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GEOPOLITICS OF BALTIC SEA COMMUNICATION – LINKING THE PERIPHERIES WITH THE CENTRE

ABSTRACT

An attempt is made in this essay to explain the importance of a new link around the Baltic Sea being constructed to the core of Europe with a possible net of the Superspeed Maglev System Transrapid with a speed of 300 miles/hr.

The geopolitics of Baltic Sea communication is to a great extent based on the peripherial position of Europe's northeastern countries. A Transrapid net around the Baltic Sea would link these countries to the core of Europe. An important ingredient in the link are bridges and tunnels. The Öresund Fixed Link with its tunnel and bridge will be the first fixed link between Denmark and the Scandinavian peninsula in history and fully completed in the summer of 2000. A railway tunnel between Elsinore (Denmark) and Helsingborg (Sweden) is needed in the beginning of the 21st century as an additional link. Other submarine tunnel projects of geopolitical importance are the Fehmarn Belt and Falster Belt fixed links between Germany and Scandinavia as well as Norrtälje (Sweden) - Mariehamn (Aland Islands) - Abo/Turkku (Finland) and Helsinki (Finland) - Tallinn (Estonia) tunnels.

Important new possibilities exist for extending tunnel construction. The Symonds Group (an important London construction and planning company) is working on prefab submarine tunnels. These are expected to be used across the St. George Channel between Dublin and Holyhead (about 90 km). The tunnel technique has been used for the Öresund Fixed Link and the Danish tunnel section of the link was completed in March 1999. Sweden, Finland, Poland, Estonia, Latvia, Lithuania and northwestern Russia would receive a structural boost with substantial consequences with the new Transrapid Net and its submarine and bridge links.

KEY WORDS

geopolitics, combined transport, transport in the Baltic area

1. BALTIC SEA CO-OPERATION

"The Baltic Sea has played a major role in the history of Europe and has served as a link between the countries and peoples surrounding it"[1] Historically, the Baltic Sea was the link of trade to Estonia, Livonia, Courland, Russia, and other areas east of the Scandinavian Peninsula.

The Hanseatic League dominated for a long time the trade in the Baltic Sea area and it seems as if the "Hanseatic" idea might be revived after the collapse of the Soviet Union in 1991.

There are a number of advantages to aid co-operation between East and West in this area. Several of the countries are small and flexible. Sweden, Norway, and especially Finland, have long established contacts with the eastern neighbours. Estonia, Latvia and Lithuania are emerging small but strong economies. Norway and Iceland have traditionally considered themselves belonging to the Baltic Rim, but they also turn westward to a greater extent than for instance Sweden and Finland.

The three big countries along the Baltic Sea, Germany, Poland and Russia are, of course, especially important. Germany, with its strong economy will probably play its part in helping to revive the eastern economies of Poland and north-western Russia. The moving of the German capital to Berlin before 2000 will be of great benefit to the Baltic Sea Cooperation. St. Petersburg and north-western Russia including Novgorod, Archangelsk and Murmansk will hopefully be a part of the future trade links in the area. Instead of the infamous Soviet "Sea of Peace" designation of the Baltic Sea, it should now be termed "Sea of Opportunity".

In the beginning, after the Soviet collapse, Sweden seemed to play an important role in the new Baltic Sea co-operation, but her role seems to have been more and more taken over by Germany and Finland.

A combination of sea, rail and road transport is vital to the area. The ports in the east have a growing freight boom and figures of 1995, for example, are now back to the level of 1988 and expanding. On the southern shores of the Baltic Sea, Hamburg, Lübeck, Wismar, Rostock, Stralsund, Szczecin and Gdansk, as well as the southern Swedish ports of Ystad and Trelleborg are successful in shipping between west and east.

Copenhagen, as always, plays a central role. No wonder large companies like IBM, Sony, Bayer and Olivetti have chosen the Danish capital as distribution

centre for northern Europe. In the future Öresund Region this will benefit also Scania, Sweden's southernmost region, with Malmö as its capital.

This article will deal with Transrapid rail communication around the Baltic Sea but also road and air traffic belongs to the future of this region of progress. The "Via Hanseatica" from Berlin – Warsaw – Vilnius – Riga – Tallinn – Helsinki – (St. Petersburg) is vital for the transport of goods from the ports on the Baltic Sea.

2. THE BALTIC SEA RING – A TRANSRAPID NET

To provide better climate for co-operation and development of the Baltic Sea area, a Transrapid maglev net around the Baltic Sea would be highly beneficial to remove the peripheral location of mainly Finland but also other Nordic states and Baltic states such as Estonia and Latvia (Figure 1).

Such a ring would preferably consist of two pillars. The first pillar (the western) would be a Transrapid net between Hamburg (Germany) and St. Petersburg (Russia) via the European Corridor in Sweden:

Hamburg – Helsingfŏr – Helsingborg/Malmö – Jönköping – Stockholm (Norrtälje – the Ĺland Islands – Turku – Helsinki – St. Petersburg.

The other pillar (the eastern) would run from Hamburg – Berlin (on a line completed by 2005) – Gdansk/Warsaw – Kaliningrad – Riga (Latvia) – St. Petersburg. In addition, a tunnel between Helsinki and Tallinn (Estonia) would create excellent maglev communication in the triangle Helsinki – St. Petersburg – Tallinn – Helsinki (see underneath in section 8).

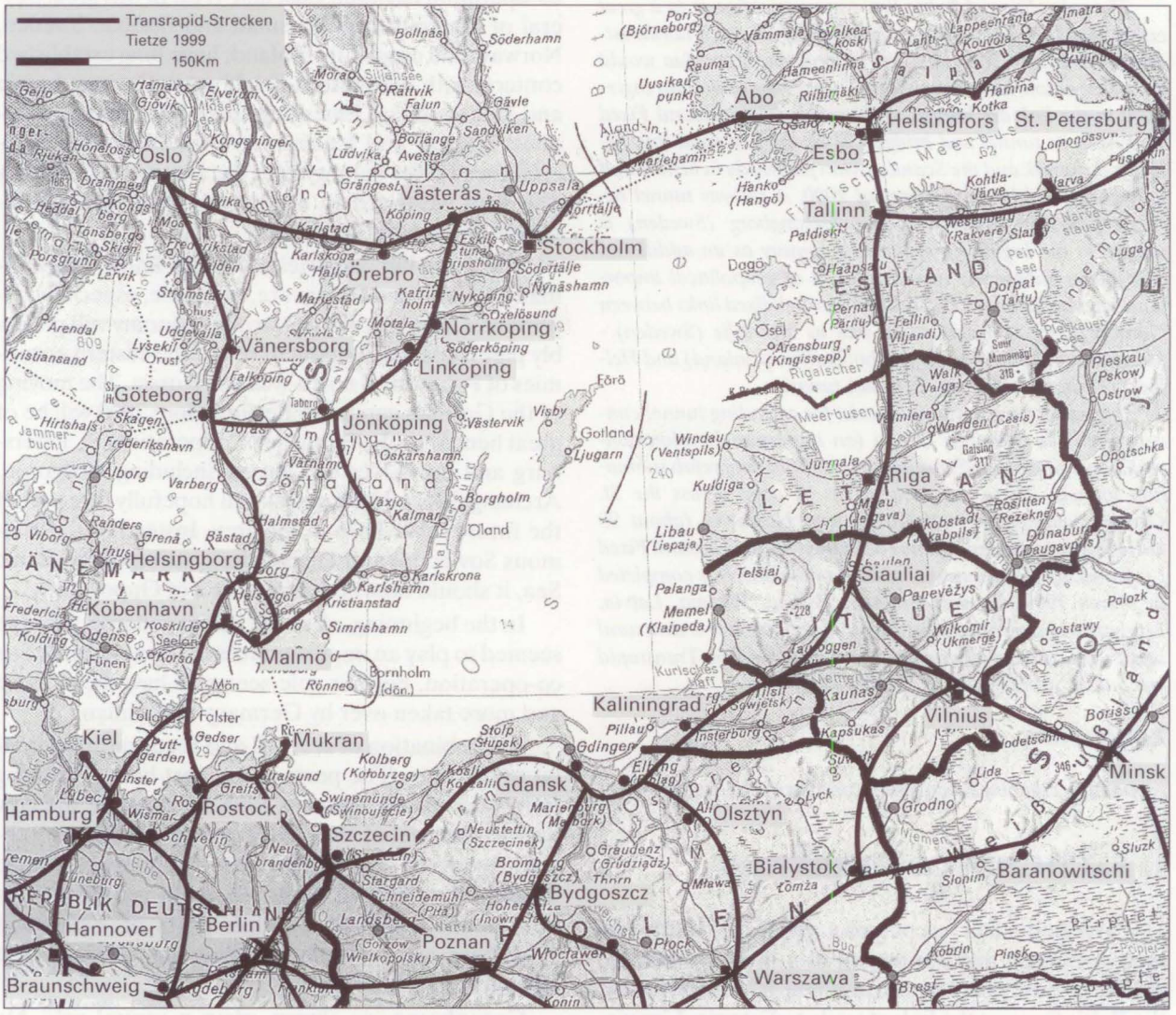

Figure 1 - Proposed circum-Baltic Transrapid net would substantially reduce the degree of marginality of one of the most advanced regions in Europe

3. THE HEAVY BURDEN OF PERIPHERAL LOCATION

One of the great problems of achieving success in the development of the Baltic Sea area is the peripherality in Europe of Finland, Sweden, Russia and the three Baltic countries. With tunnels between Finland and Sweden, Sweden and Denmark and Denmark and Germany, there will be dramatic reductions of costs and time of passenger and freight transport.

The cost for the new tunnels will be high but it should be a price well worth paying to overcome marginality in the context of the European Union.

The swift Transrapid connection between Hamburg and St. Petersburg on both sides of the Baltic Sea will contribute decisively to the development, for instance, of north-west Russia.

4. THE TUNNEL ALTERNATIVE

The British Symonds Group Ltd is an expert consultancy involved in various fields: building engineering, construction management, transportation, power and energy to mention a few of the relevant areas. It presently employs over 1,100 and is working in over 400 countries in Europe, the Middle East and Australia. The company was established in 1960 and grew rapidly in England and Wales to begin operation in continental Europe in the 1970s.

One of the fields of the group are the so-called immersed tunnels and Symonds Group Ltd is one of the world's leading consultancies in the field. Some of the immersed tunnel projects in the portfolio of the company are the Conway Tunnel (United Kingdom), the Airport Railway Tunnel (Hong Kong) and the Preveza – Aktion Tunnel (Greece). But also the Öresund (the Sound) Tunnel, part of the Copenhagen – Malmö link connecting Sweden and Denmark across the Sound. It is a combined tunnel – bridge crossing of 16 kilometres and the planned opening is in the year 2000. It will accommodate both road and rail traffic.

Symonds is using an innovative casting procedure for the tunnel part of the fixed Öresund link. When a tunnel unit has been completed by cast, a sliding gate is closed to allow the basin to be flooded. The unit is then floated to the holding area. There is sufficient space between the casting hall and the sliding gate to allow the construction of the next unit to continue uninterrupted.

One of the more advanced proposals in the field of recent international transport infrastructure projects is a plan to cross the Irish Sea between the United Kingdom and Ireland. Symonds favours an underwater sea tunnel involving the concept of construction of large tunnel units which are built in a construction facility on land, towed out and sunk into a pre-dredged trench. The units are later joined together under water and backfilled. This type of tunnel exists at Conway in North Wales and has been named the Immersed Tube Technique (ITT).

The longest tunnel using the ITT so far is the Öresund Tunnel. It has 20 units 175 metres in length.

The ITT allows for dramatically reduced cost of building tunnel units and the quality of construction is high. The concept is well suited for building longer tunnels such as the one planned to cross the Irish Sea. The project involves a twin track immersed tube railway tunnel with rolling stock operating in much the same fashion as the English Cannel Tunnel between England and France. Although no detailed studies have yet been made a route linking London with Dublin via Birmingham seems to be the best alternative.

The tunnel between England will require over 400 immersed tube tunnel units. The overall capital cost of the proposed tunnel is presently estimated at around 18 billion US dollars). The initial operating costs would be slightly over 300 million US dollars. The use of the ITT technique means that the Irish Tunnel project is less vulnerable to price escalations than bored tunnels. Immersed tube tunnel units are built on land under controlled conditions and the process is also less dependant on the uncertain geotechnical characteristics of the materials below the sea bed.

When it comes to environment problems, those related to the projects of this type are most likely to occur at the landbased works on the coast line and by terminal facilities. The marine tunnel works must be stringently monitored to avoid environmental damage and the Öresund tunnel will be important as a test case as the fixed link is constructed in one of the most environmentally sensitive areas in northern Europe.

5. HELSINGBORG – HELSINGØR

With the Öresund Fixed Link under construction it is important that further links between Denmark and Sweden are created (to the benefit of Norway, central Sweden, Finland and the St. Petersburg region). In March 1998 a EU-financed study was presented for a rail tunnel under Öresund between Helsingborg and Helsingřr.[2] A railway tunnel between the two cities has been debated since 1888. It will benefit both international and regional rail traffic. Initially, there will be one or two tracks (which can later be exchanged for one Transrapid line). The Symonds tunnel segment building technique seems to be ideally suited for this tunnel project. Initially only for passenger trains, the tunnel is planned for opening in 2010 (if funding can be arranged) and accommodate 40-50 regional passenger trains per day and 20-24 international trains. The length of the tunnel is estimated at 4.5 kilometres.

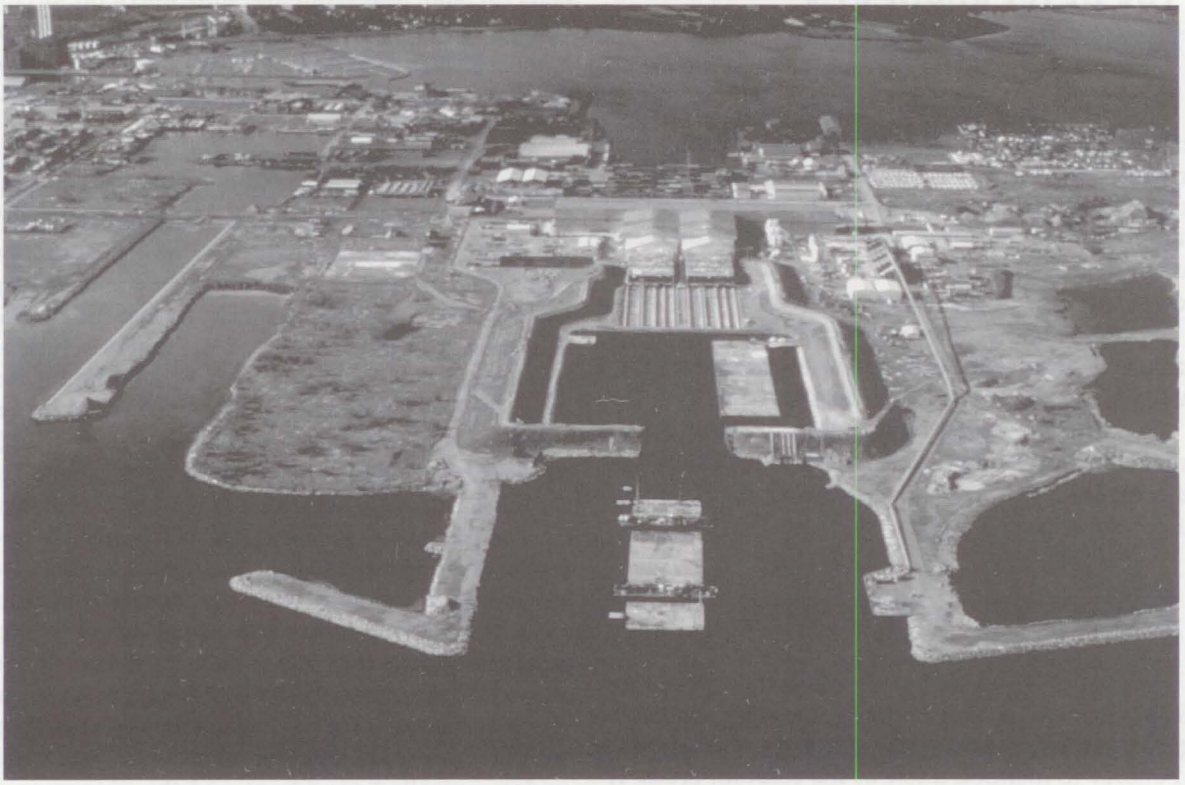

Figure 2 - Öresund tunnel casting facility

The costs are estimated at 5.3 billion Danish kroner (around a billion US dollars) but a cheaper alternative would cut the costs to 2/3 of that cost (Figures 2 and 3).

6. FEHMARN BELT

With fixed link across the Fehmarn Belt (between Rřdby /Denmark/ - Puttgarden /Germany/) there will be much faster direct train connections with, for instance, Hamburg – Köln and Hamburg – Hannover – Frankfurt.

The ratification in 1991 by the Danish Parliament of the law for construction of a fixed link across Öresund paved the way for studying the feasibility of a possible fixed link between Denmark and Germany across Fehmarn Belt. The Danish Government is now committed to work for a fixed link across Fehmarn Belt, should such a link prove environmentally sound and economically feasible. In Germany, no explicit political decision has been made regarding a Fehmarn Belt link. Unfortunately, the link is not listed in the current German investment plan for the transport sector. The earliest year of completion, if a German decision is soon forthcoming, would be 2006.

With the recent election victory of the social democrats in Germany in September 1998, and the new SPD-Green government in the Federal Republic there have been indications that the Fehmarn Link will not be the top priority on the German rail agenda. One can only wish that Denmark's government will continue pushing for this important connection to continental Europe. The Fehmarn Link is vital to reduce the peripheral location of Scandinavia in Europe.

An acceptable alternative to the Fehmarn Belt Link would be the Falster Belt Link (Gedser – Rostock). Areas further east would benefit from such a solution (Berlin, Brandenberg, Saxony, Bohemia, and Vienna).

The Danish and German ministers of transport, however, have agreed informally to carry out studies of a possible Fehmarn Belt link.

In Denmark, the decision regarding a possible fixed link has been closely connected with a decision to electrify and increase the capacity of the railroad Odense (Island of Funen) – Hamburg. It has been the policy of the Danish Government to implement the Öresund fixed link and Odese – Hamburg project before a possible link across Fehmarn Belt.

In a policy statement in the Danish Parliament in December 1993, the Minister of Transport announced that the Government's regard to development of rail traffic, including the possibility of extending the European high-speed rail network to include Denmark and Southern Scandinavia, would be the point of depar-

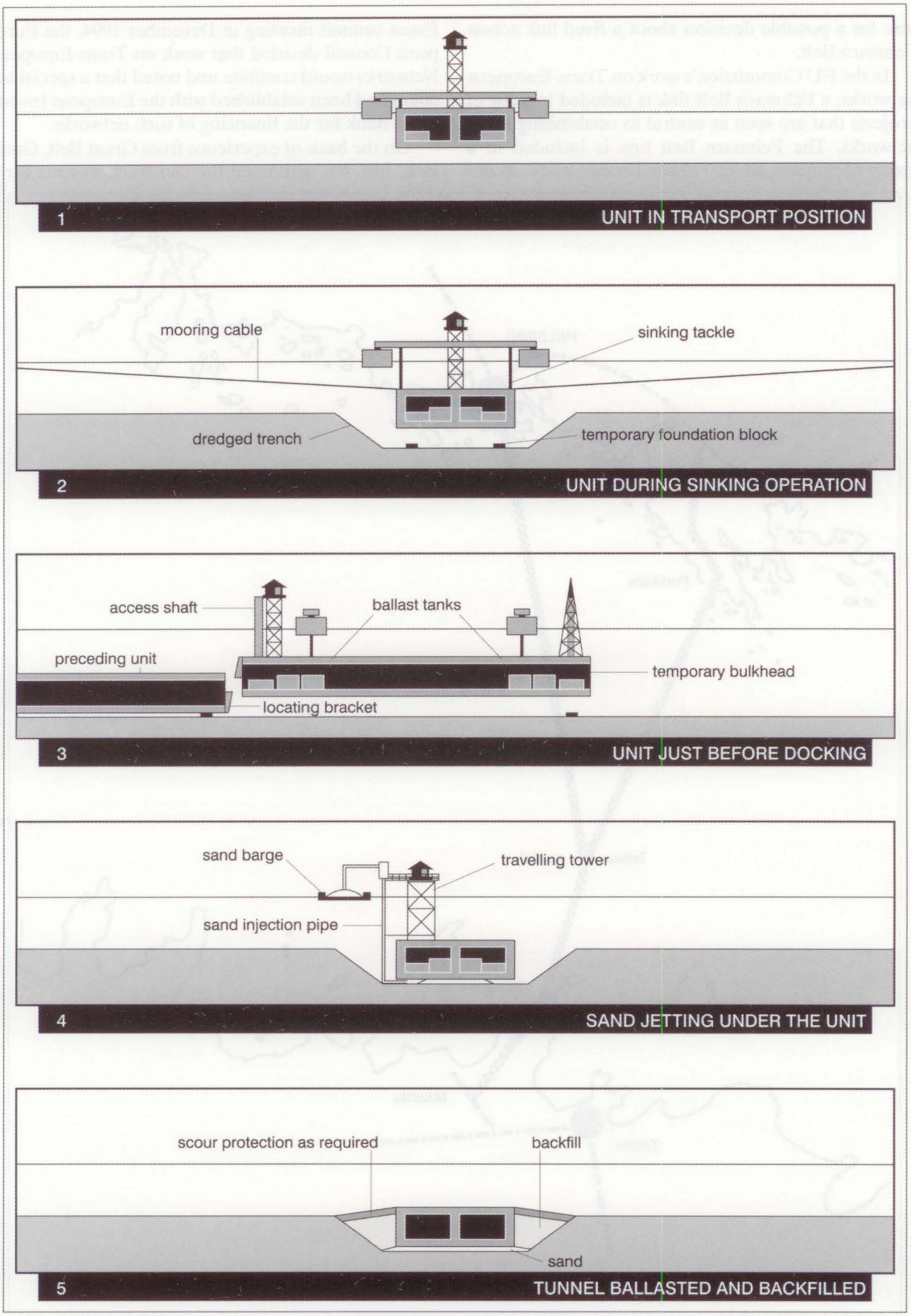

Figure 3 - Construction sequence

ture for a possible decision about a fixed link across Fehmarn Belt.

In the EU Commission's work on Trans-European networks, a Fehmarn Belt link is included in a list of projects that are seen as central to establishing these networks. The Fehmarn Belt link is included in a group of projects, which require further study. At the Essen summit meeting in December 1994, the European Council decided that work on Trans-European Networks would continue and noted that a special account had been established with the European Investment Bank for the financing of such networks.

On the basis of experience from Great Belt, Great Belt, Ltd. has estimated the construction costs for a

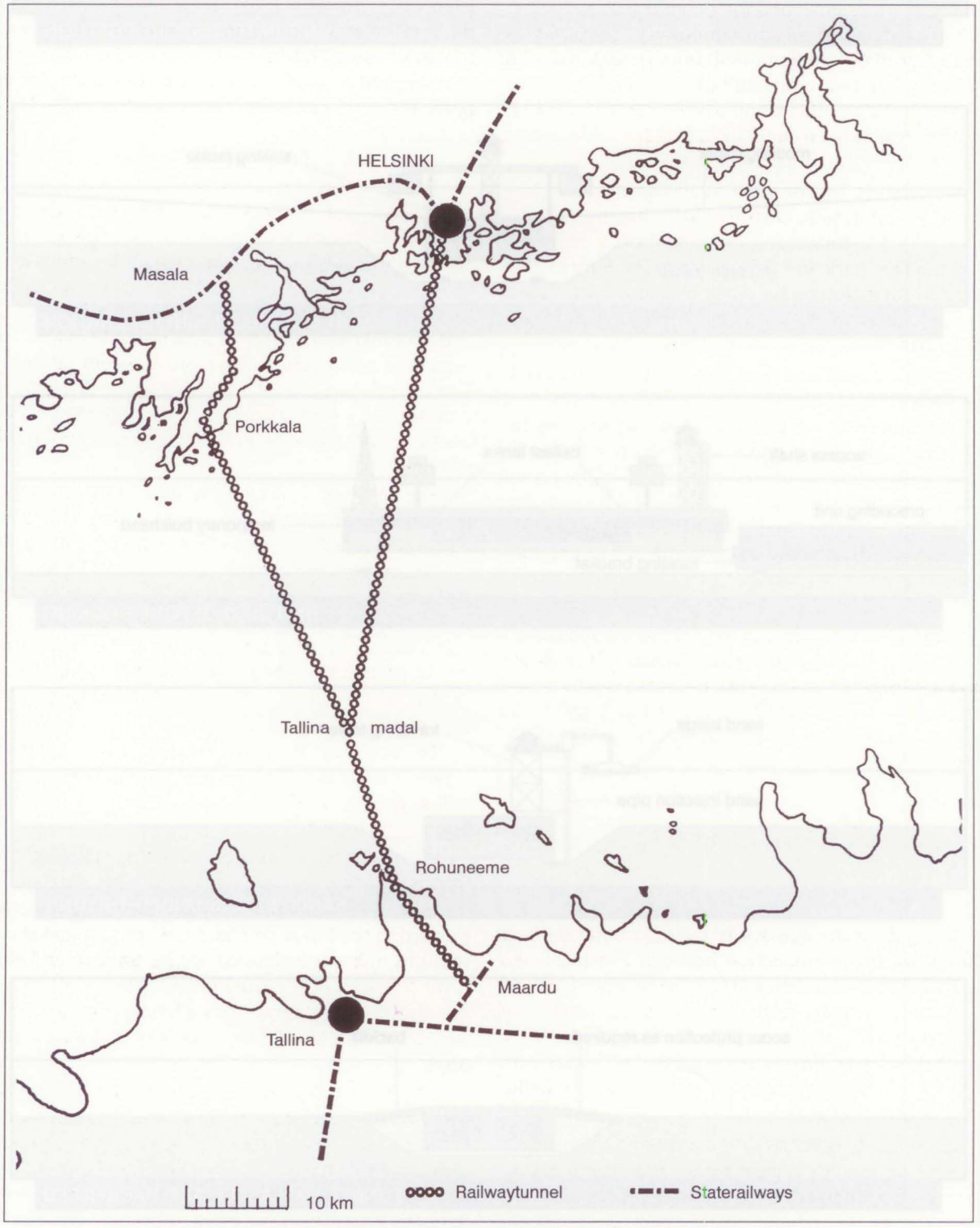

Figure 4 - Alternative routes for subaqueous tunnels between Helsinki and Tallinn

combined rail and road bridge (two-track rail, four-lane motorway) across Fehmarn Belt at dkr 24 billion (1988 prices). This is approximately twice the original budget for the Great Belt link (in the same prices).

A shuttle-train connection in a bored tunnel was estimated at 21.6 billion Danish kroner (1988 prices). Finally, construction costs for a combined connection with a bored rail tunnel and a motorway bridge was estimated at dkr 29 billion (1988 prices), with dkr 13.6 billion for the rail tunnel and dkr 15.4 billion for the road bridge. It should be noted, however, that with using the Symonds Group ITT-technique, these costs could probably be considerably reduced.

In addition to costs for the coast-to-coast link across Fehmarn Belt, costs would be incurred for expansion of the connecting rail links from one to two tracks in Denmark and Germany and for construction of connecting motorways in the two countries. Taken together, these works would cost several billion Danish kroner.

Traffic on a rail and road link across Fehmarn Belt has been estimated by Great Belt, Ltd. at 8,000 road vehicles and 5,750 rail passengers per day upon opening of the link. This is equivalent to 95 percent additional road vehicles and 160 percent additional train passengers that crossed the Belt in 1993. It is also equivalent to approximately half as many road vehicles and a fifth as many train passengers as are estimated for the fixed link across Great Belt upon its opening.

Finally, Great Belt, Ltd. found that establishing a fixed rail and road link across Fehmarn Belt would have a substantial and positive influence on the financial performance of the Öresund link but a limited influence on the financial performance of the Great Belt link.

7. FINLAND – THE ÅLAND ISLANDS – SWEDEN

Using the technique described in Section 4 the best alternative for a connection between Finland – the Áland Islands – Sweden would be to build a system of immersed tunnels from Turku in Finland via Mariehamn, the capital of Åland, to Norrtälje in Sweden, the nearest point on the Swedish mainland. From Norrtälje the maglev line would pass Stockholm in the European Corridor.

The Estonia catastrophe (the sinking of the Estonian ferry in the 90s in clear memory, a system of tunnels between Finland, Sweden (and Estonia, see underneath) would prevent further problems in respect to ferries. The northern part of the Baltic Sea is notoriously stormy during autumn and winter. A fixed link would prevent the existing ferry problems.

8. HELSINKI – TALLINN

Already in 1991, a protocol was signed by the Ministers of Transport of Finland, Estonia, Latvia, Lithuania and Poland concerning an international railway transport route Helsinki – Tallinn – Riga – Kaunas – Warsaw and to create a common commission of experts for investigation of the utilisation of railways (Figure 4).

At a meeting of the Finnish Association of Municipal Engineers in 1994 a fixed link between Helsinki and Tallinn in Estonia was proposed. The Helsinki-Tallinn Society commissioned a study group of Helsinki officials to study the possibilities and in June 1994 a report was presented[3]. The group concluded that "the only proper logistical strategy for Finland and Helsinki in relation to Tallinn and Central Europe is to advance the economic and cultural link of Russia and the Baltic region to Western Europe, and therefore construct a tunnel beneath the Gulf of Finland as part of a new St. Petersburg – Helsinki – Berlin railway."[4]

The distance between the two cities is 80 kilometres and two alternatives were studied. One alternative was directly between Helsinki and Tallinn and the other through Porkkala to reach Tallinn via Rohuneeme and Mardu (see map..). The direct line would be 105 kilometres and the Porkkala alternative 120 kilometres. With present trains, the travel time would be about an hour but this time would be reduced considerably with the introduction of Transrapid.

The group estimated a construction time of nine to eleven years and the basic costs between six and nine billion Finnish marks (around one and one and a half billion US dollars).

Prompt preliminary geotechnical investigations were suggested.

In a 1997 preliminary project plan[5] the initiators pointed to the Öresund Fixed Link project and stated that this link was estimated to give Sweden and Norway a ten percent edge on Finland in terms of international competitiveness. A tunnel would promote tourism in Finland and Estonia and boost the local railways.

The price of the Finnish-Estonian tunnel would be less than the sixth of the price for the Channel Tunnel (Dover-Calais). A further advantage would be the employment of around 55,000 people (14,000 directly and 41,000 indirectly) in the tunnel project. Even larger figures could be estimated for the fixed link between Sweden and Finland via the Áland Islands.

Financing would be with long-term state loans repayable over 11-50 years.

Traffic volumes are estimated for the first years (2007-2020) to 6-15 million persons, 200,000 to 600,000 cars and lorries and 2-10 million tons of freight per annum.

The projected fixed link will be paid for by the tunnel fees, which will be decreased as volumes of traffic increase. The net gains are estimated by the project to be 200 to 600 million Finnish marks. The tunnel project would be important to the Helsinki region and the whole of southern Finland.

9. CONCLUSIONS

The future for the Baltic Sea area seems bright and the construction of the Transrapid line between Hamburg and Berlin is proceeding according to plans. The exact route has now been fixed between Germany's two largest cities.

Plans are already made for the future Transrapid links from Berlin – Schwerin – Hamburg. From Berlin, links are possible to the eastern part of Germany, from Schwerin, links are suitable to the Baltic Sea ports nearby, and in the case of Hamburg, cities in Schleswig-Holstein offer advantageous future connections.

The creation of Transrapid International, joint venture between Adtranz (ABB Daimler-Benz-Transportation GmbH), Siemens AG Transportations Systems Group and Thyssen Industrie AG Henschel, has laid the foundation for expansion of Transrapid.

The deplorable train crash in Germany earlier in 1998 has shown that wheel-based train travel might be on its way out. Transrapid can solve many of the problems of the present high-speed trains and boost safety considerably. Transrapid is also superior to the two systems presently developed in Japan.

It is important that the Baltic Sea area is one of the first that benefits from the rail traffic of the future, Transrapid.

NOTES

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