

HIGH- SPEED RAIL

ROADMAP SUMMARY



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ROADMAP SUMMARY towards goal 4 of the White Paper on Transport:
»By 2050, complete a European high-speed rail network. Triple the length of the existing high-speed rail network by 2030 and maintain a dense railway network in all Member States. By 2050 the majority of medium-distance passenger transport should go by rail.«

HIGH-SPEED RAIL - ROADMAP SUMMARY

1 The White Paper goal on High-speed Rail (HSR)

TRANSFORuM's Thematic Group on HSR deals with goal no. 4 of the European Commission's 2011 Transport White Paper:

By 2050, complete a European high-speed rail network. Triple the length of the existing high-speed rail network by 2030 and maintain a dense railway network in all Member States. By 2050 the majority of medium-distance passenger transport should go by rail.

Any discussion about the European HSR system has to take into account a number of key principles as they emerged from the stakeholder consultation process:

1. A sensible extension of the network must obviously go hand-in-hand with an increase in demand for HSR. It is therefore necessary to focus on improvements to the quality and diversity of services as well as to improve capacity assessment methods in order to optimise the utilisation rate of the existing infrastructure and rolling stock.
2. Justice needs to be done to the different national rail system models. According to Pagliara (2014) they can be classified into:
 - the French HSR system, conceived of only for passengers, set up on new lines with peak speeds of 300 km/h and non-stop connections between metropolitan areas (focus: high speed);
 - the German HSR system, mixed traffic (passengers and freight), also serving intermediate cities with a system of trains with different speed not exceeding 250 km/h, developed on the basis of existing renewed lines (focus: high capacity);
 - the Swiss/English HSR system, mixed traffic, consisting of speeding up the Intercity service to 200–225 km/h, combined with a train every hour for any other destination on the network and connections in all stations, at the same time, with all other passenger trains.

3. The underlying rationale for HSR has conventionally been speed; but travel time is not necessarily a waste – it can be used for productive activities (Givoni and Banister, 2012). The focus on speed thus needs to be complemented with consideration of on-board and off-board services (e.g. work and leisure facilities on trains) that enhance users' experience and for connectivity with the urban and international transport networks (airports, intermodal services, local stations etc.)
4. Insofar as time and costs obviously do matter, it's the door-to-door journey that counts, be it intermodal or not. Therefore, the European HSR network should be integrated in the wider transport system, including its local and regional branches.
5. The perception of the White Paper goal among the consulted stakeholders was that the focus of future HSR developments and the respective policy measures should be on capacity extensions of the railway system and a user-oriented perspective on excellent service, rather than mere infrastructure extension. Thus, investment needs should be adapted to the current state of national HSR networks. In well-equipped countries, these investments should be directed towards alleviating congested railway nodes, freeing capacity and, in this sense, an extension of the HSR network and an improvement of the infrastructure service. Conversely, in currently poorly-equipped countries, these investments will be dedicated to the creation of a network on a high-demand axis. Therefore, tripling the length of the European HSR network can be interpreted as both freeing capacity on some nodes, or linking some high-demand cross-border sections (as in the case of Eurostar or Thalys), as well as the literal construction of new HSR lines where there are none.

2 Pathways towards the goal: HSR within the Single European Railway Area

The measures identified through TRANSFORuM's stakeholder consultation process are depicted overleaf.

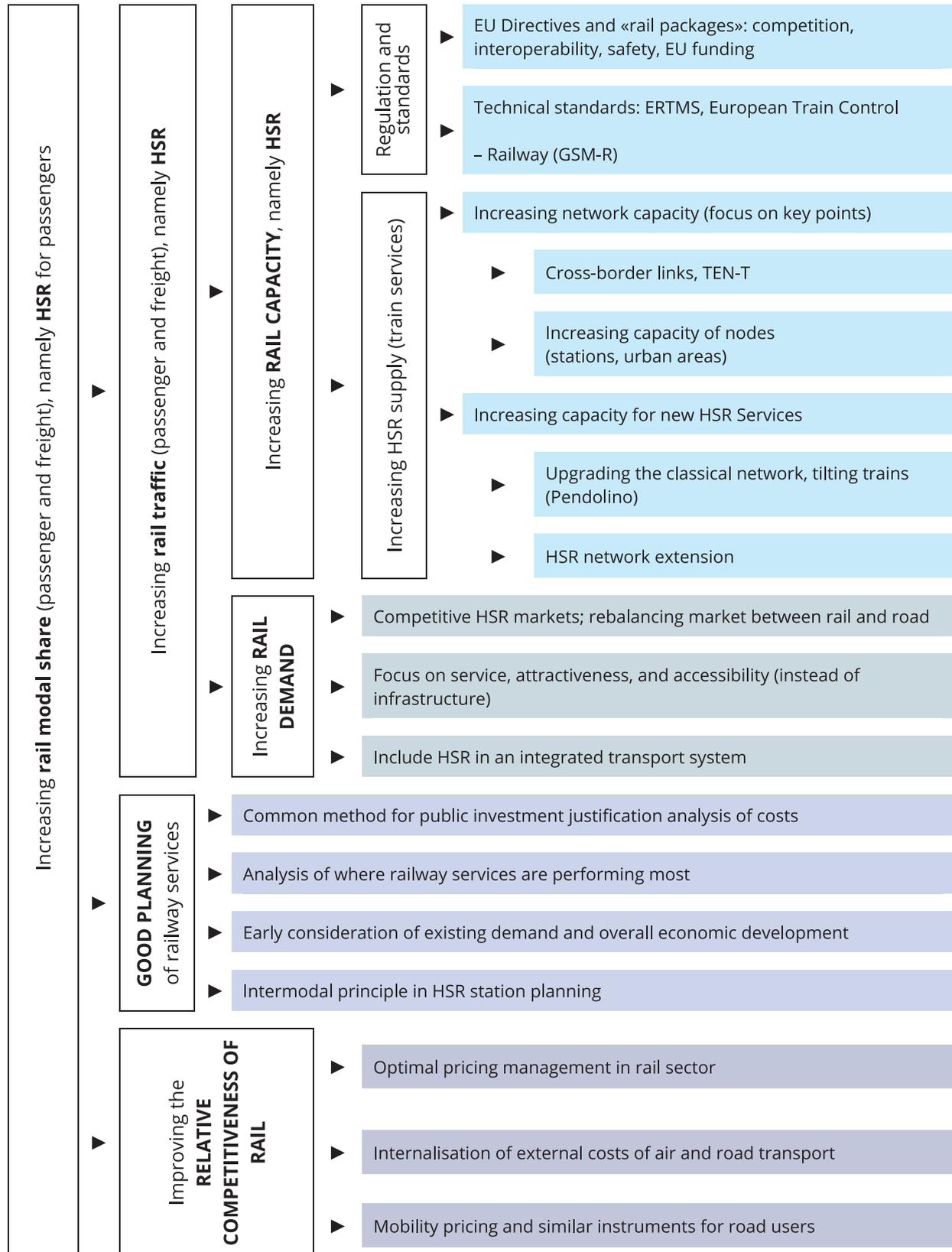


Figure 1: Structure of measures towards the HSR White Paper goal

(Measures increasing *rail capacity* represented in blue, measures increasing *rail demand* represented in turquoise, *good planning* measures represented in purple, measures referring to the *relative competitiveness* in grey).

3 Trends

During TRANSFORuM's Gdansk workshop in June 2013, major trends that influence most HSR planning schemes – whether constraining or supporting them – were identified. TRANSFORuM's deliverable 3.1¹ highlighted the most important cross-cutting and HSR-specific trends. They include the quite recent widening of the HSR rationale from its previous exclusive focus on speed towards a perspective that more consciously takes service quality (incl. internet access and power sockets) and improved connectivity into consideration (through seamless transport measures, corridors and station design etc.). In this summary, we present the following, non-exhaustive, list of some important trends:

- Research on HSR across the world highlights the weight of territory-specific potentialities in defining national HSR network. TRANSFORuM's HSR group and the various stakeholders consulted during the project all agreed on a closer cohesion between urban and territorial planning, and the expectations of HSR impacts on the urban and rural socio-economic landscapes. These factors can be called the “external” factors of success of HSR (as opposed to internal ones: speed, costs, number of stops etc.). Such particular potentialities are hard to assess and hard to anticipate. It therefore lies in the responsibility of project managers and researchers to consider territorial geography as one major factor of whether HSR is or not relevant to serve a region.
- The current scarcity of public funds increases the opportunity costs of projects (or cost of sacrifice) and burdens of project schemes. Being capital-intensive, HSR projects are being prioritised regularly, along this cost of public funds, in order to reduce pressure on subsidies. Coping with this issue is also the main reason for the growing interest in public-private partnership (PPP). But to attract private companies and to match their requirements (in terms of return on investment and profits) guarantees are to be carefully considered. Not only is the investment enormous, but lifecycle costs have been identified by our stakeholders as one major criterion of private players' willingness to invest in a project. Information and estimations are to be as precise as possible, but to create incentives for private firms to invest in HSR; public authorities must guarantee traffic risks (or commercial risk) in case their levels don't reach expectations. It also implies a consideration of the danger uncertainty represents for private firms and a potential compensation plan that copes with this particular issue. Conversely, such practices would enable higher efficiency allowed by the application of private firms' traditional optimisation of costs.
- The reinforcement of the need for a better political and institutional understanding of the projects and their financial implications over a long-term perspective. Governments may be reluctant to develop and implement strategies to improve HSR services; on the other hand appraisals for new HSR lines are often not used in the best possible way (i.e. by not thoroughly analysing the full benefits and drawbacks of HSR investments), which may lead to inefficient use of public money and an ineffective HSR system (Nash, 2010). The asymmetry of interests and information between political interests and socio-economic appraisal has been highlighted by a recent report of the French Court of Accounting (2014). Indeed there is a need for both sides to collaborate more closely and public accounting needs to be aligned to avoid seemingly irrational project construction that can lead to controversy surrounding economic viability. In addition political will, political vision and long-term infrastructure needs can also conflict when it comes to the allocation of budgets. This is because timescales, interests and motivations differ between policy actors and their short-term policy cycles and between medium- and long-term lifespans of particular infrastructures.
- Technological needs for global transport data (or big data) in order to orientate pricing strategies and offer adjustments to a more precise knowledge of demand. This implies a strong cooperation between actors (sometimes competitors), but also between infrastructure managers and operators, and between operators of different modes. A successful result could be the improvement of frequency and connections between modes. The development of door-to-door and seamless transport could logically follow.

¹ Summary on main policies, funding mechanisms, actors and trends – see www.transforum-project.eu/resources/library.html

4 Processes and policy packages towards achieving the goal

The table overleaf is the proposition TRANSFORuM's HSR Thematic Group and its stakeholders established in order to tackle the major development challenges European HSR faces. The policy packages were developed after a process which identified the two main issues addressed by the White Paper goal: the existing capacity and new infrastructure development on the highest demand corridors and the expected shift of demand towards rail that HSR, through the reinforcement of its competitiveness, can support. But as pointed out in the workshops organised throughout the project, there are, across Europe, various national railway networks that need different adjustments, some incremental (improvement of service, of connectivity, of utilisation rate, of the existing capacity) and some radical (building of new infrastructure).

In other words, creating new high speed lines is, in some countries, not necessarily the answer to cope with demand. Indeed, few high speed lines in Europe are saturated and, on developed networks, capacity issues are mainly concentrated around hubs. Such variety of situations is the reason why TRANSFORuM developed 4 different policy packages, each addressing one particular HSR issue and offering relevant solutions. They are not exclusive but give a clue about how public and private funds can be spent more wisely and more efficiently in order to improve or reinforce HSR's competitiveness for consumers.



Policy package	Policy package I Extending the HSR network	Policy package II Providing good access at stations	Policy package III Integrating with local/regional/national networks	Policy package IV Focus on HSR services and attractiveness for users
Info- and infrastructure features				
Financing focus: projects with high cost benefit ratio (CBR)	Public subsidies as a possibility if line declared as a public service obligation (PSO) – PPP without traffic risk guarantee	PPP without risk guarantee for station management through a public and multi-level governance (MLG) public support (multimodal involvement)	PPP without risk guarantee for station management through a public and MLG public support (multimodal involvement)	Monopolies: equalisation logic Competition: regulator to define PSO
Financing with low CBR	Mainly open access and/or PPP with traffic risk guarantee (on a build and operate model)			
Main source of funding	Equalisation payments (spillovers) and funding through other modes Customer fares on most profitable lines Regulation of access charges	Public Subsidies justified by PSO Commercial revenues (stations development) through “access charges” in stations	Multimodal financing through partnerships	High CBR: other modes spillovers/competition efficiency and productivity gains Low CBR: public policies for environmental HSR promotion /other modes spillovers
Offer focus	Capacity issues Corridors with high demand and air/HSR competition Bottlenecks in urban railway hubs (especially mixed-traffic networks)	Door-to-door travel patterns focus Intermodal strategy (airports /urban) and traffic origins (regional/national/international hub) IT development (online ticketing, integrated multimodal ticketing)	Door-to-door travel patterns focus More service off-board (in stations) through ticketing (multimodal and online solutions) Reliability and frequency	More services on-board; WiFi etc. in metropolitan regions with many business commuters; convenient night trains where applicable
Network focus	Capacity solutions on congested networks (specific lines, research focus to be put on congestion assessments) Focus on high to very high demand axis for high and very high speed rail ERTMS and traffic optimisation tools Frequency and reliability Network focus is seen by travellers through reliability and frequency of HSR services	Central hubs in less populated areas, dense network in highly populated areas	Territorial equity and transport land use strategies Identification of possibilities of separation of traffic flows in metropolitan areas, direct integration in medium-sized cities	Capacity solutions on congested networks (specific lines, research focus to be put on congestion assessments) ERTMS and traffic optimisation tools Frequency and reliability

Policy package	Policy package I Extending the HSR network	Policy package II Providing good access at stations	Policy package III Integrating with local/regional/national networks	Policy package IV Focus on HSR services and attractiveness for users
Capacity extensions	Focus on bottlenecks and corridors Upgrade existing lines in densely populated areas, careful consideration of demand in less populated areas	Focus on long-distance links (300+ km/h) and securing connected regional services	Upgrading existing lines (200 km/h) and balancing with regional and freight traffic – use expensive infrastructure efficiently	Upgrading existing lines, bringing equipment to modern standards, keep compatibility with European network
Business models	Private operators, licenses, franchising	Separate service operators through strong MLG model	Cooperation between public authorities and private companies for mutual benefit	Competition between operators on most profitable lines PSO: PPP with traffic risk guarantee
End-user services				
Access at stations	Integration in urban and central business districts	Isolated station accessible by high level coach services and car	Urban multimodal hub	Focus on accessibility indicators instead of access facilities (see generalised cost methods): accessibility and generalised speed as part of attractiveness of HSR on a door-to-door logic
Integration	Integrated network with balanced hierarchy of hubs	Separation of traffic flows in metropolitan areas, efficient and accessible integration at regional hubs	Integration with local and regional transport, links to airport	Integration in existing dense networks, taking care of balance between modes
Institutions and policies				
Legal framework	Fair competition Need for an independent EU regulator for European structuring network schemes	Access rights Regional level PSO rules	Obligations to integrate with connecting services	Passengers' rights Independent and strong regulator (competition and monopoly)
Decision-making leadership (in cooperation with others)	Mostly MLG with local/regional/national/European partnerships considering scale of structural effect of the project EU (and national level) as final decision maker for global strategy of HSR and main cross-border corridors National subsidiarity in priority schemes			
Good planning factors	Early public involvement, transparent strategies	Early consideration of which actors are affected and should be involved	Eye-level involvement of affected actors, i.e. rail service operators, rail infrastructure operators, local public transport operators, car and bike sharing operators, city authorities, users	Balancing economic interests of private actors with societal economic interests and user's interests (convenient usage of rail services to foster modal shift)

5 References

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ACRONYMS AND ABBREVIATIONS

CBR	Cost benefit ratio
ERTMS	European Railway Traffic Management System
HSR	High-speed rail
MLG	Multi-level governance
PPP	Public-private partnership
PSO	Public service obligation



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