

Connections and intermodality: A European viewpoint

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Abstract:

Mobility and transportation are not only important economic factors but also key elements in European integration. Climate change compels attention and forces us to reinvent modalities of transportation and make them evolve in response to major issues. Intermodality and connections between forms of transit imply redesigning current models while taking account of users' expectations so as to better manage traffic and offer riders quality services. Digitization, a trend cutting across all modes of transportation, can help us respond to expectations; but it also gives rise to other challenges: the management of data protection, control over complexity, cybersecurity and the digital divide. Solutions can be found only by collaborating with all stakeholders, users and citizens.

The growing volume of passengers and freight, along with the requirement to reduce toxic emissions by transportation and adapt to climate change, are major issues for the development of transportation networks in the European Union.¹ According to projections, total freight transportation will rise by about 58% (1.2% per year) from 2010 to 2050.² By boosting the shift toward more sustainable, multimodal forms of transit, the gradual completion of the Trans-European Transport Network (TEN-T) will help address these issues coherently and efficiently throughout the EU.

Established in its present form in 2013, this multimodal network has adopted a joint methodology for connecting major urban and industrial centers in member states. The central network is to be finished in 2030; and the global (more extended) network, in 2050. Standards will be applied to ensure continuity and interoperability, thus establishing a concrete basis for the free circulation of people and merchandise in Europe. For the coordinated development of the network in members states, nine corridors have been chosen as priority axes, each with an EU coordinator in the role of facilitator. When completed, TEN-T will more adequately cover the transport infrastructure and concentrate transnational, long-distance traffic. This will tend to densify the European network and contract distances. These developments significantly affect big cities and the network's hubs.

¹ This article has been translated from French by Noal Mellott (Omaha Beach, France). Websites were consulted in September 2019.

² European Commission (2016) *EU Reference Scenario: Energy, Transport and GHG Emissions Trends to 2050* (Luxembourg: Publications Office of the European Union) available via https://ec.europa.eu/energy/sites/ener/files/documents/ref2016_report_final-web.pdf.

Urban hubs and ports are often the starting and end points of flows of transportation and are the “last mile” for a large part of traffic. These points of connection associate various forms of transit and types of traffic... with effects on congestion, noise levels and air quality. One TEN-T objective is to attenuate the exposure of urban zones to the detrimental effects of rail and road through-traffic and boost sustainable urban mobility.

Increasing flows of passengers and freight

Many urban nodes are real or potential bottlenecks. Congestion in the EU, so often in and around urban centers, costs nearly €100 billion per year, *i.e.*, 1% of the EU’s GDP. Pollution of the air or due to noise, accidents, and increasing demands (often protests) from citizens are problems for the cities and regions along the major European transportation arteries.

Another problem in these urban nodes is the competition between the transportation of merchandise and of passengers. Space, a scarce resource in urban areas, must be used intelligently by following a global, sustainable approach to urban planning and mobility. Densification is a key factor in the fight against climate change even though it might also be a source of problems. Sustainable, homogeneous transit systems can be built only by adopting a global, forward-looking vision.

Urban nodes, the origin of tomorrow’s mobility

Through-traffic is not just a nuisance. It is also evidence of good connections with a potential for economic development and its ripple effects. Better relating long-distance transportation to urban mobility is an opportunity for member states and regions to stimulate the economies of key nodes in their transit systems. Urban nodes provide excellent conditions for installing the logistical services and multimodal platforms as additions to the value chain. Accessibility to and from a city is essential for bolstering regional development and social cohesion.

With regard to the sustainable shipping (by rail or water) of freight over long distances, a special problem is the last stop of deliveries in urban nodes. A sustainable last-mile logistics means paying more attention to the installation of terminals and their integration in the supply chain and in (improved) urban logistics operations. This lays the conditions for global, more efficient supply chains and for high quality services to users, as developed through a close partnership between all stakeholders (public and private).

Multimodality might be a sustainable solution for finding the right mix between various means of transport, since it enables us to take account of tram, train and bus rides, of walking and biking. The European Commission will continue firmly backing sustainable urban mobility plans (SUMPs) as a policy instrument for coordinating programs of sustainable urban development. These plans are an effective means for fitting the mobility needs of passengers and merchandise into a broader strategy of urban and regional development.

Digitizing all modes of transport

Urban nodes are poles of development with a strong potential for deploying environmentally friendly solutions, innovations and services in line with the goal of making transportation carbon-neutral. Urban areas offer several possibilities for demonstrating and implementing tomorrow's mobility programs. The latter can serve as a testing grounds for innovations in transportation (e.g., "electromobility", electric freight bicycles for last-mile deliveries, information and communications technology, automation, innovative services for passengers and freight). The EU is cofinancing several innovative projects of this sort, in particular under the research program Horizon 2020.³ Solutions, once tested, can be adapted much faster for implementation on another scale in urban nodes. This carries advantages for urban mobility and TEN-T.

The phase of digitization, a requisite for all modes of transport, will allow for gains in efficiency and safety. This has already happened with the European rail traffic management system (ERTMS), the Single European Sky ATM Research program (SESAR) on air traffic management, the road traffic management program, and the system of information on waterways. Data on traffic and merchandise are entered once and automatically updated so as to provide real-time information and interconnections throughout the chain. Thanks to more regularity and a better use of available facilities, these digital management systems also hold promises for improving services to users. By allowing for a more dense and regular circulation of trains, ERTMS is a genuine tool of modal transfer toward trains.

An additional phase is the rollout of 5G with its possibilities for automation, thanks to communications between vehicles and between vehicles and the infrastructure — on condition that regulations and standards be adopted for exchanging data. Since automation makes individual mobility more attractive, we must also engage in the energy transition so as to limit the effects of individual mobility on the climate.

More cooperation for successfully changing the system

Of special importance for urban areas is to link plans for transportation infrastructures to plans for urban development. Since coping with climate change means changing behaviors, citizens and firms must be appropriately associated with decision-making so that solid, innovative projects are launched and their attractiveness and functionality are enhanced for a whole region.

Only through an open dialog will it be possible to maximize the advantages for citizens, economic agents and urban stakeholders. We should also examine the best way to involve groups of stakeholders, research programs, urban planners, infrastructure-builders and -operators and investors so as to create a synergy between the results of R&D programs (such as those funded by Horizon 2020) and the projects for rolling out innovations (such as those financed by Connecting Europe Facility). Open access to data can boost the sharing economy in place of a predatory economy.

³ <https://ec.europa.eu/programmes/horizon2020/en>

A more cooperative approach among all stakeholders is needed. Collaborative logistics and “synchromodality” carry potential for an optimized use of transportation resources and of existing installations thanks to the pooling of freight. Logistics costs and the negative effects of freight haulage could thus be lowered. For this, it is important to computerize and digitize transportation and logistics.

Conclusion

The principal challenge for the future is to better coordinate investments along the aforementioned corridors, including in the nodes, and enhance them with the digital infrastructure necessary to using these new forms of technology. The completion of the TEN-T network, along with its digitization, will have a structural effect on the European economic space. It provides an opportunity for improving the performance of existing infrastructures, both on the major axes and in strategic nodes, so as to make mobility more environmentally friendly.

The EU can significantly contribute to this group effort by mobilizing, encouraging, incentivizing, learning and sharing with the communities in the corridors that are incorporated in the TEN-T policy.