

Beckmann, Klaus et al.

Research Report

Spatial and transport development in European corridors - Example corridor: Orient/East-Med. Connecting and competing in spaces of European importance

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Position Paper of the ARL 112

SPATIAL AND TRANSPORT DEVELOPMENT IN EUROPEAN CORRIDORS – EXAMPLE CORRIDOR: ORIENT/EAST-MED

Connecting and Competing in Spaces of European Importance

Position Paper of the ARL 112

SPATIAL AND TRANSPORT
DEVELOPMENT IN EUROPEAN
CORRIDORS – EXAMPLE CORRIDOR:
ORIENT/EAST-MED

Connecting and Competing in Spaces of European
Importance

Mostly grammatical forms were chosen to include female and male persons equally. If this was not possible, a gender-specific form has only been used for better comprehensibility and for reasons of simplification.

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SPATIAL AND TRANSPORT DEVELOPMENT IN EUROPEAN CORRIDORS – EXAMPLE CORRIDOR: ORIENT/EAST-MED

Connecting and Competing in Spaces of European Importance

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About the International Working Group

For four years, a group of experts from public administration, academia and practice has collaborated to highlight the important aspects of corridor development, to provide a first integrated assessment for the entire corridor system and to prepare a draft of an integrated strategy. Of course, this is just a beginning and should be followed up by additional initiatives to produce an organisational framework that will allow intensified collaboration on the corridors, which are so important for the cohesion of Europe. Moreover, we hope that our insights will also stimulate the development of the OEM Corridor and similar investigations into other European corridors. Due to the international nature of the project topic, the working group comprises prominent experts of spatial development and infrastructural engineering from both academia and from planning practice, and from various countries along the corridor.

Introduction and outline

The International Working Group Spatial and Transport Development in European Corridors – Example Corridor: Orient/East-Med officially started in May 2015 with the first meeting of the core group in Berlin. Several additional bi-annual meetings took place at some of the hot spots of the corridor: Prague, Vienna, Athens, Belgrade, Sofia and Hamburg. At these meetings, important aspects of corridor development were discussed with experts of the respective countries, regions and cities. In addition, the group established its own research efforts and investigated neuralgic points in the corridor to develop step-by-step suggestions intended to lead to improvements in various situations. It quickly became apparent that, in comparison to the top-ranking road systems of the corridor, it was the railway system that urgently needed improvement.

In the group's opinion, an attractive railway system with sufficient capacity and quick connections would enable:

- > The promotion of the much-discussed social cohesion of the population along the corridor, and, due to the urgently needed investments, the shortfall in economic development could be decreased, especially in southeast Europe. This could also collectively strengthen the economic competitiveness of Europe in general.
- > The transfer of freight transport from road to rail, called for by the EU, especially in the case of the OEM Corridor, would contribute to balancing hinterland transport from the maritime harbours. The overloaded hinterland corridors in northwest Europe could be relieved of considerable traffic if the harbours of Piraeus and Thessaloniki and the Adriatic harbours played a stronger role. In addition, unnecessary Alpine crossings by freight transport could be avoided.

- > The use of appropriate integrated projects to support promising opportunities for sustainable settlement and spatial development in the catchment areas of capable, efficient railway stations and in hub areas of public transport.

These central points have prompted the group to concentrate their efforts on the integrated railway and spatial development of the corridor. The central goal is to publish the findings gained over the course of several years of cooperation and to discuss these with selected actors in the forefront of the corridor's development.

About the Corridor

The corridor leading from Hamburg to Athens, previously defined as the infrastructure project no. 22 in the European Union (EU) TEN-T (Trans-European Transport Network) policy, and as the TEN-T Orient/East-Med(iterranean) (OEM) Corridor as part of the more recent EU Core Network, is a key cross-European transport corridor, for which the programme "Connecting Europe Facility" allocates funds for infrastructure development. Over its length of more than 2,500 km, it has the capacity to directly connect various ports in Europe: from the ports in northern Germany (e.g. Hamburg and Rostock), across the Danube ports (e.g. Vienna), to the Mediterranean seaports (e.g. Thessaloniki and Athens). Furthermore, as it directly intersects the Danube River, the ports of the Black sea are also easily approachable via the OEM Corridor. In addition, via railway branch lines, the corridor is also connected to the Adriatic ports (e.g. Koper and Rijeka).



Fig. 1: The Orient/East-Med Corridor including the Western Balkans transit route. Source: ETH/Chair of Spatial Planning and Development, A. Perić/M. Niedermaier

However, the OEM Corridor is currently characterised by genuine shortcomings across various domains:

- > It runs through states with traditionally poor economic performance in comparison with the developed Western European countries.
- > The infrastructural network also significantly lacks efficiency, as seen in numerous missing links and bottlenecks.
- > Administrative obstacles caused by mistrust among stakeholders and among various authorities of the nation states are common practice in cross-border issues.

The plan to strengthen its transport features indicates that the OEM Corridor is considered as an axis with huge potential for triggering spatial development, ultimately leading to territorial cohesion in Europe. Therefore, as an approach complementary to official EU policies in the domain, the ARL project considers two main routes in the Balkans – through the EU states (Romania and Bulgaria) and through the non-EU states (Serbia and the Former Yugoslav Republic of Macedonia - FYROM) (Fig. 1).

1 Assessment Positions

The working group jointly assesses the following eight positions on the strengths and weaknesses of the corridor:

Europe's canvas of languages, cultures and thinking patterns: value and asset

The European continent has many different languages, cultures and thinking patterns. To defend this diversity and its values is one of the greatest challenges of the future. However, one source of problems lies in the inequality of today's distribution of economic wealth. Although the history of Europe is marked by its many bloody wars, the lessons from history indicate that peace can only be maintained by exchanging, compromising, collaborating, shared thinking, acting and deciding on projects which lie in the common interest of Europe. Only thereby can a shared, stable, self-supporting and resilient Europe be created. The challenges and obstacles deriving from these circumstances can be seen in this corridor in a nutshell. Many countries in this region joined the EU in past decades with huge, continuing fluctuations in national income, infrastructure development and planning culture. Additionally, initiatives from outside, such as the Chinese Silk Road project, will influence further development.

A lack of joint projects of common interest

Visible, nationally linked projects of common European interests can demonstrate the value and meaning of cooperation to the citizens of Europe, as more and more people are involved and can share their experiences. We hypothesise that the situation in the participating countries, and for Europe in general, can be improved through sustainable spatial and transport development, as this will offer the means of equalising the opportunities available. As in earlier times, the further development of the railway system, as the strategic backbone for such a network, is a means for supporting cohesion with better facilities for connecting both passengers and goods between European nations, regions and cities and via multimodal harbours to other continents.

Inconsistency in investments for integrated spatial and transport development along the corridor

Corridor development leads to spatial benefits by improved railway accessibility in addition to the benefits of travel-time savings, increased safety, reduced environmental impacts and reduced traffic congestion costs. Railway development is particularly important here, because of its strategic

importance for sustainable spatial development, inter alia affecting settlement structures with the railway stations as crystallisation points. Particularly along the OEM Corridor, considerable potential exists for inward settlement development around the most important railway stations in the great cities (hot spots) along the corridor. In areas like the Hafen City of Hamburg, the main railway station in Berlin and Vienna's new central railway station, impressive projects are already tapping into this potential. In Budapest, Belgrade, Sofia, Thessaloniki, Athens and Patras enormous underexploited land reserves can be found. The development of these reserves can be initiated through railway stations, offering access to competitive rail services.

With this insight in mind, the big challenges do not concern the poor capacities of the transport system, but rather ways of reducing travel times for interregional and international trains, implementing improvements for intermodal freight transport, and, finally, initiating inward development through regenerating urban brownfields.

Reliable, seamless railway operation for freight and passenger transport can be implemented with the planned base tunnel Dresden-Prague or the upgrade of the existing Thessaloniki-Athens-Patras line. Both projects will allow stepwise development along the existing network. For other sections and hot spots of the corridor, however, appropriate solutions still need to be developed. We believe that for these cases, more intensified collaboration between the different state levels of the nations involved, the appropriate actors from the EU and other relevant stakeholders would improve the situation in what we call 'Spaces of European Importance'.

Inefficient flow between maritime ports and hinterland

The catchment area of the southern harbours of the corridor (Athens, Thessaloniki) is limited, while the majority of the corridor is served through the port of Hamburg. As the global flows from and to Asia increase, strong investments in the southern part of the corridor could lead to a better balance in the flow of freight traffic inside Europe. With better connections to the southern ports, not only would the Balkan countries be better served, but also Vienna and Budapest, important metropolitan regions of Europe. On the one hand, this would relieve the northern port's over-capacity hinterland connections and the people living in the hinterland from transit traffic. On the other hand, a strong OEM Corridor would also serve as the backbone of a strong land connection from Central Europe via Bulgaria to Turkey and Iran.

Long travel times for passenger and freight transport

For long-distance motorised traffic from the Balkans to North and Southeast Europe, the same short travel times have been achieved as in other European regions. There are, however, numerous routes in South-East European rail traffic where a trip of the same distance takes nearly twice as long as in other European regions: e. g. Prague-Vienna (4 hours) and Sofia-Thessaloniki (8 hours) are both roughly 300 km apart from each other. Large increases in travel time are also caused by considerable waiting times at national borders for cross-border freight transport.

When shortening travel times, it must be ensured that the targeted sections for long-distance passenger transport are roughly three to four hours apart. This would produce sustainable alternatives to air travel and motorised traffic. For example, continuously improving efficiency on the Thessaloniki-Athens-Patras route would contribute towards a shift in the modal split towards the railways, enhance the city network in Greece, strengthen decentralised development, and open new perspectives for a sustainable tourism industry.

A lack of cooperation

Integrated spatial and transport development requires civil society participation and an intensive exchange of knowledge and experience across national borders. This intensive exchange needs to take place in a multi-level environment, between different territorial levels, sectors and transport modes. This is also true for the implementation of railway projects, because the formal spatial

planning instruments are based on the specific legislation of the member states. Experience shows that there is a lack of timely involvement of spatial planning instances in the development of plans that require voting or coordination. For example, in the Rhine-Alpine Corridor section of the southern Upper Rhine (Offenburg to Freiburg), over 15 years were lost because efforts to identify a route that was acceptable in spatial planning terms only started in the year 2000 (shown in xxx). In comparison, the Dresden–Prague section of the OEM Corridor was handled in an exemplary way through early informal exchanges with the relevant actors involved in spatial development on both sides of the border. The experience gained from this cooperation should be applied along the entire corridor.

The European added value of the OEM Corridor development

For an international corridor like the OEM, the European added value is of particular importance: This value can be defined as the net benefits occurring in all countries together besides the benefits of a country from a particular investment. European added value can be induced by enhancing border-crossing corridor sections, connections to the overall network, and the removal of the abundant administrative or technical bottlenecks.

A deplorable example for weak cross-border performance is the Hungary to Greece corridor segment, with serious delays at the border crossings due to a lack of technical harmonisation and customs activities. Even gradual improvements here would significantly improve European added value. An example for European added value created by a new infrastructure link can be found in the planned Dresden to Prague route. Besides other benefits, travel time will be reduced from more than two hours to less than one hour, with the result that the regions on both sides of the border will move closer together. New opportunities for the inhabitants thus emerge, such as commuting, education, tourism, and trade. At the same time, the freight trains will be shifted from the Elbe valley to the new route, significantly reducing noise pollution in the Elbe valley – an important tourist area and nature reserve on both sides of the border.

‘Belt and Road’ Chinese Silk Road Initiative: a strong EU response needed!

Improving the international situation is definitely in the common interest, as it will support a more balanced flow of goods throughout Europe in the long run. The seaports in southeast Europe will play an important role because the main maritime trading flow is oriented towards Asia. The Piraeus development as a strategic part of the Chinese New Silk Road initiative, officially called the ‘Belt and Road Initiative’ (BRI), could be seen as beginning to develop Mediterranean ports as European entrance ports for Asia-Europe sea trade routes. It can be assumed that on the Maritime Silk Road corridor (as part of the BRI) more Hellenic and Adriatic ports (e.g. Patras, Piraeus, Thessaloniki, Bar, Rijeka, Koper and Trieste) will gain importance compared to the northern European ports of Rotterdam, Hamburg and Antwerp (Fig. 1). The example of Piraeus provides a first impression of the associated demands of a modified sea port setting for the OEM Corridor. Some of the strategic Chinese investments have already been implemented, e.g. improvement of the railway link between Budapest and Belgrade. Hence, the Chinese strategy of the New Silk Road needs a strong European response. The Balkan route can play an important role here as a quick hinterland axis, in addition to the official route over Bulgaria and Romania, which remains undisputed.

2 Positions and Recommendations

The working group shares the following seven positions and recommendations on the future development of the corridor:

Sufficient capacity for freight and passenger transport

We deem the construction of a double-track corridor for a capacity of ca. 250–280 trains as reasonable and necessary. As a realistic mix of passenger and freight transport, the following train numbers are given per day and in both directions:

- > 130–150 freight trains, of which 100 are estimated to be in transit (150 freight trains correspond to about 25 % of the capacity over the Alps after the opening of the Brenner Tunnel, including the Gotthard and Lötschberg tunnels)
- > 30–40 long-distance trains
- > 40–80 local trains.

The OEM Corridor runs continuously through the EU member states from Budapest via Arad, Craiova and Sofia to Thessaloniki. This route is 265 km longer than the connection via Serbia and FYROM. The low transport volume in the southern part of the route indicates that a future update of the single track is sufficient. Instead of investing in an expensive double track line here, the existing single track from Niš via Skopje to Thessaloniki should be improved simultaneously. This will allow a more effective use of European investment by providing increased and redundant connections and thus improving reliability of access to the whole region.

Speeds as fast as required, not as fast as possible

Passenger service speeds should be developed based on a cross-border operational concept, which predefines desired travel times and necessary capacities between important nodes for a long-time horizon. Based on such a concept, individual lines should not be designed for speeds that are as fast as possible, but rather as fast as required to offer regular and convenient connections for train passengers at the node stations. The experience from Western European projects shows that lines offering the fastest possible speed for passenger traffic lead to conflicts in the scheduling of freight and passenger trains. Freight trains can consequently be forced back to the existing, underdeveloped lines, hindering an improvement for the situation of rail freight traffic. Also, a high-speed orientation requires high investment and bears the risk of cannibalising domestic demand for conventional rail services.

In comparison, mixed transport routes, appropriately modernised and enlarged, are more economical to operate. As a rule, line speeds of 160–180 km/h are considered adequate. Within most sections, this is a sufficient service speed for travel times of three to four hours between the important metropolitan centres as well.

Separation between freight and passenger transport in densely settled metropolitan regions

For safety and capacity reasons, a separation of passenger and freight traffic in densely settled agglomerations is necessary and recommended. The access to Piraeus exemplifies this situation: for passenger traffic, the modernised rail line from the main Athens station to the largest European passenger harbour of Piraeus is expected to open by 2020. The separate freight bypass to the commercial harbour of Piraeus is already in service. This bypass offers appropriate infrastructure for freight traffic and relieves the inhabitants of Athens from the emissions and risks resulting of freight transit through the densely settled city centre.

Stepwise development of passenger transport

Experience shows that with travel times of up to four hours, railway routes can be very competitive even compared to air transport. Accordingly, travel times on important transport sections should be gradually reduced to a max. of four hours in the long run. Table 1 illustrates such sections, depicting current travel times against the projected travel times in 2030. Improving travel times requires not only infrastructural improvements, but also efficient operation. One measure could be reducing stops for border controls and even conducting non-Schengen border controls in the train.

Relation	Rail distance	Travel Time 2018 / average speed	Travel Time 2030 / average speed
Hamburg-Berlin	300km	01:45 / 170km/h	01:45 / 170km/h
Berlin-Dresden-Prague	375km	04:15 / 90km/h	03:45 / 100km/h
Prague-Vienna	400km	04:00 / 100km/h	03:45 / 110km/h
Prague-Bratislava	400km	04:00 / 100km/h	04:00 / 100km/h
Vienna-Budapest	250km	02:45 / 90km/h	02:30 / 100km/h
Bratislava-Budapest	225km	02:30 / 90km/h	02:30 / 90km/h
Budapest-Belgrade	375km	08:15 / 50km/h	02:45 / 140km/h
Belgrade-Sofia	450km	10:15 / 40km/h	08:00 / 60km/h
Sofia-Thessaloniki	350km	07:30 / 50km/h	07:00 / 50km/h
Thessaloniki-Athens	500km	05:30 / 90km/h	04:00 / 120km/h
Athens-Patras	225km	03:00 / 70km/h	02:30 / 90km/h

Table 1: Travel times between nodes today and in 2030. Source: P. Endemann

Despite the modernisation of the entire corridor, travel times will remain too long for extensive passenger transport from one end of the corridor to the other – except for tourism. However, the potential improvements discussed in this position paper may widen the catchment areas along the corridor.

Joint strategy for railway development

The working group has ascertained that upgrades and improvements on the corridor will enable considerable reductions in travel time. Individual sections will be part of the European high-speed train network. On most sections, however, a continuous travel speed for passenger trains of 160 km/h appears to be sufficient and reasonable. We suggest establishing a concept timetable that includes all nations involved along the entire corridor. This concept also determines international coordinated time slots for freight trains. Based on these, the detailed allocation of train paths further on can be assigned by the existing coordination platform of the Rail-Freight Corridor 7 (RFC7). Due to the long-term orientation of such a concept timetable, basic assumptions about future provisions of freight trains need to be considered: we assume a demand of up to 150 international freight trains a day on the central sections of the entire corridor. In comparison, this is equivalent to about 25% of the combined capacity of the transalpine base tunnels Lötschberg, Gotthard and Brenner. To oversee the full number of trains along the individual sections of the corridor, the frequency of the intended local and long-distance passenger transport provisions needs to be considered, as well as the expected number of national freight trains. Figure 2 illustrates a possible scheme to present the required capacities along the exemplary segment Sofia-Piraeus.

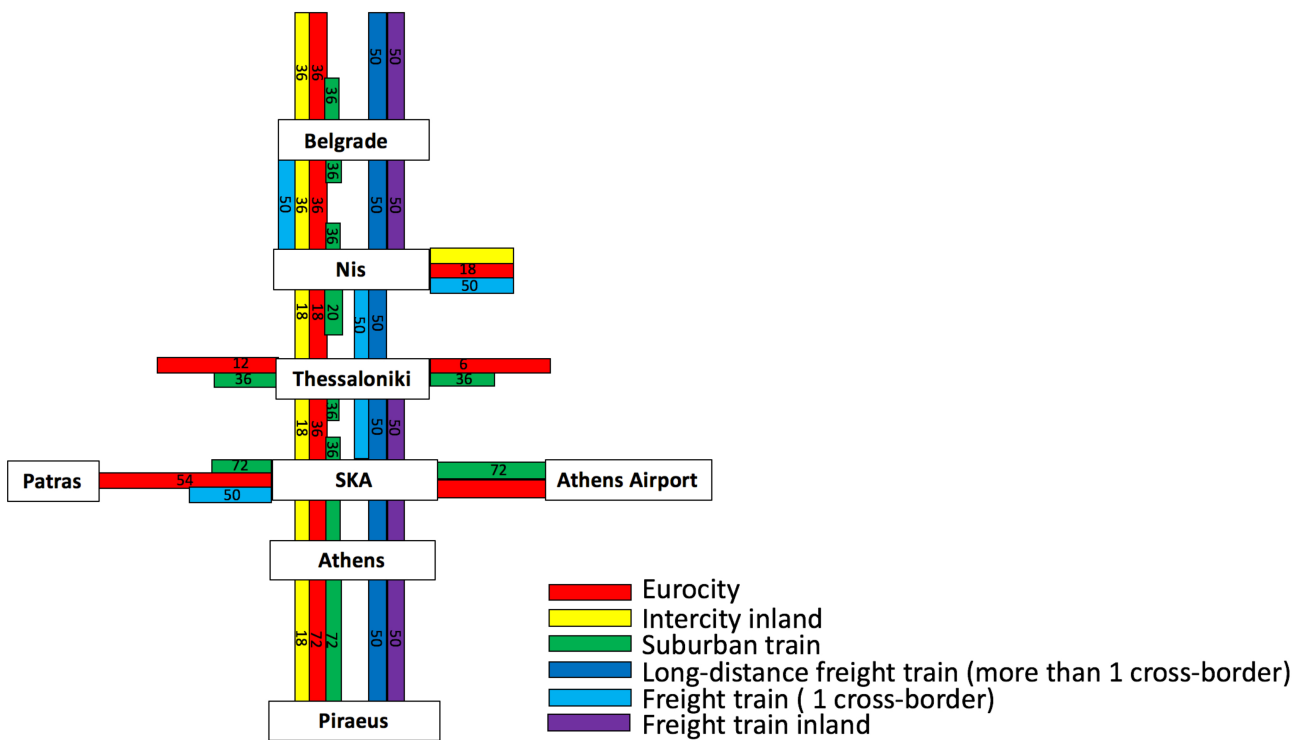


Fig. 2: Demand management in local and long-distance passenger transport and freight transport between Belgrade and Piraeus.

Source: H. P. Vetsch

Joint strategy for integrated spatial and transport development

Transport infrastructure not only has an important influence on transport flows and the environment but also on spatial planning in the regions. According to INEA (Innovation and Networks Executive Agency), there are usually four criteria used for evaluating projects for European funding: relevance, maturity, impact, quality. To ensure that attention is also given to the spatial planning effects of the project, there should be separate criteria for this point or a clear request for a relevant statement from the applicant for the criterion ‘impact’.

Moreover, along the transport corridors, cooperation of regions, municipalities, chambers of commerce, infrastructure operators and other public and private players has mostly been established on the basis of bottom-up initiatives, often financed through INTERREG B projects. Especially local and regional players support integrated corridor development by means of these bottom-up initiatives. However, the OEM Corridor is an example where integrated spatial and transport development needs strengthening at a range of levels, since sufficient bottom-up initiatives are not apparent.

Due to the different interests and needs, it is necessary to apply overlapping and coexisting approaches at different spatial levels (i.e. focusing on certain cross-border areas, on a larger segment of the corridor as well as on the whole corridor). Integrated development requires better exchange within each of the levels, thereby at least including relevant transport modes, transport and spatial policies. In addition, it requires exchange between the different focus levels to generate the integration of approaches from cross-border to corridor level (Fig. 3).

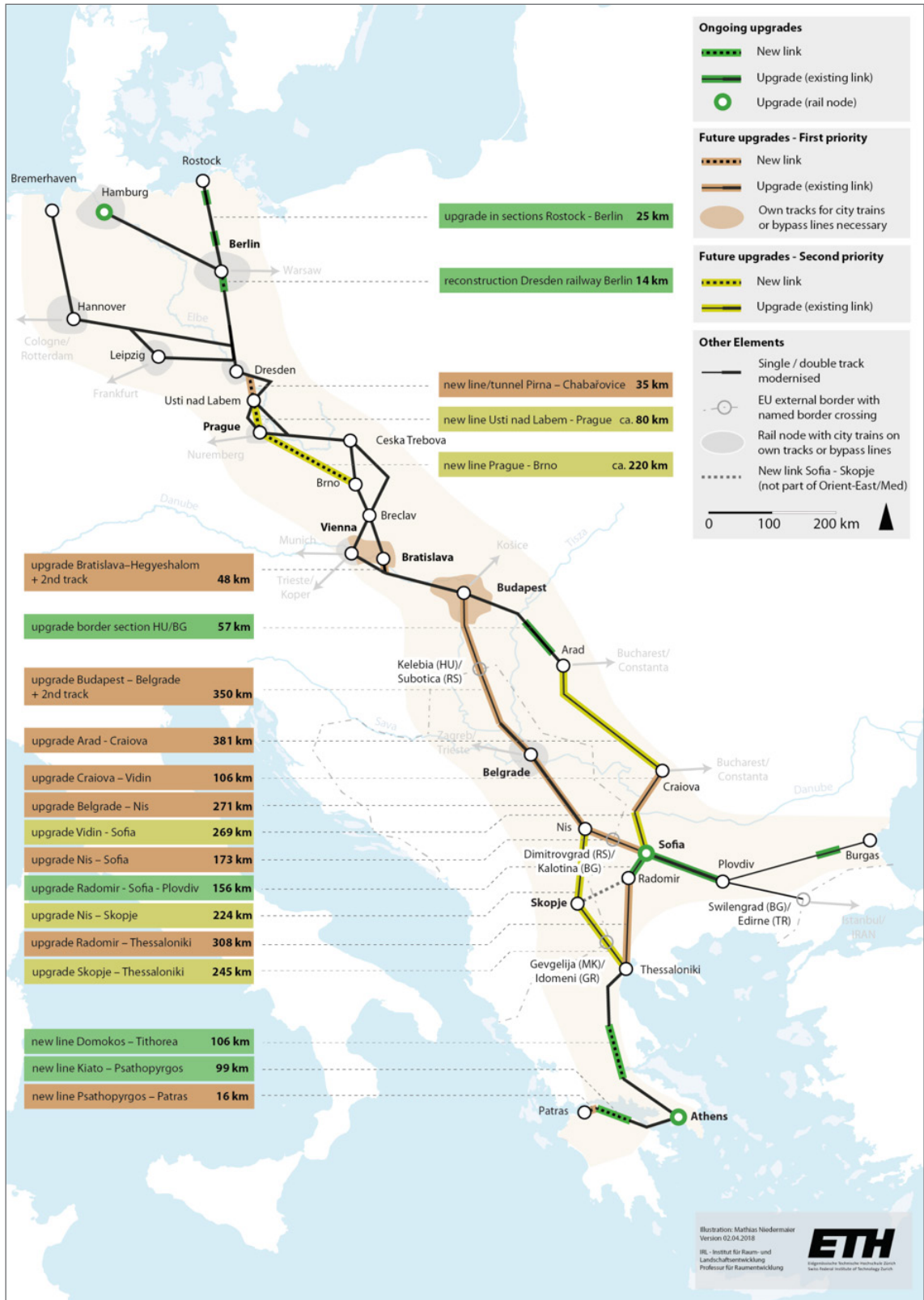


Fig. 3: Corridor overview with draft strategy. Source: ETH/Chair of Spatial Planning and Development, M. Niedermaier

A consistent and continuous strategy is essential to push this corridor as a backbone for development and to contribute towards coping with population decline in the crucial countries, along with other corridors in Europe. Thus, action is needed to steadily develop the OEM. The OEM Corridor provides integrated international interconnectivity for Romania and Bulgaria but with its branch through Serbia it further has the potential to offer capacity for fast and direct connections from mainland Greece to the hinterland for freight and passenger rail.

Aspects of strategic spatial planning: complementary informal processes

In our opinion, to continue the promotion of an integrated spatial and railway development strategy, an intensive exchange and effective communication, cooperation and coordination are required. To achieve these goals, the formal planning processes foreseen in the respective national planning laws are not sufficient. A prime example for the failure of a coordination process is seen in the huge protests against the construction of the Offenburg-Basel section of the Rhine-Alpine Corridor. After many years of political resistance and in consequence of the protests, a project advisory board was arranged. The advisory board finally found an integrated solution for the project, yet there was a delay of 10 to 15 years compared to the original plan.

To learn from such experiences, we suggest implementing regular events on specific topics of great importance. These regular events serve to promote the exchange of experience on specific topics, complementing the existing Corridor Forums. From our perspective, one example for a specific topic of great importance along the OEM Corridor is the integrated station and city development in Athens: on the initiative of the Universities of Athens, Patras and Zurich, an international seminar, Rail&City, was held in Athens in 2015. Here high-ranking political representatives and experts from Madrid, Berlin, Zurich, Vienna and Athens discussed and exchanged ideas and experience on urban and railway development in the vicinity of large railway stations.

Informal processes are helpful complements to formal planning, especially for uncommon, complex problems. Another example of such an informal planning process is the pilot planning process on future railway and spatial development executed in the 'Three Corners Area' of Germany, France and Switzerland. Important findings, which were supported by various participants, were implemented in the subsequent formal planning processes. Likewise, at the OEM Corridor, the project planning between Dresden and Usti attained results that are now being fed into the formal planning process, which indeed would never have been initiated without the informal exchange and activities. Such approaches are especially pertinent for projects crossing national boundaries.

Finally, we consider the application of informal planning procedures to be essential for capacity-building among representatives involved in complex planning problems. Therefore, we suggest two crucial measures: increasing funds for transport development in order to make the implementation of informal procedures possible, and creating a pool of suitable experts available for consultation.

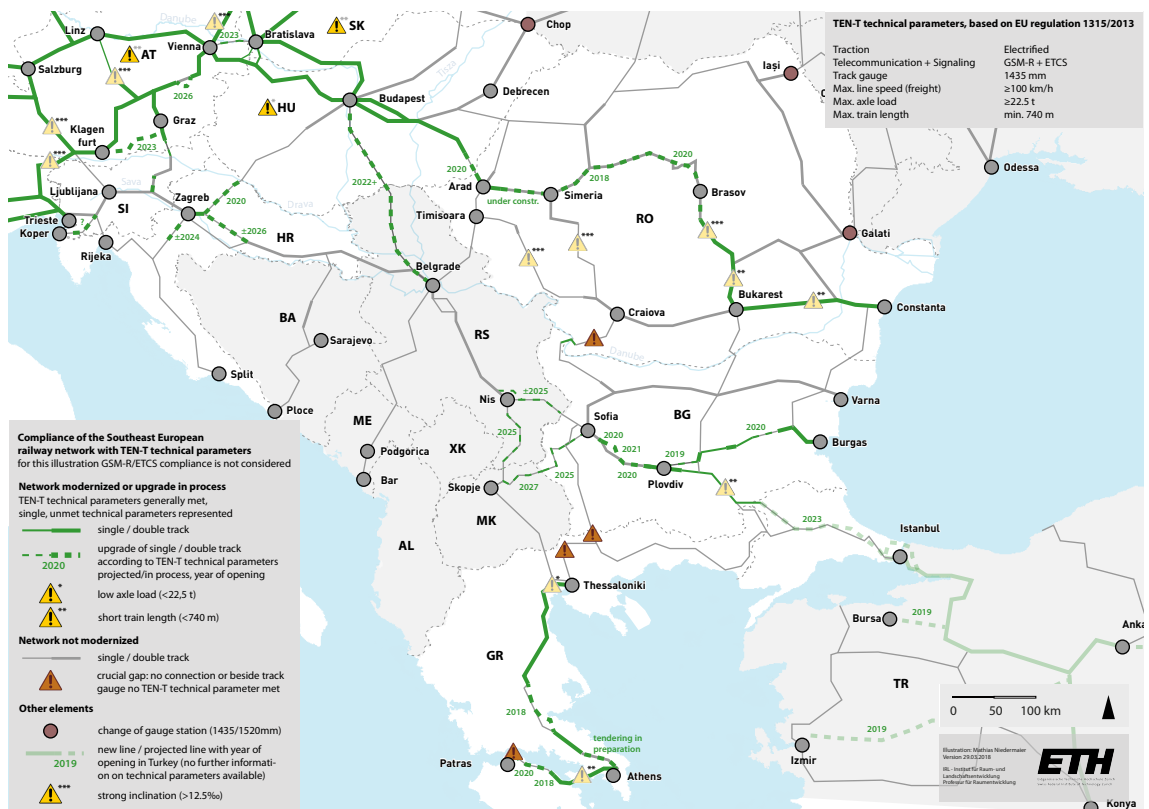
3 Final Remarks

Over the course of three years, the International Working Group Spatial and Transport Development in European Corridors – Example Corridor: Orient/East-Med has dealt intensively with questions of cross-border transport and transnational governance in Eastern Europe. In the meetings at some hot spots of the corridor, various aspects of corridor development were discussed with experts of the respective countries, regions and cities. Furthermore, the group members themselves compiled a comprehensive overview of the corridor and investigated neuralgic points along it. Based on these, the working group developed recommendations that should lead to improvements in various situations.

We propose to conduct the following tasks for a goal-oriented development of the OEM Corridor as defined by this ARL project:

- > Preparation of the European added value study on the corridor development from Hamburg to Athens, taking into due account both of its branches
- > Preparation of the studies on existing transport capacities along the corridor
- > Estimations of possible investments necessary for the realisation of stepwise development
- > Feasibility studies for freight bypasses in metropolitan regions
- > Study for a double-deck corridor from Thessaloniki to Budapest
- > Study on transport chains (modal split, time-saving and lower fares) from Northern European ports to Greek harbours

Appendix



Compliance of the Southeast European railway network with TEN-T technical parameters. Source: ETH/Chair of Spatial Planning and Development, M. Niedermaier

Aktuelle Positionspapiere aus der ARL

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- 107 **Großschutzgebiete, Biodiversität und räumliche Planung.**
Positionspapier aus dem Arbeitskreis „Biodiversität und nachhaltige Landnutzung in Großschutzgebieten“ der ARL. Hannover, 2016.
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- 106 **Biotopverbund Nordwest – Der Beitrag der Raumordnung.**
Positionspapier aus der Ad-hoc-Arbeitsgruppe „Großräumige Kompensation und landesweiter Biotopverbund“ der Landesarbeitsgemeinschaft Bremen/Hamburg/Niedersachsen/Schleswig-Holstein der ARL. Hannover, 2016.
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- 105 **Migration und Raumentwicklung.**
Positionspapier aus dem Expertenworkshop „Migration und Raumentwicklung“ der ARL im März 2016. Hannover, 2016.
URN: <http://nbn-resolving.de/urn:nbn:de:0156-01058>
- 104 **Multilokale Lebensführung und räumliche Entwicklungen.**
Positionspapier aus dem Arbeitskreis „Multilokale Lebensführung und räumliche Entwicklungen“ der ARL. Hannover, 2016.
URN: <http://nbn-resolving.de/urn:nbn:de:0156-01043>

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