

High-speed train Oslo-Berlin

Per Homann Jespersen¹

Introduction

The COINCO-project (Corridor of Innovation and Cooperation), a collaboration between cities and regions in the Oslo-Göteborg-Malmö-Copenhagen-Berlin corridor, was developing a common strategy aimed at furthering growth through cooperation and use of complementary strengths. Project proposals were developed within a number of areas covering innovation (e.g. in creative industries and sustainable energy), institutional cooperation (university cooperation, planning education) as well as transport infrastructure (Jespersen et al. 2006).

On the infrastructure part very much emphasis was put into establishing functioning transnational railroads for passengers and freight. The reason for this was that among the four main transport modes – air, sea, road and rail – the *forsyning* of infrastructure for the first three are in general well provided for in the four countries; air and sea through the market and road through national programs. The railway sector, however, is due to its organisation oriented towards serving national transport, and because of the poor economy of most lines, transnational routes have had low priority. The one exception in the corridor, the Øresund connection between Copenhagen and Malmö has however shown, that conventional wisdom within this field might no longer be valid.

In this paper a pre-feasibility study of a high-speed connection between Oslo and Berlin is presented as well as some of the considerations made for making this connection feasible as well as attractive for the decision makers.

Developing the idea

In the context of the COINCO-project a bottom-up process for producing a strategy for the corridor (Jespersen & Jensen 2006; Leonardsen 2007). An intermediate step in this process was to develop a vision, that was confirmed by the board of politicians responsible for the project (Jespersen, Nielsen, & Jensen 2006). In this vision a number of themes for further study was set up, and transnational working groups were set up to develop propositions for the strategy. Within transport infrastructure one group working with passenger and one with freight transport were set up. Each of them consisted of 15-20 members representing regional and city administrations, organisations, companies and knowledge institutions. Coordination between the groups was secured by having a couple of common members as well as a common secretariat (the author of this paper).

Each group met three times, the first time to get a common understanding of the area through lectures and discussions, the second and third time to develop and

¹ FLUX – Center for Transport Research, Roskilde University, house P7, P.O.Box 260, DK-4000 Roskilde, Denmark, phj@ruc.dk.

decide on the strategy to propose. Around ten interviews were made by the secretariat with different stakeholders in the four countries². These interviews served as information for the working groups as well as a test of robustness of the ideas and plans developed in the working groups.

The Strategy for Transport Infrastructure

A fast and reliable transport infrastructure is crucial to the development of the COINCO corridor. It gives the corridor internal coherence by minimizing the time needed to transport passenger and goods within the corridor. At the same time it gives a better utilization of the infrastructure connecting different parts of the corridor with the global market. Fast road and rail connections to the airports give better service to the citizens and greater volumes at the airports. Easy access to the corridor's international freight terminals will give faster access to the global marketplace from everywhere in the corridor.

A precondition for having an effective transport infrastructure is a coherent transport system – shifting effortlessly between modes of transport is the cue to flexibility for passenger traffic as well as freight transport.

The road infrastructure in COINCO consists of a well-established main network. There are some links missing in order to provide a full-fledged motorway system from Oslo to Berlin. But for all the missing links there are plans for their improvement, and in general the governments provide for the necessary road infrastructure.

Air and sea transport is provided for by private companies and regulated by market demand. The infrastructure necessary (airports and harbors) are generally made available by national and local administrations and through private investments, so that serious bottlenecks do not arise.

Thus, rail is the transport mode where COINCO efforts should be concentrated. It is the most environmentally benign of the motorized forms of passenger transport and along with sea transport the 'greenest' freight transport mode.

However, the huge investments needed as well as the nationally oriented railway regulations has impeded the transborder operations of railroads. Where a special effort has been made to make rail competitive – as at the Öresund connection – success has been imminent.

Passenger Transport Infrastructure

The main passenger transport mode in COINCO is and will continue to be the passenger car – no other means of transport can compete with the combination of flexibility and speed of the car. Air transport is without competition for long distance transport.

² Interviewees representing NSB, Oslo; Petersons Papirfabrikker, Moss; Göteborgs Hamn; Volvo, Göteborg; Thor Line, Göteborg; Skånetrafikken, Hässleholm; Københavns Kommune; Storstrøms Amt; TransNetz, Berlin; The Ministry of Planning and Infrastructure, Mecklenburg-Vorpommern; DB Netz, Berlin.

Passenger transport infrastructure priorities of COINCO

- By 2025 Oslo and Berlin will be connected by a *high speed rail link*, allowing for travel times of 2 hours between Oslo and Göteborg, 2 hours between Göteborg and Copenhagen and 3 hours between Copenhagen and Berlin
- The rail link will be supported by an *advanced communication and signaling system* permitting seamless transborder operations and sophisticated train management systems in such a way that the link will give improved conditions for regional and freight trains as well
- The new Berlin International Airport in Schönefeld, Malmö/Sturup and Landvetter/Göteborg will (along with Copenhagen and Oslo) have dedicated railway stations. A shuttle train Copenhagen-Copenhagen Airport-Malmö/Sturup Airport will provide synergy between the two airports
- The Berlin-Copenhagen rail axis shall be included in the *TEN-T priority list* of European Transport Corridors
- A *rail innovation forum* of (mainly COINCO) enterprises should be formed in order to secure that the competencies of the corridor will be fully exploited in the development of new railway technology
- To support this process, the COINCO partners will establish a *transnational rail R&D institution*
- A common ticketing system will be introduced: *One Region – One Ticket*
- Until a fixed Fehmarn Belt connection is established, priority should be given to reduction of travel times in the corridor Copenhagen-Gedser-Rostock-Berlin

Railways have their niche herein between – traditionally in the regional transport around larger cities and in intercity transport. With fast railway connections rail intercity transport can compete on speed and comfort with both cars and short distance flights, attracting new customers and making it economically feasible.

High speed rail link

By 2025 Oslo and Berlin will be connected by a high speed rail link, allowing for travel times of 2 hours between Oslo and Göteborg, 2 hours between Göteborg and Copenhagen and 3 hours between Copenhagen and Berlin

A high class railroad through the COINCO area will be crucial to the efforts of making the corridor a leading player on the global market. A railroad infrastructure that can support high speed trains, improved regional trains as well as freight trains is a very robust strategy. If oil prices rise, railroad is the most energy efficient of the land transport modes. If pressures from climate change increases, railroads are able to use renewable energy sources – biofuels or electricity produced from sun, wind or waves. Under all circumstances, a high speed rail connection will be competitive to air transport on the short distances (up to 6-800 kms) and to the passenger car on all distances.

A high speed rail connection with speeds up to 250 kms/h will require substantial investments all along the corridor.

- A fixed connection across the Fehmarn Belt is in principle agreed upon by the governments of Germany and Denmark in a public-private partnership arrangement that should finance it fully by EU support, user payments and possibly state guaranteed loans (Trafikministeriet & Bundesministerium für Verkehr 2003)
- The land support to the bridge includes an upgrading of the rail connections Copenhagen-Rødby and Puttgarden-Hamburg to electrified double track. This is assumed to be built by the Danish and German governments. The track should be built to accommodate for speeds up to 250 kms/h
- In Germany this has to be supplemented by a corresponding upgrade of the 50 kms Lübeck-Büchen line, which in Büchen would connect to the existing high speed Hamburg-Berlin line
- In Denmark the planned increase of the rail capacity between Copenhagen and Ringsted would have to be accompanied by an extension of the Copenhagen Airport Station to accommodate for being the main stop on the high speed line and increase the capacity Malmö-Copenhagen (Hansen & Lindström 2006)
- Between Göteborg and Malmö track is being upgraded to the standard needed, and the opening of Citytunneln in Malmö (2011-12), Hallandsåstunneln (2012) and four tracks from Lund to Malmö (2020) will supply the quality and capacity needed.
- For the connection Oslo-Göteborg a study has been made (Civitas AS, Norwegian Railconsult AS, & RTM-konsult AB 2006), showing that a travel time of 2 hours can be obtained by 2025, demanding an investment of 2 billion Euros.
- In order to accommodate for trains of very different speeds, parts of the connection might need to have a third track used for overhauling so that faster trains will not be slowed down and slower trains will not have to come to a full stop.

Advanced communication and signaling system

The rail link will be supported by an advanced communication and signaling system permitting seamless transborder operations and sophisticated train management systems in such a way that the link will give improved conditions for regional and freight trains as well

Rail track containing high speed traffic with few stops, regional traffic with medium speeds and many stops as well as slow freight trains with few stops will need a very advanced management system in order to utilize the track's capacity.

The European Union has developed standards (ERTMS, European Rail Traffic Management System) for communication and signaling, that solves the problems with each country having its own standards. In the most advanced form (level 3),

it is a system based on wireless communication and with no external signals – the tracks will be the only hardware along the rail lines, and all control equipment will be situated within the locomotives and the central control stations.

The management of trains can be made independent of ‘channels’ and ‘blocks’. Under normal operational conditions the trains can be run to minimize energy use, and under unusual conditions strategies can be chosen to minimize the time lost by passenger and freight trains.

The COINCO high speed rail link will be using this system in 2025 and be on the forefront of international rail development.

Rail/air integrated transport terminals

The new Berlin International Airport in Schönefeld, Malmö/Sturup and Landvetter/Göteborg will (along with Copenhagen and Oslo) have dedicated railway stations. A shuttle train Copenhagen-Copenhagen Airport-Malmö/Sturup Airport will provide synergy between the two airports

The airports of Oslo and Copenhagen



include on site railway station, which greatly enhances the attraction of combining the two transport modes.



The fast train connection between Stockholm and Copenhagen passes by Copenhagen Airport, attracting travelers in 3-4 hours distance to use Copenhagen’s instead of Stockholm’s airport.

Well connected airports will give basis for better services and more competition between the airports. Thus, responsible politicians are urged to consider providing the larger airports in the corridor with connections to the major rail

lines.

The Öresund Committee has proposed a small bifurcation of the Malmö-Ystad railway in order to establish connection to Malmö/Sturup Airport. A railway service Copenhagen-Copenhagen Airport-Malmö/Sturup Airport would give the possibility for an extended cooperation with Copenhagen as the main international hub of Northern Europe and Malmö/Sturup as a hub for Swedish domestic airlines and for low-cost carriers.

Berlin-Copenhagen included in TEN-T

The Berlin-Copenhagen rail axis shall be included in the TEN-T priority list of European Transport Corridors

The present TEN-T corridors in COINCO comprise of corridor 1 Railway axis Berlin-Verona/Milano-Bologna-Napoli-Messina-Palermo, corridor 11 Öresund fixed

link (completed 2000), corridor 12 Nordic triangle railway/road axis and corridor 20 Fehmarn Belt railway axis (European Commission 2005).

Obviously, there is a 'missing link' between Berlin and the Nordic triangle, which would provide for the continuation of the COINCO corridor to Eastern, South-eastern and Southern Europe. Thus, the axis connecting Berlin to the Fehmarn Belt fixed link by rail should be included in TEN-T.

This should be a common effort of the four national governments.

Rail innovation forum

A rail innovation forum of (mainly COINCO) enterprises should be formed in order to secure that the competencies of the corridor will be fully exploited in the development of new railway technology

Constructing a high speed rail link with an advanced communication and signaling system as outlined above, demands a lot of innovation – hardware as well as software. This is one of the innovation areas of COINCO. A lot of capabilities exist within the corridor and these should be mobilized in order to organize precompetitive research, partnerships, common bids for projects etc.

Transnational rail R&D institution

To support this process, the COINCO partners will establish a transnational rail R&D institution

Only if a continued pressure is applied on national authorities, the technical and organizational barriers to establish a high speed link can be broken down fast enough.

Setting up benchmarking systems for the fulfillment of the goals of the high speed railroad connection would be one of the main tasks for a common research and development institution in COINCO and servicing of the Railway Innovation Forum would be another.

This would only require a limited staff, but the institution will have ample opportunities to attract funding from EU, the Rail Innovation Forum etc.

The board of the rail institution should consist of rail operators, COINCO politicians and other parties with a clear interest in promoting transborder rail traffic.

One Region – One Ticket

A common ticketing system will be introduced: One Region – One Ticket

Easy access in the corridor is also dependent on easy access to information, to booking, and to the buying of tickets

Improvement of Copenhagen-Berlin corridor

Until a fixed Fehmarn Belt connection is established, priority should be given to reduction of travel times in the corridor Copenhagen-Gedser-Rostock-Berlin

References

Civitas AS, Norwegian Railconsult AS, & RTM-konsult AB 2006, *Interreg III A "Ny jernbane Oslo - Göteborg". Sluttrapport.*

European Commission 2005, *Trans-European Transport Network: TEN-T priority axes and projects 2005*, Office for Official Publications of the European Communities, Luxembourg.

Hansen, S. & Lindström, H. 2006, "Framtidens järnväg i Helsingborg - stadsutveckling och expansion mot Helsingör".

Trafikministeriet & Bundesministerium für Verkehr, B. u. W. 2003, *Fixed Link Across Fehmarnbelt: Financial Analysis, Traffic Forecast and Analysis of Railway Payment. Summary Report.*



References

- Civitas AS, Norwegian Railconsult AS, & RTM-konsult AB 2006, *Interreg III A "Ny jernbane Oslo - Göteborg". Sluttrapport.*
- European Commission 2005, *Trans-European Transport Network: TEN-T priority axes and projects 2005*, Office for Official Publications of the European Communities, Luxembourg.
- Hansen, S. & Lindström, H. 2006, "Framtidens järnväg i Helsingborg - stadsutveckling och expansion mot Helsingör".
- Jespersen, P. H. & Jensen, A. Transnational planning of infrastructure – the case of the COINCO corridor. 1-21. 2006. World Planning School Conference 2006, Mexico City.
Ref Type: Video Recording
- Jespersen, P. H., Jensen, A., Stroschein, C., & Lundgaard, J. 2006, *COINCO Strategy 2025 - Discussion Paper* Roskilde.
- Jespersen, P. H., Nielsen, L. D., & Jensen, A. 2006, *Visions of a COINCO Region in 2025*, Roskilde University.
- Leonardsen, Ø. "Dialogbaseret trafikplanlægning på tværs af landegrænser. - kan det lade sig gøre?.", L. G. Hansen et al., eds., Trafikforskningsgruppen, Aalborg Universitet.
- Trafikministeriet & Bundesministerium für Verkehr, B. u. W. 2003, *Fixed Link Across Fehmarnbelt: Financial Analysis, Traffic Forecast and Anaysis of Railway Payment. Summary Report.*