

Boosting cross-border regions through better cross-border transport services. The European case

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ABSTRACT

Cross-border regions are the laboratories of European integration. Daily interactions across European borders let citizens experience the benefits of the European Union (EU) internal market. Still, many border barriers continue to prevent individuals and organisations from exploiting the full-potential of European border regions and the benefits of a more integrated European territory. Amongst these barriers are the absence or inappropriate supply of cross-border public transport services. In this context, this paper presents potential policy tools to increase border permeability related to cross-border public transport as well as practical results from a few case-studies implemented across Europe.

1. Introduction

The history of Europe is closely linked with the constant formation and rearrangement of national administrative boundaries (AEBR, 2012), commonly referred to as borders (Lundén, 2018). Over time, the presence of these national boundaries ends up forging nation-building processes which normally lead to the creation of distinct administrative and

legal systems on both sides of the border (Guillermo-Ramirez, 2018). Differences between these systems leads to border obstacles. By themselves, several of these legal and administrative barriers pose formidable challenges to citizens working or living on the other side of the border.

Resonant issues (e.g. barriers) for cross-border commuters are experienced daily, related to other types of persistent border barriers associated, amongst others, with the absence or the presence of

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inappropriate cross-border accessibilities (Svensson and Balogh, 2018). Such concerns have propelled the European unification or integration process, through EU policy support to cross-border cooperation (CBC) processes, formally initiated with the Interreg Community Initiative in 1990 (Reitel et al., 2018), to fully exploit the potentials of the European cross-border regions (CBR) (EC, 2017a).

As the outcomes from the EC Cross-border Review² reports (Gramillano et al., 2016; METIS, 2015) including its workshops have revealed, cross-border accessibility is regarded by European citizens in border regions as one of the main obstacles to their daily lives, soon after legal and administrative and language related obstacles (Medeiros, 2018a). Within the accessibility border barriers, cross-border public transport is seen, together with poor cross-border physical connectivity, as the main problem for European citizens (Medeiros, 2018b). But just like what happens with the language barrier, the lack or the inappropriate presence of cross-border transport services becomes centrally important when considered in a broader context since they can prevent the use of cross-border public services, and the options for desired cross-border commuting flows. This is particularly worrying in Europe, as 30% of the EU population dwell in border regions “and for many of them, the natural catchment area for everyday life activities reaches across national borders” (EC, 2019: 8).

Analogous ideas emerge from recent research which confirms an insufficient availability of cross-border public transports in most EU CBRs, which include certain European border areas with long experience in cooperation (i.e. North and North-western Europe). Consequently, “this panorama adversely affects the socio-economic development and environmental sustainability of border areas, by limiting the cross-border flows and by promoting the use of private vehicles” (Medeiros, 2018b: 11). Certainly, cross-border employment is largely affected by the limitations posed by the lack or insufficient presence of cross-border public transports to fully explore the potential opportunities offered by the labour markets across borders. These constraints are extended to students, and business owners. Hence, “matching supply and demand when it comes to employment is a real challenge in cross-border regions, often because of the lack of cross-border connections” (EC, 2019: 8). Lack of, or reduced, availability of public transport services in a cross-border region, is thus one of the causes of the border effect that hampers the development of those territories.

Under this scenario, this paper debates the main challenges associated with the current panorama of cross-border public transport services in Europe, based on the findings of a recent EC event³. At the same time, it advances meaningful policy answers to mitigate the barriers still encountered by European citizens (Medeiros, 2018b). These answers are based on concrete policy experiences that are taking place across all European borders. In the end, this paper will answer the following research questions: (i) What are the main policy challenges to mitigate the lack of or existence of inappropriate cross-border public transport systems affecting the daily lives of European citizens? (ii) What potential policy tools can improve cross-border transport connections across Europe?

The previous research questions have helped to inform this paper. Hence, the next section presents an overall view of the potential benefits for the development of European cross-border regions while tempering the causes of inequality therein. The third section provides a critical analysis of the main challenges facing the improvement of cross-border transport services across Europe. The fourth section debates the potential policy tools that can provide an improvement in the quality of cross-border transport connections by lifting and/or mitigating existing obstacles. The last section presents ongoing experiences across Europe of how cross-border transport services are being improved. From a

methodological standpoint, the analysis is based on a collection of ongoing illustrative case-studies presented at an EU Conference by several experts and practitioners, complemented with literature on cross-border transport services and infrastructure.

2. The development potential of improving cross-border accessibilities

The policy notion of development is predicated on positive trends, or fundamental and structural change for societies (Potter et al., 2008). Concomitantly, development is a holistic concept, encompassing a myriad of policy components. These are associated not only with economic competitiveness, social cohesion, environmental sustainability, and territorial governance policy dimensions, but also with spatial planning related aspects (Medeiros, 2019). These latter aspects include policy goals aiming to improve territorial accessibility. In view of this, a striking feature of post-2020 EU Cohesion Policy is the addition of a goal focused on delivering a more connected Europe.

This novel Cohesion Policy strategic focus on improving territorial accessibility does not signify, however, that current and previous EU Cohesion Policy programming periods have not been crucial to improving this policy goal. Indeed, literature on the implementation and the main impacts of this Policy proves otherwise (Berkowitz et al., 2020). As the latest Cohesion Report stresses, EU Cohesion Policy has provided critical assistance to improving public transport as well as the *trans*-European road and rail network across Europe (TEN-T). Even so, the same report recognises that more investment will be needed to complete the *trans*-European Transport networks (EC, 2017b).

In overall terms, EU border regions are generally regarded as among the least developed regions within national boundaries, from a socio-economic standpoint (Reitel et al., 2018). Under this scenario of significant socioeconomic imbalances, their economic potential is illustrated by an estimation of around two million workers crossing a European national border to go to work every week (cross-border commuters) (EUSALP, 2018). Many of these commuters use cross-border public transport. However, as several studies have pointed out, despite the advantages associated with the use of public transport for the economy, society and the environment (Kii & Hanaoka, 2003) their availability in CBR far from covers the needs of cross-border commuters, in basically all European territory (Medeiros, 2018c). This justifies why Europeans in recent surveys have placed the lack of appropriate cross-border accessibility as the third main border-based barrier in their daily lives (Medeiros, 2018b). This calls for increasing public investments in improving cross-border public transport, in particular in areas where it is still reduced (Fig. 1).

As Keeble et al. (1982) postulate, the improvement on territorial accessibility within a trading community, such as the EU, is particularly important in reducing distance costs for economic activity, and consequently to promoting economic growth. Likewise, the policy goal of increasing European integration depends on how labour mobility can be increased across EU borders (Huber and Nowotny, 2013). Even though the precise role of transport infrastructure in the process of regional development and integration is still open for debate (Vickerman et al., 1999), it is difficult to dispute the significant and positive effect of road transport investment on the economic productivity of regions (Matas et al., 2015). Ensuring cross-border public transport services would facilitate commuting and, therefore, increase the potential development by enhancing the labour market and consumers access to the market across the border.

From an environmental prism, transport is responsible for 30% of the EU's total CO₂ emissions, which have been on the rise since 1990. The carbon footprint of transport is accentuated by an unsustainable mix of mobility. For instance, road traffic causes 72% of environmentally

² https://ec.europa.eu/regional_policy/en/policy/cooperation/european-territorial-cross-border/review/

³ <https://eu.eventscloud.com/ehome/crossbordertransport/200472801/>

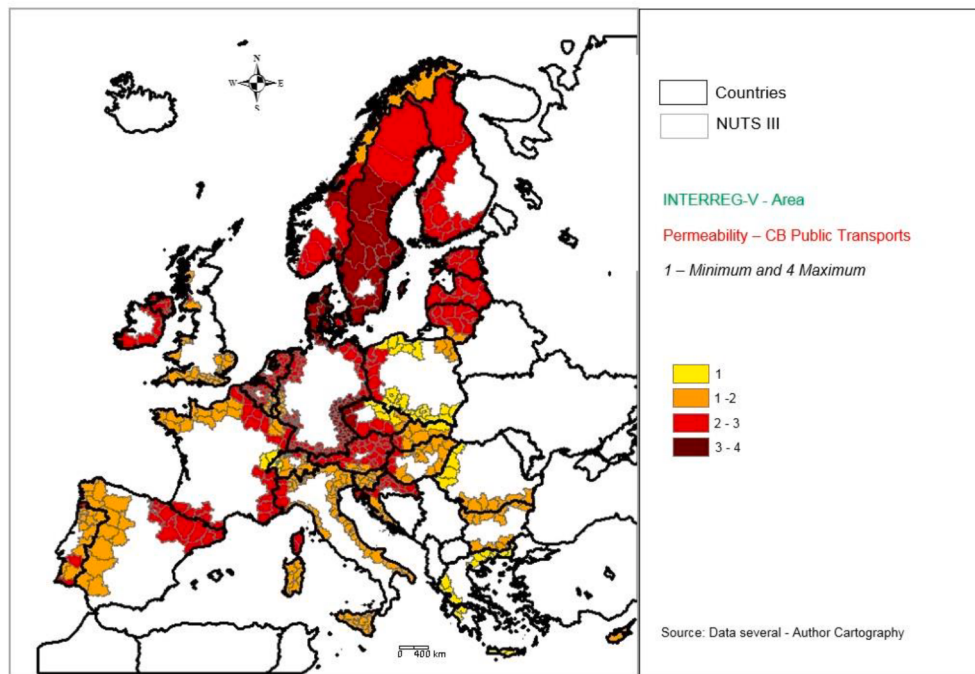


Fig. 1. Permeability index of cross-border public transport. Source: own elaboration.

harmful emissions of transport⁴. In this light, enhanced cross-border transport interactions, mainly via public transport, are not only essential for European integration (Buch et al., 2009), but also for improving environmental sustainability (Kii and Hanaoka, 2003). However, European railway networks remain a patchwork full of gaps at national borders (Schipper and Gerrits, 2018). This is especially remarkable since 40% of EU territory represents border regions, which also represent 1/3 of the EU's population⁵. For all these reasons, there are undeniable gains from reducing persistent missing rail links across Europe (Sippel et al., 2018). Ensuring accessibility in CBR via public transport would allow citizens to i) avoid longer trips to find the same service in their country that they could access closer on the other side of the border; ii) avoid making long detours to another border crossing served by public transport to reach a close by neighbouring region; iii) opt for public transport on over congested roads.

In this context, in 2014, the European Green Party in the European Parliament presented the unique project Mind the Gap! to visualise the problem – in relation to rail – and to propose real solutions to the inappropriate cross-border connections in Europe (EC, 2015). The call for a change of infrastructure investment policies at EU-level found a sympathetic ear. Since 2017, the European Commission (EC) has provided funding, under the Connecting Europe Facility, with a view to reducing cross-border gaps. This has proved to be a great success. Already during the first call for projects, the projected budget of 110 M€. was raised to 140 M€. owing to the greater demand⁶.

3. Specific challenges for accessibility in cross-border regions

The quality of transport infrastructure is regarded as a decisive factor for territorial development, since it determines location advantages relative to surrounding territories (ESPON, 2014). As such, and in view

of the general territorial development disadvantages of European cross-border regions vis-à-vis non-cross-border regions (EC, 2017a), there is a main policy challenge to improve physical accessibility in cross-border regions. Such challenges demand the development of fully integrated transport connections reaching across national boundaries (EC, 2019). This, instead, requires a cross-border planning approach (Durand & Decoville, 2018) since transport networks are still largely planned within national boundaries, thus affecting the policy goal of cross-border integration (Sohn, 2014). Amongst others, one can point out the following main challenges to improve accessibility in cross-border regions (EC, 2019: 8-9):

- Cross-border planning: transport networks and services, as well as transport infrastructure need to be jointly planned. This includes all operational aspects of transport to connect both sides of the border: ticketing systems, understandable information sources, etc;
- Harmonisation of legal and administrative procedures: there is a need to create legal and administrative standards or systems when operating cross-border transport. In this regard, mutual recognition or limited derogations from national rules could be considered on a case-by-case basis;
- Joint management structures: their use can facilitate the establishment and operation of genuine cross-border transport. These structures can take the form of a European Grouping of Territorial Cooperation (EGTC) (Evrard and Engl, 2018).

As regards the latter challenge, there are a few concrete examples in Europe on the crucial role that EGTCs can have to foment and manage cross-border transport connections. For one, the Eurodistrict Strasbourg-Ortenau, created in 2005 and transformed into an EGTC in 2010, has been successfully managing the Eurodistrict-BUS project BUS between Erstein (FR) and Lahr (DE). Indeed, this project has showed that EGTCs can take new paths and serve as a laboratory for local experimental projects.

In essence, the Eurodistrict-BUS is a special regular bus service dedicated for French employees working in German companies, introduced in 2017 for a three-year period test phase, to prove the need for such a bus line between both countries and to prepare a regular solution.

⁴ <https://www.europarl.europa.eu/news/en/headlines/society/20190313STO31218/co2-emissions-from-cars-facts-and-figures-infographics>

⁵ <https://ec.europa.eu/futurium/en/evidence-and-data/quantification-effects-legal-and-administrative-border-obstacles-land-border>

⁶ https://www.michael-cramer.eu/fileadmin/documents/Publikationen/MissingLink_EN_Einleger_2018.pdf

To develop the bus service, the EGTC cooperated with several stakeholders, only partly members of the EGTC. The Région Grand Est, the Département Bas-Rhin, the local authorities' association Canton d'Erstein were key stakeholders as they co-funded the bus, while the EGTC was the main financier and contracting authority. The district office of the Ortenaukreis (DE), representatives of the German business park 'startkLahr' and the cities of Erstein and Lahr were also involved in order to assess the actual interest in such a service and to prepare the regular solution from 2020 on. The main advantages of using the EGTC as a central platform to manage this cross-border transport project were:

1. The fact of having a legal structure and an own budget allowed to 'fill gaps' where other actors were not willing or able to act together;
2. The capacity to act as a coordinator and mediator between German and French parties, of facilitator and accelerator, as well as the pilot for experimental mobility projects;
3. The capacity to understand both national and regional contexts, legal bases and attitudes;
4. The fact that all its members have the competence for a common topic, for instance bus transport, makes it possible to centralise and create synergy effects by delegation to the EGTC.

Nevertheless, mutual competence for a common topic also represents one of the most important challenges of using an EGTC as a central platform to manage cross-border transport projects. This comes from that fact that an EGTC generally has the choice between two strategies when it is created: (i) concentration on one or few clearly defined missions and choice of its members according to the competences needed for this/those missions; (ii) definition of a wide panel of topics in order to respond to the very different needs of daily cross-border life as the Eurodistrict S-O did. In this case, the delegation of competences is more complicated, and its constitution has potentially to be adapted subsequently. Additionally, the EGTCs also face staff and financial limits for implementing projects. But they are very flexible and can easily develop appropriate approaches for permanent or transitional solutions without creating unnecessary double structures.

For its part, the EGTC Eurodistrict PAMINA, also located on the French-German border, faces three main challenges in recovering the missing cross-border railway link Karlsruhe-Rastatt-Haguenau-Saarbrücken: (i) gaining and maintaining political support; (ii) financing studies and the infrastructure works; and (iii) identifying the responsible body for each phase of the project. All three of these challenges meet in one priority in view of the upcoming 2021–2027 revision of the TEN-T: if the railway link is not integrated in the Comprehensive TEN-T network, European financial support would become nearly impossible and therefore the realisation of the reactivation itself as well. In order to tackle these challenges, a wide network is essential, and the following approach proved to ensure the development of the project:

- At all levels: The EGTC functions as a single contact point, an interface for all stakeholders and its name is closely attached to the project which makes communication around the project as a joint cross-border development easier;
- At local level: The EGTC sees the reactivation of the missing link as a central element for joint growth as well as territorial and social cohesion in the border region. The PAMINA Mobility Action Plan, comprising of around 20 cross-border transport projects involving a strong partnership of political and economic (e.g. transport associations) stakeholders within the cross-border region has been a role model.
- At national level: As the impact of the project goes beyond each of the border region involved, the EGTC and its partners work closely with the German and French government. The Aachen Treaty of 2019 on Franco-German cooperation represents a new impulse and complementary driver for the project.

- At European level: The EGTC cooperates closely with the EC (DG Regio, DG Move), the European Committee of the Regions and Members of the European Parliament.

To add an extra layer of complexity to the challenges involved in implementing effective cross-border transport connections, it is important to highlight the challenges experienced by the private sector. In this regard, Leo Express, a young European private passenger multimodal operator (train, buses, door-to-door minibuses, peer-to-peer car sharing) with executive teams in Prague, Krakow and Berlin, present an eloquent success case in exporting rail services and launching European cross-border rail services.

In summary, in 2014, the Leo Express started rail services from the Czech Republic to Slovakia. In 2017, the company started rail services in Germany between Berlin and Stuttgart in cooperation with FlixTrain (and became the first Czech passenger operator in history who started operations outside the territories of the Czech Republic and Slovakia – still a rare example of the export of rail services). In 2018, Leo Express successfully launched operations between Prague and Krakow via Ostrava, thus becoming the first foreign open-access passenger rail operator in Poland.

After years of decline, travelling by train has become popular precisely on these routes with competing operators and thus focus on passengers. The example of Leo Express, and other newcomers across Europe, shows that competition in rail has resulted in a passenger-driven focus and a huge increase in the number of passengers. Since private operators started providing open-access services on just one line (Prague – Ostrava) in the Czech Republic, there has been an increase of more than 40% in passenger-km in the whole of the Czech Republic. This has resulted in a positive impact on employment, business, but also in tourism in cross-border regions boosted by the launch of these new rail services.

4. Available supporting tools for increasing cross-border transport permeability

CBC is an EU policy goal objective since the early 1990 s, and several concrete Interreg-A projects have contributed to increase cross-border permeability across Europe (Medeiros, 2018c). Physical distance and travel time on road and rail networks is one of the reasons that constrains cross-border interactions across the EU (Christodoulou & Christidis, 2018). As such, Interreg-A has proved to be an important, although often times insufficient, policy tool to increase cross-border mobility. This was achieved via the construction of transport infrastructure (roads and bridges) and by supporting projects implementing pin-point cross-border rail and road services⁷.

The Interreg-A policy instrument is, however, financially limited (represents less than 3% of the total EU Cohesion Policy funding – EC, 2017). Put plainly, it cannot, by itself, provide enough funding to resolve expensive cross-border infrastructural gaps. Indeed, when it comes to tools, there are two different sets that can effectively tackle the challenges posed by the lack or inappropriate presence of cross-border transport connections. But these should be used in a policy context of mutual trust (EC, 2019: 9-10):

1. Financial tools: these not only include EU policies (Cohesion Policy) and instruments like the Connecting Europe Facility, which can include specific call for cross-border missing links⁸, but also local, regional and/or national funding sources. Furthermore, loans can be a useful financial tool for larger and long-term investments. In this

⁷ i.e. <https://www.interreg-central.eu/Content.Node/intermodal-service.htm>

⁸ <https://ec.europa.eu/inea/en/connecting-europe-facility>

regard, the European Investment Bank (EIB) provides funding for projects aiming to support the European integration process;

2. Legal tools: the use of a single legal body can facilitate the setting-up and the joint operation of cross-border transport projects. As such, since 2016, these cross-border legal bodies can be established in all Member States via EGTCs (regulation 1082/2006 and its amending regulation 1302/2013). In some Member States, similar legal bodies also exist under specific inter-governmental agreements (e.g. Benelux Grouping of Territorial Cooperation). In equal terms, private bodies can establish joint structures such as the European Company. Finally, the recent (May 2018) European Cross-Border Mechanism (ECBM) (Engl & Evrard, 2019) draft regulation, provides all Member States and/or regions with legislative powers, a mechanism that will allow for the legal framework of one country to apply in the neighbouring country, within the clearly defined limits of a given project.

In a similar vein, EC support for cross-border cooperation in general, considering Interreg and the “support beyond funding”, can be grouped in three types: legal, financial and political (Verschelde and Ferreira, 2019:13). The battery of tools to support cross-border transport connectivity can ultimately assist the EU goal “to create a genuine Single European Transport Area by eliminating all residual barriers between modes and national systems, easing the process of integration and facilitating the emergence of multinational and multimodal operators” (EC, 2011: 10). As regards financial tools, the traditional European Investment Bank (EIB) approach to cross-border needs was for a long time concentrated on the TEN-T framework, supplemented during the last decade by the Connecting Europe Facility (CEF), with a focus on the TEN-T Core Network Corridors due to their international dimension. Lending to CEF corridor projects forms a considerable part of the EIB transport lending, amounting to almost 40B€ out of total transport signature volume of 150B€ since 2008, representing 26% of overall EIB transport lending in the period.

So far, 130 projects along the CEF Corridors have benefitted from EIB loans. A specific evaluation of TEN-T cross-border projects⁹ demonstrated the significant added value of EIB financing. Various initiatives are associated with the reflection around macro-regions strategies (Sielker and Rauhut, 2018), as illustrated by the Drava Bridge that forms part of the European motorway corridor from Budapest to the Adriatic Sea. The EIB Advisory is able to provide direct project support, in this case by reviewing the feasibility study, options analysis, EIA procedures, CBA, Natura 2000 and project application.

This traditional approach was revised in the context of the Juncker Plan under which cross-border projects are now regarded as, by definition, additional and therefore a priority. In response, EIB Advisory (which complements EIB lending offer) has developed a new strand of activity in the field, entering into contacts with different stakeholders active in this field to initiate new forms of partnerships, notably with local authorities managing Interreg operational programmes. EIB Advisory also engaged with practitioners involved in cross-border issues to better explore the needs for advisory support, launching a specific study in 2018 to identify potential cross-border projects (MOT, 2018).

At the current stage, a window of opportunity seems to exist in relation to the convergence of policies & instruments towards the recognition of the importance of the cross-border dimension. This is illustrated by the evolution of the EFSI regulation, the EC Communication on ‘Boosting growth and cohesion in EU border regions’, the possible combination of EFSI and ESIF money under the Omnibus regulation beyond ERDF, as well as by the possibility to extend financial instruments to cross-border regions. Given their non-mature and complex nature most of the time, cross-border projects often required

specific technical, legal or financial expertise that EIB Advisory can provide through the EIAH (European Investment Advisory Hub). One case in point is the V4 Advisory Platform which seeks to support Visegrad Countries in developing those projects which have a cross-border and regional significance.

Looking forward, a mid-term option could be to identify a cross-border project to serve as a test case for bringing together, on the one hand, local and regional authorities managing Interreg programmes and large financial institutions such as the EIB dealing with large infrastructure cross-border projects, on the other. In the longer term, the possibility to set-up a dedicated financial instrument (or framework loan) to finance a local cross-border integrated programme could merit further exploration. For either option, it will be necessary to gather (i) a sufficient level of alignment of interests amongst stakeholders, (ii) local leadership to support the project all along the process, (iii) compatibility with the local political agendas, (iv) the identification of the relevant legal entity to support the project, (v) definition of the relevant size and scale of the territory to be supported, and (vi) the existence of a solid business case to ensure financial viability and sustainability.

Another crucial tool to correct potential cross-border transport traps is the production of detailed studies on this subject. With this in mind, in 2017 and 2018, a study was conducted to analyse existing cross-border rail transport connections and missing links on internal EU borders (Sippel et al., 2018). This work consisted of: (i) the setting up of an inventory of cross-border rail connections and “missing links”; (ii) the analysis of possible new rail connections and discussion of alternatives; and (iii) the identification of ‘potentially most beneficial’ projects. As a last step, the consultants discussed a number of findings and recommendations in order to facilitate good cross-border rail connections within the EU.

Out of the 365 cross-border rail connections identified and described in the inventory (Fig. 2), 176 connections were classified either as a ‘missing link’ (i.e. the infrastructure is non-operational) or as a ‘promising link’ (the infrastructure is operational but with inadequate or no passenger services). The passenger demand potential was estimated for each of these links: for routes with significant potential the infrastructure investments and operating costs were estimated. Public Service Obligation (PSO) competent authorities’ willingness to implement projects was assessed in parallel by means of stakeholder consultation.

The study’s authors stress two main findings. Firstly, most minor cross-border railway connections do not belong to the TEN-T Core or Comprehensive Network and have previously been ineligible for funding for infrastructure investments by the EU. Secondly, gaps in the cross-border passenger rail network are not necessarily the result of missing infrastructure. In many cases, there is a lack of cross-border passenger services even on operational railway infrastructure. The cooperation of competent PSO authorities and availability of funding explicitly for train operations therefore play a crucial role in the introduction or improvement of passenger services on most cross-border rail connections. Based on the results, the authors have reached the following conclusions:

- Funding for cross-border infrastructure projects should also be available for lines that are not part of the Core and the Comprehensive TEN-T networks;
- For the opening or reopening of a new railway line in many cases the full passenger potential can only be reached after a start-up phase of several years. Seed funding can help operators or competent authorities to launch such services;
- Funding for rolling stock used on cross-border railway connections could help revive cross-border services, either by reducing the operational subsidy requirement or by enabling the services to be run in ‘open access’ mode;
- A dedicated coordinator for small cross-border projects beyond the TEN-T network should be implemented;

⁹ <https://www.eib.org/en/press/all/2007-009-publication-of-new-eib-evaluation-report-evaluation-of-cross-border-trans-european-network-projects.htm>

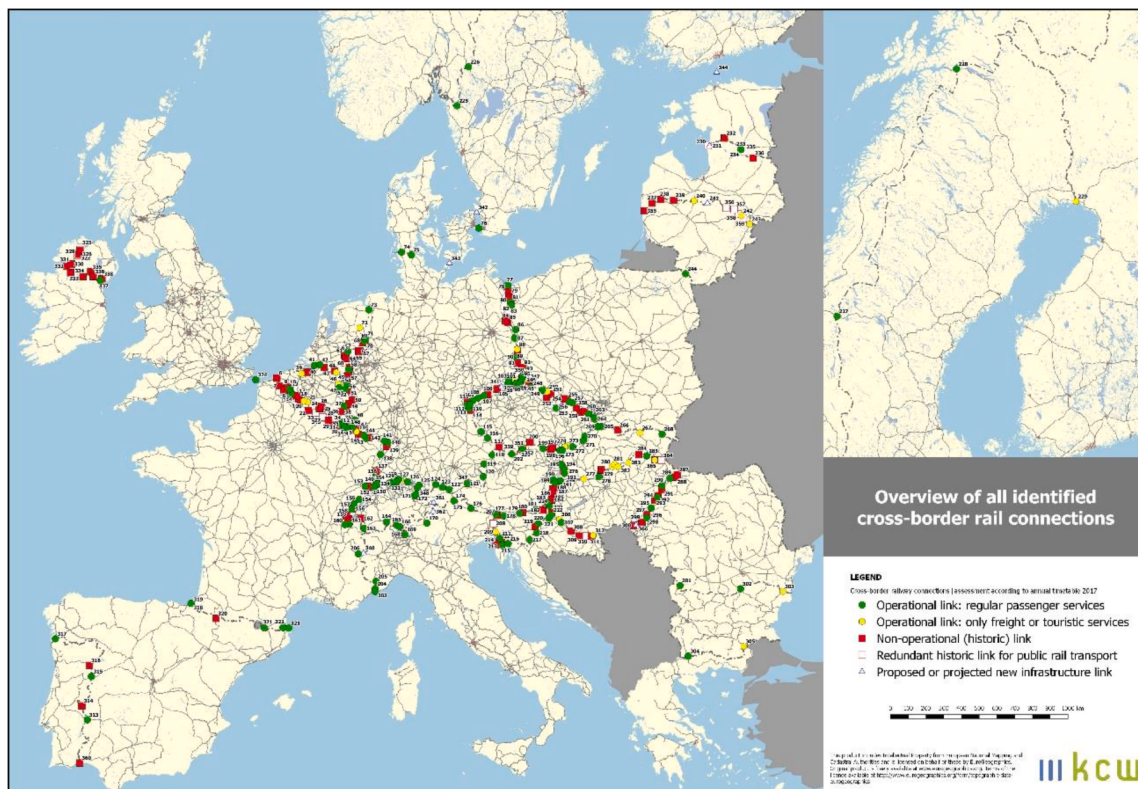


Fig. 2. Cross-border missing rail links. Source (Sippel et al., 2018).

- Better information on cross-border rail connections should be made available to potential passengers and the booking of international train journeys should be made much easier.

As seen, there a myriad of obstacles and challenges, as well as potential solutions which can be adopted to improve the cross-border public transport systems, which are summarised in Table 1.

5. Illustrative case-studies across Europe in promoting cross-border public transport accessibility

The impact of transport infrastructure on territorial development is known to be difficult to verify empirically, despite a general consensus that there “seems to be a clear positive correlation between transport infrastructure endowment or the location in Interregional networks and the levels of economic indicators such as GDP per capita” (ESPON, 2015: 1). As previously stressed, recent (2015–16) online EU public surveys have concluded that, in many instances, the level of cross-border transport service provision is unable to match the needs of several border residents, thus forcing them to use their private vehicles as the only viable means to cross the border (EC, 2016). Under this unfavourable background, this analysis presents a few ongoing projects that aim to mitigate these cross-border public transport barriers.

The analysis starts with the cross-border commuting case in the Alpine Region, which accounts for almost half of all cross-border commuter flows in the EU (EUALP, 2018). Attractive labour markets and metropolitan areas near borders are among the driving factors of increasing cross-border commuting. However, mobility networks are mostly planned from a purely national perspective and, thus, are not able to accommodate ever-increasing cross-border traffic flows, especially in public transport. Congested roads, noise, and pollution are the result (Chilla & Heugel, 2018).

To improve the situation, CBC in mobility is necessary. Its success is predicated on common objectives: (i) clear structures, responsibilities,

and legal statutes; (ii) good relationships with a willingness to compromise; and (iii) subsidiarity (Ebster & Schmidt, 2019). Facilitating cross-border mobility includes infrastructural, organizational, and network building measures. Positive examples include the tramway line Basel–St. Louis. It moves 30,000 commuters from France to Switzerland, has a connection every 15 min as well as a Park & Ride facility at the final station (Fig. 3).

Likewise, a carpooling platform in the Jurassic Arc region, where due to low population density people have limited access to public transport, succeeded to increase car pool rides among the roughly 20,000 employees of this French-Swiss border region. Previously, 90 percent of employees commuted by car, and of these, 98 percent drove alone. Finally, the Austrian network ‘WirtschaftMobil’ initiated by the Energy Institut Vorarlberg brings together big companies from Vorarlberg and partly from Liechtenstein to exchange ideas and experiences and facilitate companies’ corporate mobility.

In another case-study, a fixed cross-border tunnel connection between Helsingør (DK) and Helsingborg (SE) (Fig. 4) is set to be finished by the end of 2020 with the goal to improve connectivity between Sweden and Denmark in the Öresund cross-border region, binding the northern part of Europe better together. A fixed link between Helsingør and Helsingborg is also expected to provide a valuable ‘shortcut’ from Stockholm and Oslo to the European mainland. The strategic analysis is carried out to the requirement of the Danish as well as the Swedish administrative systems. The main challenges have been to identify the differences in indicators and appraisal for the project. More practical challenges: the use of two different traffic models and aligning the calculations and setting the framework for the financial calculations.

As regards the project to improve cross-border connections between Friuli Venezia Giulia (IT) and Land Carinthia (AU), its main goal is to make use of all the potential that rail passenger transport could express in a context characterized by a significant presence of mountain areas with low population density. Crucially, the project area was in danger of being further marginalized, after the difficult situation resulting from

Table 1

Cross-Border Public transports main obstacles and respective challenges and solutions.

Type of obstacle	Challenge	Potential Solution
Legal and Administrative	- Schedules - Prices - Lack of information - Lack cross-border planning	- Create legal and administrative standards or systems when operating cross-border transports; - Normalise schedules; - Reduce ticket prices and integration of ticketing systems; - Provide higher levels of information to the public via a multi-lingual information process; - Transport networks and services, as well as transport infrastructure need to be jointly planned; - Make use of the European Cross-Border Mechanism draft regulation.
Institutional	- Lack of joint management structures	- Implementing joint management structures to facilitate the establishment and operation of genuine cross-border transport. They can take the form of an EGTC; - Have a single (public or private) legal body with its own budget which can operate equally on both sides of the border in managing cross-border public transport (i.e. EGTC).
Infrastructure	- Lack of interoperability - Different ticketing systems - Lack or reduced presence - Reduced speed	- Reinforcing the harmonization and modernization of ticket rules and systems, as well as shared technical standards; - Implement new cross-border connections of cross-border public transports (including the expansion of railway lines) or increase their frequency along the day; - Modernise the transports to increase speed and implement direct routes.

Source: Own elaboration.

the departure of economic activities linked to the presence of customs barriers. This resulted from the decision of the railway operators, made operational in 2009, to interrupt all passenger rail connections, during the day. In order to reverse this situation, the Mi.Co.Tra. project was defined and approved by the INTERREG IV IT-AU Programme in 2010. The main goal was to reconnect this cross-border area to the network of public passenger transport services, to provide an opportunity for the development of that territory. This resulted from the commitment and cooperation between public administrations, transport companies, and other stakeholders.

After a pilot connection between the railway hubs of Udine (IT) and Villach (AT), activated for a year, from June 2012 onwards, thanks to the co-financing made available by the Mi.Co.Tra. project, the current configuration of the cross-border service was reached. As a consequence, the extension of the connections to Trieste on weekends was achieved, as well as an increasing availability of new long-distance rail services. This project is in constant evolution, linked both to the increasing attractiveness of tourist train-bicycle mobility, and to the willingness of the territories to further develop the longer-distance railway connections, which will be enhanced with the entry into service of the new interoperable trains purchased from the Friuli Venezia Giulia Region. The 56% increase in passenger numbers between 2013 and 2018 (+18% estimated 2018–2019), together with the 186% increase in the number of transported bikes (+15% estimated 2018–2019, as shown in Fig. 5) represent just some of the positive results achieved by the project, which has its most valuable element in the positive effects of the rail connection in favouring the economic development and the protection of the

cross-border mountain territory.

The Grand Est administrative region in France is distinguished by its unique cross-border situation in Europe. Bordered by four countries (Germany, Belgium, Luxembourg and Switzerland), it represents 760 km of borders and is crossed by four eurocorridors that are the support by numerous transit flows, as much for the travellers as for the goods. This situation presents itself as follows:

- More than 170,000 cross-border commuters (45% of the total in France);
- An overlap of functions related to transport infrastructures which experience significant daily border flows between the main traffic generator hubs of the Union (the North Sea, the Mediterranean, the Atlantic seaboard, the Rhine area...).

The main routes that regularly present gridlock situations are those linking the Grand Est region to the Grand Duchy of Luxembourg and Switzerland. With more than 100,000 cross-border commuters currently recorded, predicted to rise to 130,000 by 2030, the main road (A31) and rail lines are jammed at all the peak times. The 35,000 border workers crossing into Switzerland on a daily basis are amassed along a narrow border, which increases function conflicts on the existing infrastructures (A36). The border with Germany is much more extended and includes more crossing points on the roads. The 45,000 border workers are therefore less penalised by the gridlock, except for the Kehl-Strasbourg and Forbach-Sarrebruck roads.

The Region prioritizes its intervention by focusing on the ‘mass transit’ of travellers towards Luxembourg (Metz-Luxembourg ville line) and Switzerland (new rail link of the EuroAirport), with major investments enabling significant benefits concerning the reduction of greenhouse gases. Furthermore, putting back the existing lines to the required level will enable the construction of an ambitious cross-border project coordinated with three Länder, aiming to multiply by 10, or even 20, the direct service on the seven existing lines by 2024, and coming with a cross-border rolling stock acquisition program unique in Europe (376 Million euros).

Beyond the 11 rail corridors to be strengthened, other corridors can be developed in the medium to long-term to accompany developments cross-border mobility. Thus, four of the most promising projects among the 19 Missing links projects identified across the Union are situated in the Grand Est Region. The reinstatement of the Givet-Dinant line would therefore enable to link two cities that share a strong common history, and would contribute to renew the rail links between France and Belgium in an area between Maubeuge and Longwy (250 km) which is currently lacking. The reinstatement of the Haguenau - Karlsruhe and Colmar – Freiburg lines would allow to restore the continuity of long-distance itineraries (Luxembourg – Nuremberg) for the first line, and would ensure a rail link between two agglomerations of more than 100,000 inhabitants, that is lacking, for the second line. Also, intensifying the connections between Metz and Trier would reinforce the existing partnership between these two cities within the Quattropole.

Similarly, on the area covering the Italian municipality of Gorizia (34,411 inhabitants) and the Slovenian municipalities of Nova Gorica (31,799) and Šempeter Vrtojba (6,234) the European CB PUMP project, financed by the EU *b-solutions* initiative, had the objective of laying the foundations for the creation of a future cross-border urban transport system between the three cities. The obstacles that influence the creation of a single and integrated transport system are:

- The presence of a different tariff system (in Gorizia a tariff is applied to tickets while in Nova Gorica and Šempeter-Vrtojba urban public transport is free);
- The absence of adequate information and signs in both languages;
- The limitations contained in EC Regulation no. 1073/2009 of the European Parliament and of the Council on “common rules for access to the international market for bus transport services”. In particular,

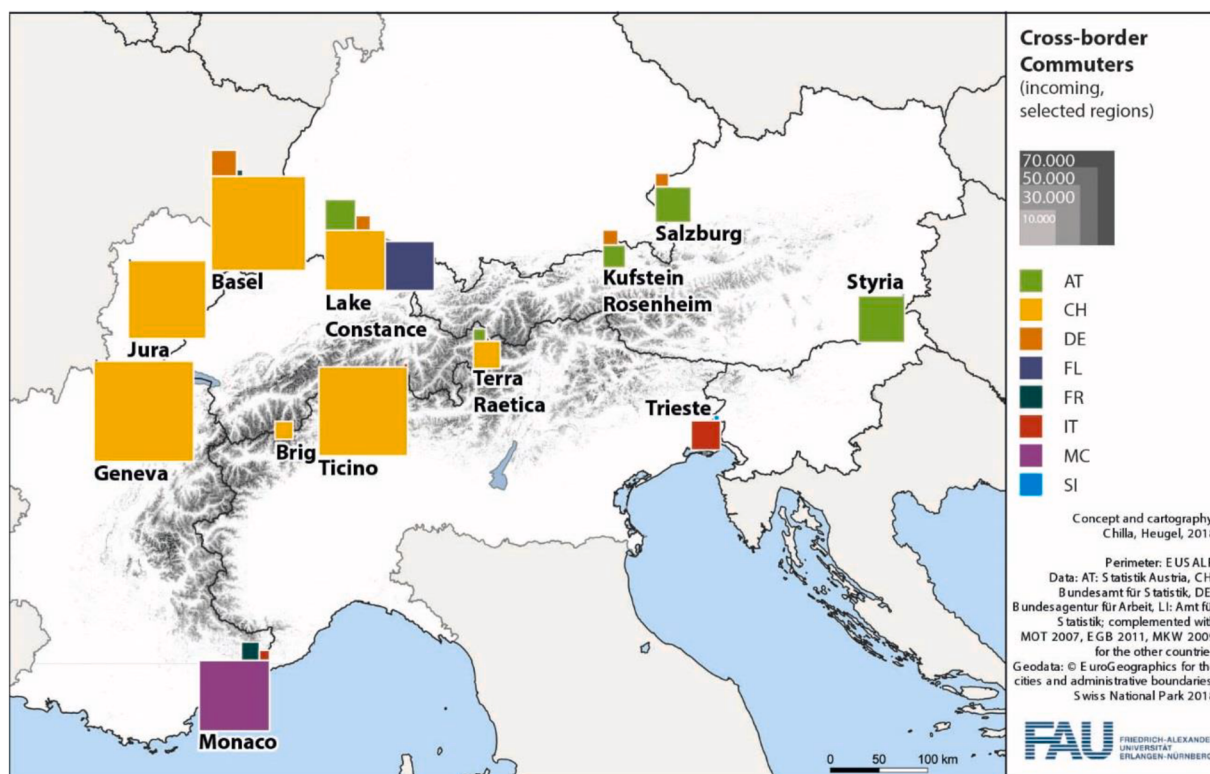


Fig. 3. Incoming cross-border commuting in selected hotspots in the Alpine region. Source: (Chilla & Heugel, 2018).



Fig. 4. Cross-border transport connection between Helsingør (DK) and Helsingborg (SE). Source: own elaboration.

articles 8.4e and 15c impose restrictions on boarding and disembarking operations in cross-border areas for passenger transport.

Although there are provisions of Italian and Slovenian national and regional law (see Decree of the Italian Ministry of Infrastructure n.2606/2008, Regional Law FVG 23/2007 and Slovenian Law on road transport n.39/2013) which constitute a first legal nucleus useful for the development of a shared solution, the EGTC GO proposed a series of practical actions to facilitate the establishment of a network appropriate to the needs of a cross-border area and its specificities. First of all, the creation

of a local technical committee including the two operators currently active in urban transport (APT and NOMAGO), the EGTC GO, with an overall coordination function, and GOLEA, the Goriska Energy Agency of Nova Gorica as an indispensable partner for technical support in the creation of a network that respects European standards regarding sustainable mobility and alternative energy sources.

Subsequently, a negotiating table was set up including the FVG Region and the Ministry of Transport of the Republic of Slovenia to precisely establish the details of the geographical area within which the provisions contained in articles 8.4 and 15c of EC Regulation n. 1073 /

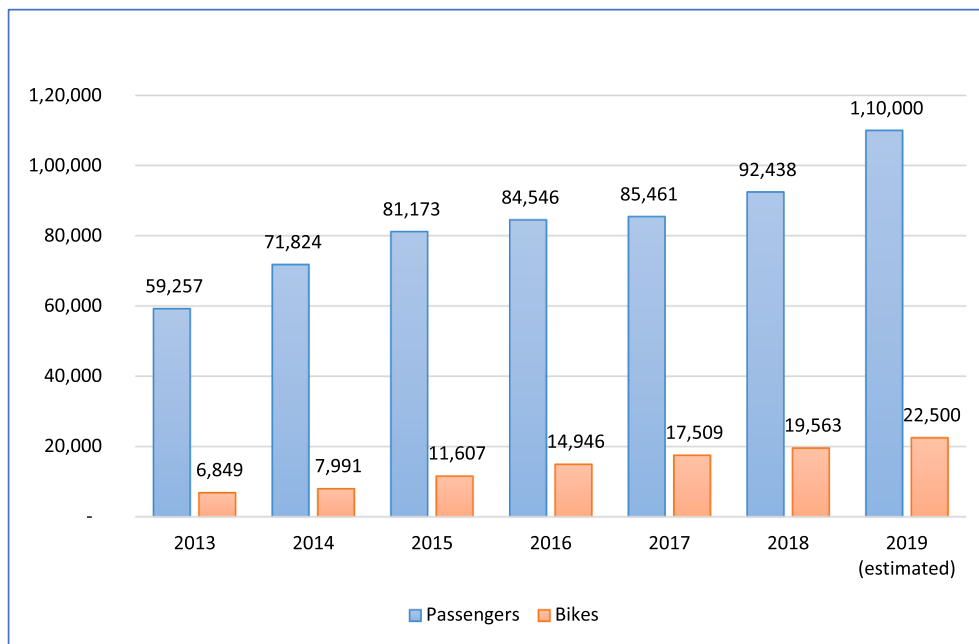


Fig. 5. Change in number of passengers and bikes transported per year in the Mi.Co.tra railway service. Source: own elaboration.

2009 are no longer applicable. Moreover, the content of article 25 of the same Regulation asserts that “member states may conclude bilateral and multilateral agreements on the further liberalisation of the services covered by this Regulation, in particular as regards the authorisation system and the simplification or abolition of control documents, especially in border regions”, so that the cabotage system does not apply within 40 km of the border line, thus liberalizing the use of international transport and qualifying it as urban transport in the three municipalities, even if belonging to two different member states.

Thanks to the project activities, a draft bilateral agreement was drawn up as well as a new structure for the cross-border lines, approved both by the manager of the public transport services of Nova Gorica - NOMAGO and by the manager of the public transport services of Gorizia ATP. In this way, citizens will finally be able to freely use a cross-border urban line between the three cities without cabotage restrictions and by

relaunching the use of public transport in the area.

Finally, TEN-T represents one of the most tangible EU policies in cross-border regions impacting on mobility. It generates new territorial dynamics, reshaping mobility and public transport’s accessibility by improving railway interoperability and removing infrastructural bottlenecks. The Mediterranean Corridor provides a good example. It crosses seven cross-border regions from Spain to Ukraine (Fig. 6). The Franco-Spanish case is of high interest, as national borders have historically marked the infrastructural interruption between French and Spanish railway systems: different legislations, procedures and technical aspects (like electrification, security systems, track gauge, etc.), divergent national strategies for transport planning and unsynchronized time schedules still represent the main obstacles to improve cross-border permeability and to provide better transport.

Local and regional stakeholders are actively engaged in cross-border



Fig. 6. Cross-Border Section of the Mediterranean Railway Corridor. Source: own elaboration.

initiatives (Euroregions, Eurodistricts, Eurocities, EGTC or partnerships in Interreg projects), but often Railway Corridors seem difficult to be integrated in their agendas, due to inadequate partnerships (EPM Euroregion) and to the lack of funding (Catalan Eurodistrict and other local initiatives). In order to boost better transport for cross-border regions, TEN-T and European Territorial Cooperation should converge in one innovative vision (conceptually and regulatory) as well as incorporate EU's existing financial tools. The Med Corridor Governance could, for example, adopt the EGTC legal status benefitting the existing Med Corridor Working Group on Cross-Border Sections to promote a wider and shared territorial cross-border vision, boost knowledge transfer and smarter EU funded projects. In this regard, the European Cross-Border Mechanism should receive greater political backing.

6. Conclusions

The Single Market and freedom of movement are fundamental EU rights. Nowadays, however, incompatible administrative and legal frameworks still create all sorts of barriers restricting the possibility for EU citizens to move, work or study in a contiguous border region to that where they live. In this regard, the lack of well-developed cross-border public transport services on offer across the EU has been identified as being one of such crucial systemic barriers. It has been estimated that only 44% of EU border residents has access to rail services. This and other barriers push cross-border commuters away from sustainable collective travel options towards single occupancy vehicle use.

The above-mentioned issue shows yet another critical cross-border transport challenge, namely financing. It is undeniable that well-functioning cross-border mobility based on public transport as the backbone is a very powerful means of improving the quality of life of border populations. However, cross-border services are not designed to become economically profitable. It is, therefore, crucial that public budgets at European and national levels keep on investing in missing rail links and bus network gaps along the borders, together with providing grants under Interreg programmes or executing the internalisation of external costs strategy. Also, given that border regions perform generally less well economically than other regions, investments in local public transport can pay off in a plethora of ways, including economy, jobs and environment benefits.

It is therefore encouraging to see that many cross-border transport challenges and opportunities are currently entering a large-scale debate at the EU level. Nevertheless, as public transport is chiefly a local regulatory competence, local public authorities should be more than ever engaged and encouraged to work together to find optimal solutions among a multitude of languages, regulatory frameworks, technical protocols, procurements regimes and energy power currents, to name just a few of the most obvious issues.

Moreover, the development of local cross-border public transport is not only pivotal to reducing the earlier mentioned barrier effect on citizens' mobility, but also to help unleash the development of a massive potential of cross-border regions. Besides the growth and touristic potential, developing cross-border transport is also beneficial in terms of accessibility, social and employment interconnectivity, territorial and social cohesion, not to mention the positive environmental impacts. It is estimated that removing obstacles to cross-border interactions could lead to the creation of 1 million new jobs in border regions across the EU. Developing public transport networks would make a significant contribution to this gain.

Substantively, achieving a public transport-oriented modal split is essential to facilitate sustainable, efficient but also climate friendly local passenger transport between regional borders. The presented case studies have demonstrated numerous solutions to promote various aspects of cross-border transport, for instance developing common fare policies or ticketing systems, harmonising timetables and making information accessible to passengers, introducing zero-emission vehicles or rolling stock, providing infrastructures operability or creating

cooperation platforms involving a plethora of related stakeholders.

Setting up and operating joint cross-border transport services integrated with the networks on both sides of a borderline is not an easy task. However, as has been demonstrated throughout this paper, this can be made easier if there is institutional goodwill and if the operation in question is managed by a single legal body, such as an EGTC, or a Joint management structure which facilitates cross-border planning and the harmonisation of legal and administrative procedures. The latter require, amongst others, the (i) creation of legal and administrative standards or systems when operating cross-border transports; (ii) normalisation of schedules; (iii) reduction of the prices of tickets while integrating ticketing systems; and (iv) improvement of information provided in several languages.

As seen along the text, considering the tools to implementing potential solutions, despite its positive contributions, the EU Interreg-A programmes do not provide enough funding to solving the needed modernization of cross-border accessibility infrastructure. Hence, these programmes need to be complemented with a variety of financing sources. These include other EU sources of funding within EU Cohesion Policy, the Connecting Europe Facility. The EU b-solutions project can also contribute to overcome legal obstacles. Besides national, regional, and local development funding, loans can also serve the goal of financing larger and longer-term investments commonly related with the transport sector. For this, the European Investment Bank provides funding for projects which support the European integration process.

As things stand, the challenges ahead to reducing the current cross-border accessibility barriers across Europe related with the use of public transport are immense. The presented case-studies have shown, however, that improving cross-border transport accessibility facilitates all domains of territorial development. For this, appropriate financial and legal tools are required at all territorial levels to create a genuine Single European Transport Area.

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