, which lays ground to turn selected medium-sized cities into attractive intermodal secondary transport hubs. The strategy is being tested by the pilot actions.

Pilot actions:

Practical experimentations in the participating regions with innovative improvements of public transport to make public transport tangible and visible to people. Pilot actions will be implemented in the partner regions to demonstrate the willingness of transport authorities to mitigate the situation and make travelling for passengers quicker, more seamless, more reliable, and comfortable. All pilot actions are in demonstration stage.

Action Plans:

The conceptual basis of the strategy together with the practical test of actions during the pilot phase is translated to regional action plans which will implement actions to overcome urgent bottlenecks and make public transport more attractive. All action plans are in stage of establishment.

WHOLE GREEN ROAD

Aim

- **Support developement of municipal strategic goals and plans for becoming fossil independent in 2030** for 39 municipalities in the border region of Östfold-Follo-Fyrbodal, through cross-border cooperation, exchange of experience and joint planning with local and regional business.

Deliverables

- Several new public gas stations for CBG
- 1000 new charging points, including several new fast chargers
- Increase of number of EVs and Gas vehicles in the municipalities vehicle fleets.
- Establishment of nationally funded projects in Norway.
    - Test of fossil free machines,
    - Lending electric bikes at libraries,
    - Advisor for fossil free public procurement
    - Project to repair children's bikes and increase knowledge about safe bicycling for school children, have been included in the new project Fossil free border region.

Success factors

- Personal meetings with the target groups and cooperating actors
- Communication – To communicate the results and success of the project. It is important to be seen and heard not only on social media but to also show the result by striping the cars and vehicles with symbols showing they are fossil free.
- The political commitment, the signed document 2014 saying all 39 municipalities will be fossil free by 2030
- Integration of the political commitment into local and regional strategy documents in Østfold.

- Time management regarding companies. Public organisations are easier to work with and the corporation with the private actors was more time consuming than expected.
- Sometimes information is not enough. For example, to have seminars of workshops as a method to educate. In some cases, the project needs to take more responsibility to make things happen inside the organisations of the target groups. Sometimes there is a need for the project to start and initially lead an actual case to reach the expected results. We can't rely on that municipalities or companies by them self will lead a change just because we arranged a workshop or seminar to educate them in a specific area.

- It is important with continuity. In our case it has been a systematic way to work to initiate these projects (Infragreen, Whole Green Road, and now Fossil Free Border Region 2030)
- It is important to address and identify the roles of different actors and how they can collaborate.
- The work across the Swedish and Norwegian border. In Norway that have the expertise and experience of with development and implementation of EVs and charging infrastructure, and in Fyrbodal we have the expertise of working with development and implementation of biogas vehicles and infrastructure for biogas.

Table 4 Summary of project success factors

PROJECT SUCCESS FACTORS
• A balanced, interdisciplinary, and cross-sectoral composition of partners to cover the relevant thematic areas and combine theoretical and practical insights into the project goals and themes. • Political commitment (anchoring) and a sharp identity of the project in 'leading the change'. • A will between stakeholders and partners to cooperate and share information and experience. • Pooled resources and a clear distribution of actors' roles based on a common understanding of key goals and concepts, including a sharp vision of the project. • Clear project communication, with sufficient time resources allocated to manage an outreach to key high-level stakeholders on an international and EU level. • Interactive work between project level and case/pilot level, based on appropriate tools (e.g. internal guidance and report templates). • Clearly assigned and defined leaders for cases/pilots within project to ensure an alignment between the different work packages and cases, the consistency of case tests and the integration of results into an overall framework. • A careful scheme of meetings – allocate the right types of events to the activities and processes in the project implementation (workshops, face-to-face decision meetings, conferences and video calls, online forums etc.). It is also advisable to schedule physical meetings within the partnership as well as with the target group representatives to create and sustain an inspiring cooperation climate. • Ability to run an open stakeholder interaction process to help the various public and market sector players communicate, share goals, and agree on best-reckoning measures. • Awareness of remote technologies to facilitate joint products (e.g. freeware for travel planning and information exchange). • Continuity – in actions well-monitored projects as consecutive elements in a development process. • Creativity – to be able to deploy dormant resources (e.g. for mobility in rural areas). • Emphasis on 'low-hanging fruits' to make the project deliver realistic yet attractive results to the decision-makers.

Table 5. Projects categorized by approach and relevance

Transport Interoperability	Subissue	Relevant Projects	
1.Multimodality and efficient freight logistics	**Corridor-wide perspective** for the planning of terminal infrastructure, terminal accessibility, and relevant ICT infrastructure	REFEC BA3NET TENTACLE INTERCONNECT CHEMMULTIMODAL	REFEC, BA3NET, and TENTACLE have policy orientated measures and handle larger cross-border geographies. They will lead to better cross-border connections and cooperation. They have relevance for connecting First Mile Areas to CNC due to possible improvement for integrated planning regarding terminals, ferries, and evaluation of investments, in countries and between countries in their region.
	Integration of users' needs to align corridor investments with actual user requirements		
	Collaborative logistics and synchromodality for an optimized use of transport resources and the existing infrastructure		
	Enhanced collection of cross-border **multimodal transport statistics**		
	Enhancement of Data platforms and IT systems for information on (cross-border) multimodal transport services, terminals, and logistics platforms		
2.Intelligent transport systems (ITS)	**Digitalization/Automation of vehicles**	ROLLING BUS SHELTERS RUMOBIL INTERCONNECT E-MOPOLI	ROLLING BUS SHELTER, INTERCONNECT, RUMOBIL, E-MOPOLI, and TENTACLE offer several concrete actions, primarily regarding public transport, which can be implemented in a short timeframe in all countries and regions. They have a semi-high relevance for connecting first mile areas to CNC due to their possible but shorter-stretch traffic solutions for last mile. They have a high relevance due to possibilities for databases and for interchange of data, timetables, bookings etc across countries and geographies.
	Better/new fit-for-purpose **user-centric mobility services** incl. persons with disabilities or with reduced mobility		
	Stimulation of **behavioral change** towards shared and sustainable mobility		
	Coordinated action incl. regional and local authorities		
3.Innovation and clean fuel infrastructure	Cross-modal **port-hinterland connectivity** leveraging innovation in communications technologies, hub design and logistics	TENTACLE HYTREC2 E-MOPOLI WHOLE GREEN ROAD DESTI-SMART	HYTREC2, TENTACLE, and E-MOPOLI offer alternative fuel introduction and demands on coordinated actions in many parts in the supply chain. They have a semi-high relevance for connecting First Mile Areas to CNC due to the possible implementation of Clean Fuel infrastructure in the whole system, regardless of which First Mile Areas are affected.
	Infrastructure components for **clean fuel fleets**		
	Consumers' acceptance and education for a positive change in consumption patterns towards the sustainability		
	Interoperable solutions for payment/use		
4.Integrating urban nodes	First mile urban centers: not 'integrating' but as **providers of good practice**	ROLLING BUS SHELTERS RUMOBIL TENTACLE SUBNODES CONNECT2CE	E-MOPOLI, RUMOBIL offer concrete measures mainly regrading public transport. They are ready to implement but can be dependent on national and regional legislation. They have semi-low relevance due to a small geographical effect surface. The solutions offer only a small part of the connection to the Urban Node from the First Mile Area.
	Connection with Sustainable Urban Mobility plans to ensure an effective multi-level governance		
	Communication tools/pilot projects actively involving urban nodes users **to facilitate dialogue and cooperation** at different governance layers		
	Business models supporting the take-up of mobility as a service		

7. First mile areas in project inventory

7.1. General findings

The inventory of projects, with co-financing from EU, that can provide good examples of First mile solutions show that first mile issues are usually not addressed specifically. Thereby finding best practice solutions has to be made by analysing the relevance of first mile analysis as dependent on the main issue and aim of each project. A second observation is that the first mile solutions that can be identified does not, with few exceptions, apply to first mile areas as defined in BSR Access.

The project TENTacle specifically addressed the (geographical) connection to TEN-T Core network corridors and how to reap benefits from corridor development. TENTacle have analysed strategies and actions regarding multimodality and freight logistics, clean fuels and urban integration dependent on location of geographical areas in relation to Core network corridors. Thereby it comes naturally that the project has resulted in a variety of strategies and recommendation. Some studies within the project also show how infrastructure measures not necessarily are critical to reap benefits from corridor development. One of the studies made also clear how the relative accessibility of different geographical areas can change as a result of corridor development.

SubNodes tackles the weak intermodal integration of peri-urban hinterland regions to primary TEN-T rail hubs. Suitable medium-sized cities in these areas shall be developed into attractive intermodal secondary hubs – so called 'sub-nodes' – which better connect the hinterland to the TEN-T rail network and offer passengers a continuous travel chain.

For studies of transport chains and supply chains first mile solutions are integral parts. HYTREC2, studying deployment of hydrogen infrastructure, has provided a structure illustrating the flow from production to consumption, where solving the 'first mile' is essential for the possible deployment of hydrogen filling stations.

Awareness of the importance of the first mile can be crucial for identifying potential improvements in the transport system and how to benefit from the development of the core network corridors. Both BA3NET and TENtacle have addressed the issues of awareness of infrastructure development.

The following chapters accounts for examples of solutions, from the project inventory. Furthermore, the inventory is complemented with an overview of a few examples of Swedish national and regional projects relevant to the first mile issues. These examples show that best practice examples for first mile solutions are to be found. However not co-financed by EU programmes. The examples are based on the general knowledge of the authors of this report. Further analysis of these projects has not been possible to perform within the framework of this

7.2. Examples: projects addressing first mile areas.

7.2.1. Awareness of first mile areas

As part of the project BA3NET, an analysis shows how the national oriented planning and modelling tools can underestimate transport flows and potential in cross border areas. The Swedish freight model SAMGODS is often inaccurate along borders and weak regarding regional analysis. The national perspective also limits impact analysis of cross-border measures. Evaluation of national models and value parameters in Sweden, Norway and Finland are limited. The outcome of a cost-benefit analysis can vary considerably depending on which national methodology is used. Cost-benefit analysis for cross border investments are made *within* each country, and not for the entire investment which might result in different conclusions regarding profitability. A cross border investment in Norway – Sweden or Norway – Finland is more likely to be profitable in the Norwegian part of the investment than in the Swedish/Finnish part. To simplify, a cross border project can be profitable in one country but not profitable in the other. The entire cross border investment will thereby be evaluated and prioritized differently.

Figure 5 show that for a given cross border project, the part located in Sweden will generate 373 000 € in benefits using Swedish parameters but almost 1 456 000 € using Norwegian parameters. Even more outstanding is applying Finnish parameters of the Norwegian part of the investment where the benefits are calulated to 240 000 €. Using Norwegian parameters instead would generate 2 875 000 € in benefits.

Figure 5 show the variation of net benefits of a given investment depending on which national model and value parameters are used. Cost-benefit analysis for cross border investments are made *within* each country, and not for the entire investment which might result in different conclusions regarding profitability. A cross border investment in Norway – Sweden or Norway – Finland is more likely to be profitable in the Norwegian part of the investment than in the Swedish/Finnish part. To simplify, a cross border project can be profitable in one country but not profitable in the other. The entire cross border investment will thereby be evaluated and prioritized differently.

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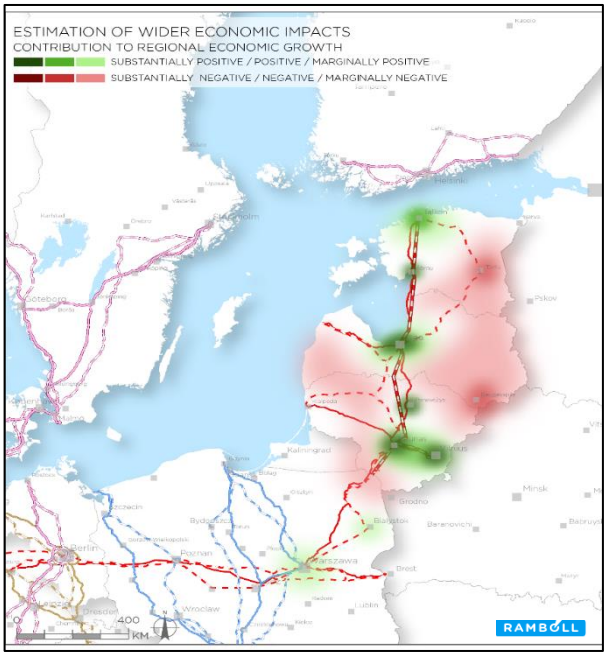
	Norwegian EFFEKT-model Parameter values from:			Swedish EVA-model Parameter values from:			Finnish IVAR model Parameter values from:		
	Norway	Sweden	Finland	Norway	Sweden	Finland	Norway	Sweden	Finland
Time costs	2,536	1,200	1,064	1,252	627	550	975	853	785
Traffic safety costs	362	366	326	-386	-230	-221	-730	-343	-383
Environmental costs	-23	-110	-28	-4	-24	-6	-5	-28	-7
Total	2,875	1,456	1,361	862	373	323	240	482	395

Figure 5 Net benefits from given investment calculated by alternative national models and value parameters, BA3NET.



Within the TENTacle project the wider economic benefits from investments in Fehmarn Belt fixed link and Rail Baltica were analysed. When adding potential traffic made possible by the infrastructure investments some areas will benefit more than others from the investment. The analysis of indicates the spatial distribution of wider economic impacts to economic growth. The example of Rail Baltica concludes that in particular Tartu and Daugavpils are at risk of losing competitive power to a larger extent than other areas.

The TIA tool[11] developed by ESPON have potential to provide data on territorial impacts of infrastructure investments and identify areas at risk of suffering from negative impacts of implementation of TEN-T. A research project has tested the potential of the tool and results will be published during summer 2021[12].

Figure 6 Estimation of wider economic impacts to economic growth, example Rail baltica. TENTacle.

7.2.1. Multi-level governance

A policy-oriented approach as exemplified by TENTacle is to connect and take advantage of existing logistic hubs to create synergies. TENTacle provides good example on both multi-level cooperation for transport and growth as well as geographical analysis on territorial conditions related to the development of the TEN-T core network corridors. Project lessons relate to a large extent to multi-level governance principles where organizational specifics need to be thoroughly analysed for separate territories with different characteristics. For best practice in multi-level cooperations for transport growth in the Baltic Sea Regiona, the project5 has formulated a number of lessons as follows:

Lesson 1. Different perspectives make it happen (to the EU Coordinators)

Lesson 2. Regional experiences can facilitate national planning (to national planning authorities)

Lesson 3. There is no such thing as one-size-fits-all (to project developers)

Lesson 4. Design stakeholder specific communication (to project developers)

Lesson 5. Consider the limited resources of lighter-weight players (to project developers)

Lesson 6. Extend reach to include the general public (to project developers)

Lesson 7. Do not forget the low-hanging fruits (to project developers)

Lesson 8. Provide sufficient time to cope with expected and unexpected delays (to project developers)

Lesson 9. Ensure sufficient organisational and personal commitment (to project developers)

[11] https://www.espon.eu/tools-maps/espon-tia-tool

[12] Territorial consequences of infrastructure investments in international transport corridors. Working material. Ramboll/Swedish Transport Administration.

Lesson 10. Get the right leader onboard (to project developers)

Lesson 11. Accommodate developments during project implementation (to Interreg Programme)

Lesson 12. History is fading away (to Interreg Programme)

With a large number of multi-level governance initiatives, the Baltic Sea Region seem well prepared with established organizational structures to integrate first mile issues within the framework of each initiative.

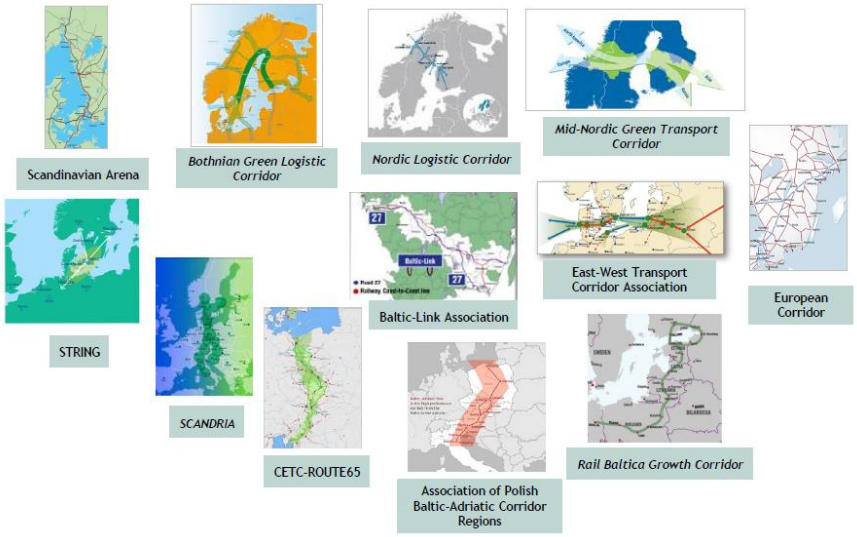


Figure 7 Snapshot of multi-level governance initiative in the Baltic Sea Region, 2014.

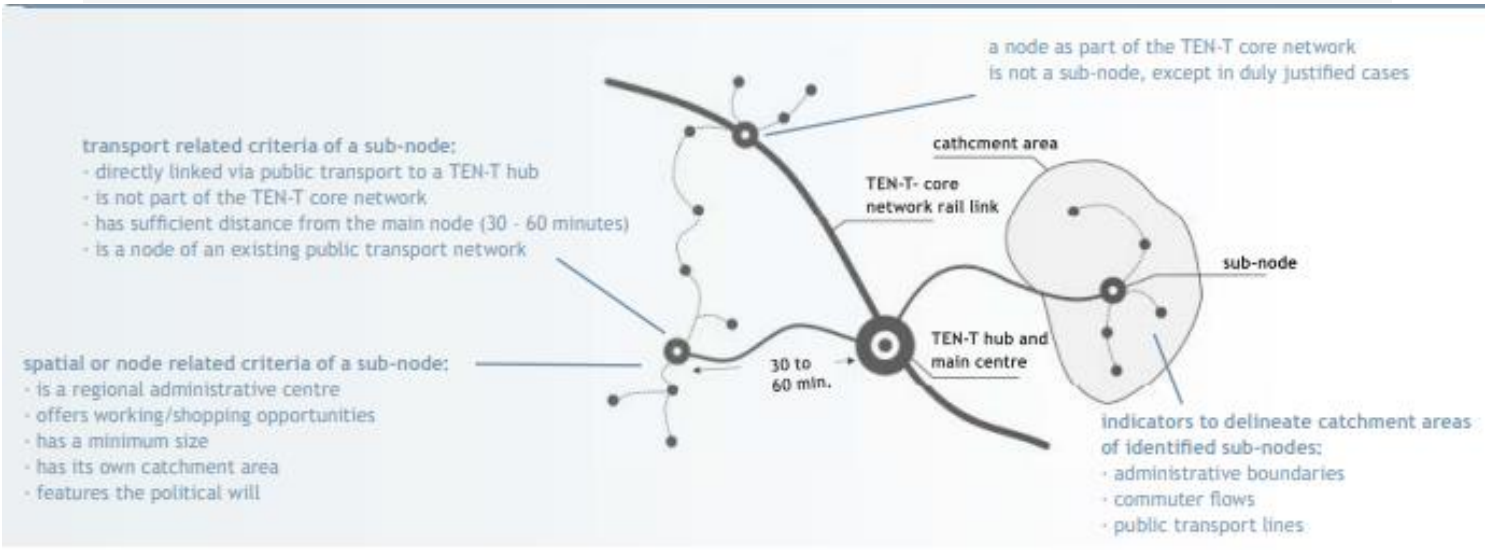
7.2.2. Expanding the functional urban area

SubNodes tackled the weak intermodal integration of peri-urban hinterland regions to primary TEN-T rail hubs. For this, suitable medium-sized cities in these areas were to be developed into attractive intermodal secondary hubs, so called sub-nodes, which better connect the hinterland to the TEN-T rail network and offer passengers a continuous travel chain.

The project's ultimate aim was to establish the subnodes-approach in the participating regions by adopting a SubNodes-strategy, conceptualizing its implementation and testing innovative actions in real world conditions. Policy recommendations derived from this process were integrated into transport plans or spatial planning strategies of the regions.

One core joint output is the signing of a joint declaration, in which the political representatives of the partner regions agreed on key statements, such as:

- A polycentric spatial development and the reinforcement of regional public transport systems contribute to equivalent living conditions.
- Suitable small and medium-sized cities in Central Europe are to be developed as sub-nodes.
- In order to strengthen territorial cohesion within and between Europe's regions, an adequate support of secondary transport networks is necessary to the same extent as for the TEN-T core networks.



Classification of sub-nodes within the hierarchical transport network. source: Dr. Mathias Wilde, University of Applied Sciences Erfurt, 2018

Figure 8 Principles of subnodes, SubNode

7.3. Examples: projects with integrated first mile perspective

7.3.1. Electromobility as a learning process

Electrification of the transportation system is based on well-known technology. The vehicle industry is developing battery technology to increase the distance range for vehicles dependent on charger stations. Sweden and Germany have an agreement on developing technology for electrification of roads which particularly addresses the heavy road vehicles. Norway is currently leading the implementation of electric (private) vehicles due to policy measures promoting electric vehicles and the infrastructure of charging stations. Sweden has taken lead on developing and testing technologies for electrification of roads and has an explicit policy for electrification of heavy road transport.

The project e-MOPOLI has addressed policy development based on the potential of electrifying the transport system. Challenges for policy development have been identified and methods to overcome the challenges are based on promoting awareness, stakeholder involvement, learning from good practices and formulation of regional action plans. Policy making to promote electrification is considered as a learning process that need to be promoted.

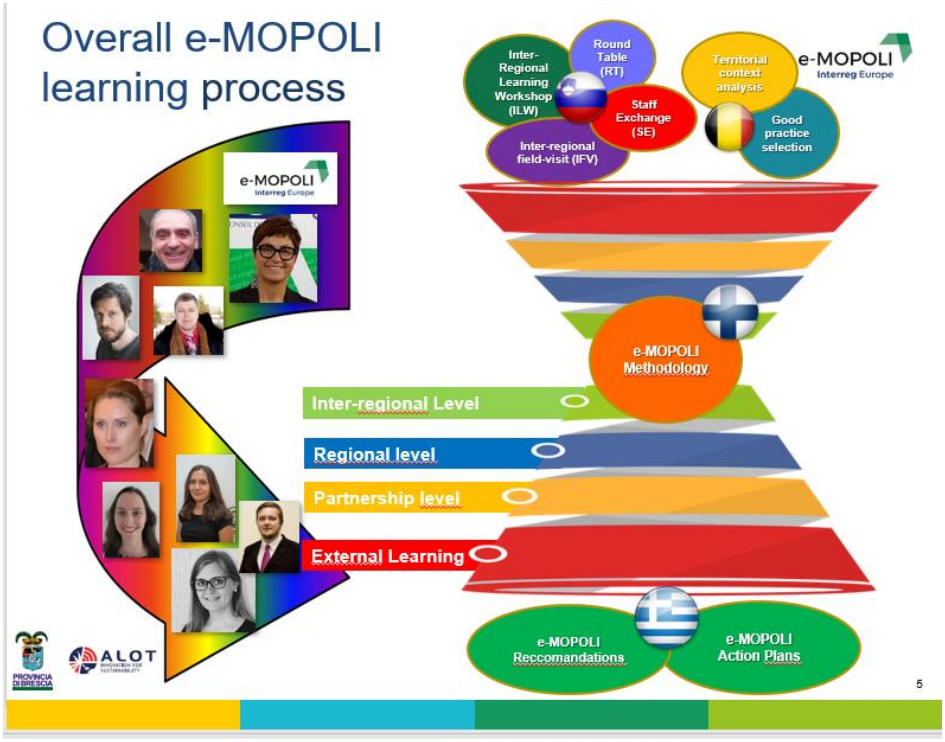


Figure 9 Overall e-MOPOLI learning process, e-MOPOLI

7.3.2. Supply chain analysis for market development

For development of the market for hydrogen the project HyTrEc2 has a broad approach including:

- Improving the operational efficiency of a wide range of vehicles such as vans, large trucks and refuse collection vehicles.
- Improving the supply chain and training so that the NSR (North Sea Region) becomes a Centre of Excellence for hydrogen transport and a competitive environment is formed

- Developing innovative methods for the production, storage and distribution of green hydrogen.
- Ensuring that the NSR is the dominant region in the EU in terms of hydrogen transport. The project will complement national programmes and facilitates joint NSR approaches and common standards.
-

First mile perspectives can be regarded as moving hydrogen from production plants and storage. Partner involvement is essential both for developing solutions as well as develop and maintain the supply chain. All parts in the supply chain need to be developed simultaneously.

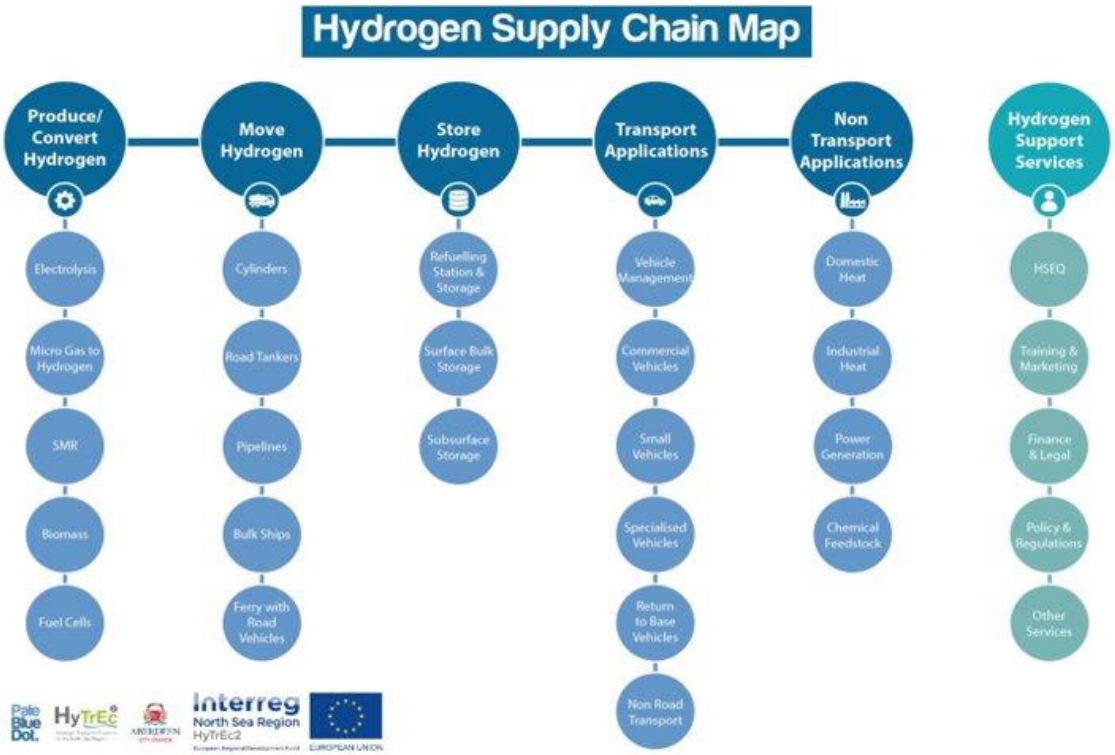


Figure 10 Hydrogen supply chain, HyTrEc2

7.4. Examples: projects without first mile perspective

7.4.1. Multimodal planning tools

Multimodal transport requires thorough planning. The *planning guidelines* developed by CHEMMODAL is developed by the industry itself based on the specific conditions for the chemistry industry. The toolbox developed also include *intermodal planning tool* and *CO2-calculator*. The developed toolbox was tested throughout the partner regions and countries in 7 pilot projects with 58 chemical companies in the partner countries to facilitate real modal shift. In addition, the entire project developed a joint transnational *strategy for improved cooperation of logistic stakeholders* for the promotion of multimodal transport of chemical goods.

Figure 11 Visualization of multimodal transport, northern England – northern Italy, using intermodal planner tool, CHEMMULTIMODAL

Country		Driving restrictions					Loading Regulations					
			Night	Weekend	Public holiday	Max. allowed speed		2 axle tractor with 3 axle semitrailer	Semitrailer combination used in a CT	3-axle tractor + 3-axle semi-trailer	Road train used in a combined transport	Vehicle combination used otherwise than CT
Austria		**Road**	10p.m. - 5a.m.	Saturday 3p.m. - Sunday 10a.m.	00:00 am to 10:00 pm; On Sundays and public holidays, the weekend driving ban will go seamlessly into the night driving ban from 22:00 until 5:00 o'clock!		**Unimodal**	40t		40t		n.a.
	Austria	**Rail**	Does not apply for combined transport	Does not apply for combined transport	Does not apply for combined transport		**Combined**		44t		n.a.	
Czech Republic		**Road**	none	a) on Sundays and other days of rest according to a special legal regulation (hereinafter referred to as "rest day") from 13.00 to 22.00 hours; b) on Saturday from 1 July to 31 August from 7.00 to 13.00; c) on Friday from 1 July to 31 August from 17.00 to 21.00.			**Unimodal**	32t		32t		48t

Figure 12 Example of input data in Planning Tool, CHEMMULTIMODAL

7.4.2. Developing alternative first mile routes

Capacity and accessibility deficits on the TEN-T core network can in some cases be solved by developing first mile connections. The REFEC project is an example of how industry in south-eastern Finland can improve its connection to the Core network with a new maritime connection between Finland and Estonia surpassing the traffic intensive eastern Helsinki. Market analysis and stakeholder involvement are key factors in the ongoing work to potentially establish a new route that is also beneficial for accessibility on the core network.

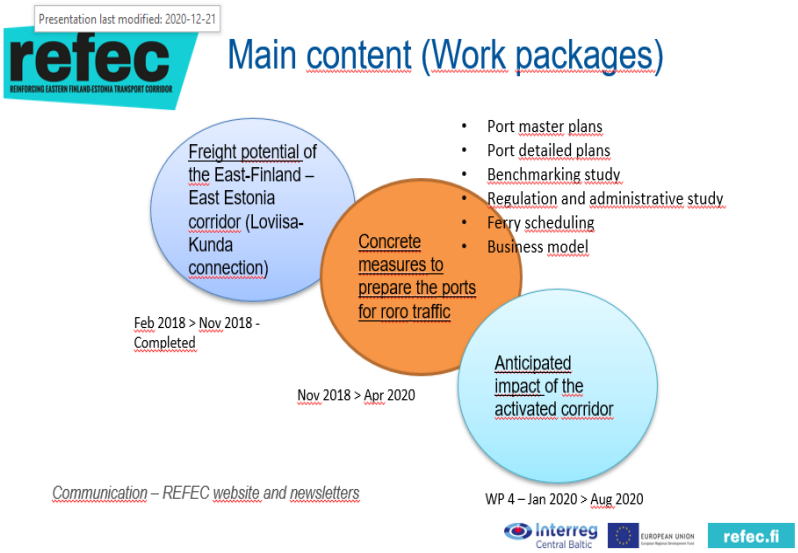


Figure 13 Project structure, REFEC

Figure 14 Project geography, REFEC

7.4.3. Rural public transport

Automation and digitalization offer new possibilities to improve public transportation where the transport market is limited and thereby improve hinterland connection to urban centres. The RUMOBIL project provides eight pilot projects testing innovative applications for public transportation in sparsely populated peripheral areas to better connect and access national and European passenger transport networks. A good example of using software to create on-demand solution is he Prontobus pilot project in Castelfranco, Italy.

Figure 15 On-demand services, RUMOBIL

Another approach to integrate very sparsely populated areas where small automated vehicles provide access to regular public transport lines and at the same time gives shelter for weather conditions. The rolling bus shelter project in Skellefteå (northern Sweden). The project has successfully been tested with small automated, on-demand, vechicles in an area with harsh winter climate.

Neither of the project adresses first mile solutions as defined in BSR Access. However, they provide good examples of software applications that could be transferrable to first mile solutions.

7.4.4. Cross border public transport

Experience of the past cross-border cooperation in integrating public transport systems in the BSR needs to be taken into account. It is clear, however, that the existing knowledge on cross-border public transport approaches, operational models and replicable practice in the Baltic Sea Region is scattered and available only at the local scale. Thus, it has never been pooled together and presented in the macroregional (and European) transport policy content. No attempts have been made so far to disseminate and exchange good experience between the sites covered by the individual projects and initiatives, co-financed by separate cross-border funding programmes.

Interconnect project have addressed cross-border public transport analysing demand, supply and governance structures. A multi-level governance model is essential for developing cross-border public transport and the project have developed guidelines for governance issues. For improved supply of public transport information, common information systems and technological platforms/applications provides new opportunities to develop planning/organization of cross-border public transport and customer services, as travel information, joint ticketing service.

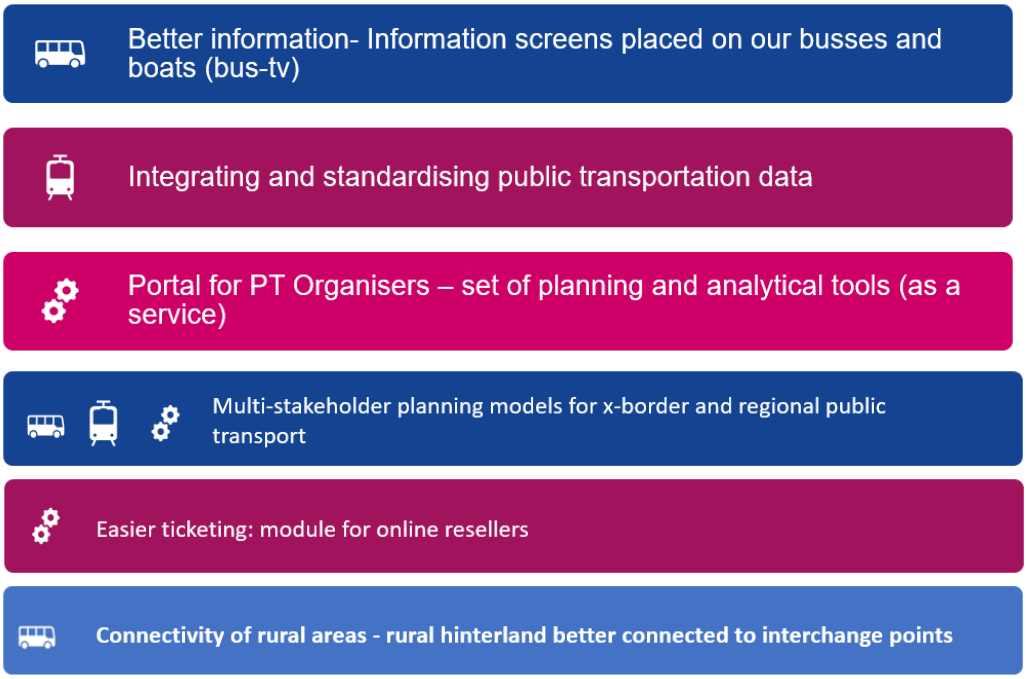


Figure 16 Project output, INTERCONNECT

7.5. Overview of Swedish national and regional projects addressing first mile issues

Even though few EU funded projects address first mile issues there are best practise examples to be found among national and regional initiatives that do not specifically target first mile access to the core network corridors. The following overview give some Swedish examples of potential, successful and non-successful solutions.

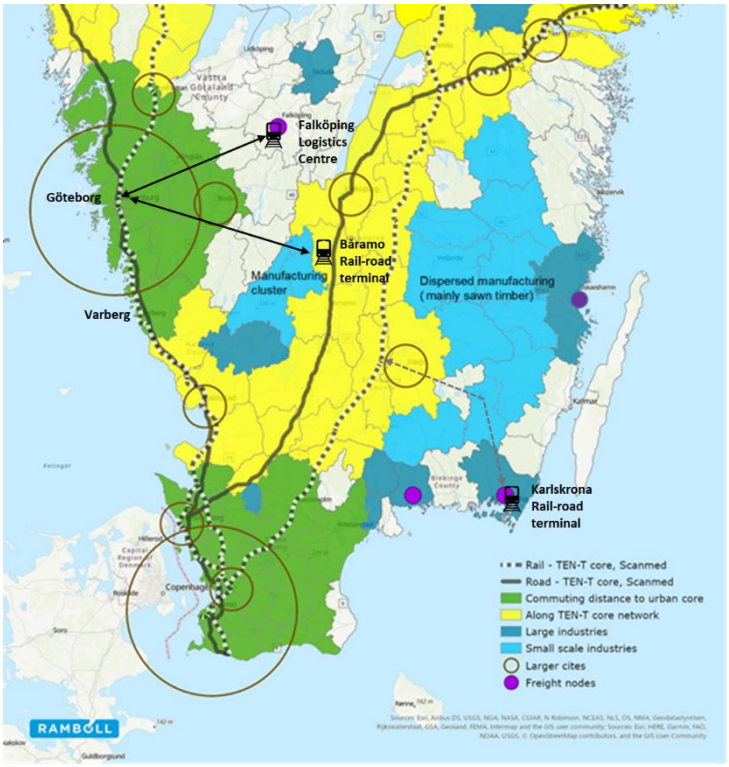


Figure 17 Development of rail-road terminals in Båramo, Falköping and Karlskrona

Båramo rail-road terminal was established based on a common need for a cluster of SME:s to connect manufacturing to the port of Gothenburg. The terminal started as a very simple low-cost solution and received some EU grants for investments. In spite of proximity to two other rail-road terminals and a low railway standard the terminal has developed well and became the first dry-port to Port of Gothenburg. The distance to Gothenburg is 160 km.

Strong local networks and a tradition of cooperation in the particular area might have been crucial for this company driven initiative to be realised. The terminal is located along the ScanMed corridor but the transport relation can be described as a first mile solution to reach Gothenburg.

At the railway junction at **Falköping** forest industry (timber and sawn timber) started to consolidate transport volumes for the export market via the ports of Gothenburg and Varberg. The area was further developed, and is still developing, also for manufactured gods serving local industry and warehousing with container transport solutions by rail. The distance to Gothenburg is 120 km and railway connection have good standard.

Karlskrona is a major RoRo-port with theoretically sufficient volumes concentrated to Jönköping and central Sweden. The railway connection between Karlskrona and the ScanMed railway is reasonably good. A new rail-road terminal in Karlskrona was opened in 2014 with the purpose of moving trailer transport from road to rail, as well as serving local industry. However, competitive logistic solutions have yet not been developed and the terminal is currently not used apart from domestic timber transport. Since transport flows, distances and pattern is sufficient for railway solution to and from the port, the case can provide a learning experience on which prerequisites that need to be fulfilled for developing a competitive railway solution.

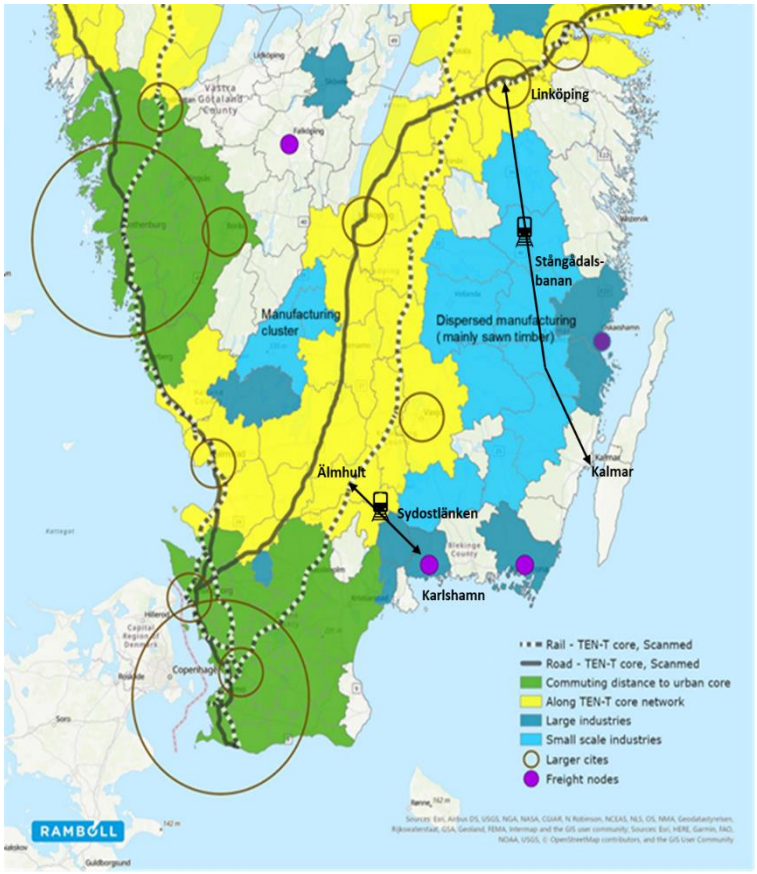


Figure 18 Development of railway connections, Sydostlänken and Stångådalsbanan

Sydostlänken between Älmhult and Karlshamn is a planned (investment plan 2018 – 2029) upgrade of low standard railway and extension to Karlshamn. The project will increase the accessibility to the port of Karlshamn and industries along the route. Apart from increasing efficiency for current freight transport by railway the project will support the economic development in the first mile area of eastern Blekinge.

Stångådalsbanan is a low standard railway connecting Kalmar to the ScanMed corridor at Linköping. The county of Kalmar is promoting partial upgrading of the railway and introduction of electric hybrid trains. The purpose is to increase the accessibility for passenger transport between Kalmar and Linköping as well as offer possibilities to daily commuting to either of the cities. The project does currently not have funding.