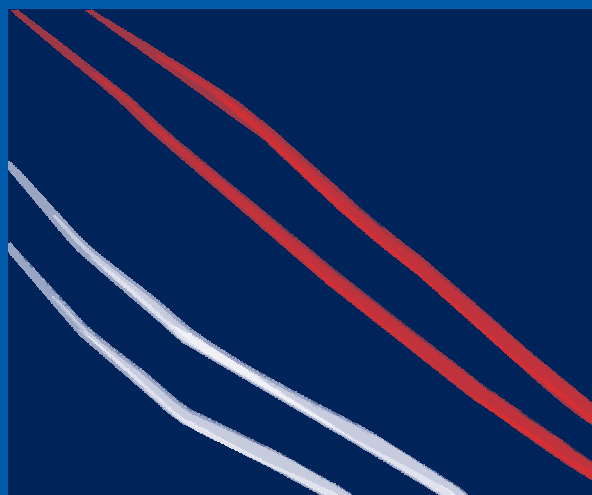


TRANSPORT SYSTEM OF THE NORDIC TRIANGLE



FOREWORD

The transport corridor of the Nordic Triangle links the Nordic capitals to each other, Russia and central Europe. It is one of the transport schemes prioritised by the EU. In Finland, the Nordic Triangle covers the road and rail connections from Turku to the eastern border via the capital region. The sea routes, ports and airports of the area are also part of the transport system. The Nordic Triangle is a central part of the transport system that serves the whole country.

Multimodal Development Strategy for the development of the transport system of the Nordic Triangle has been made. It addresses the needs for and preconditions of developing the transport infrastructure as well as the projects and their timing as part of the balanced development of the whole transport system. The Civil Aviation, Maritime, Rail and Road Administrations have participated in the work.

The European Road E18 is an essential part of the Nordic Triangle in Finland. It is a road connection from the ports of Turku and Naantali to the Vaalimaa border crossing via the capital region. The national and international significance of the E18 has necessitated defining its role and development strategy as a part of the transport system.

"The Development Study European Road E18" was completed in April 1995 and contained the first holistic examination of the E18, a road that consists of several sections. The report defined the development strategy and programme for the E18.

Subsequently, the implementation has proceeded mainly as proposed in the Study. The sections Turku - Paimio, western part of Ring Road III, Porvoo - Koskenkylä and Koskenkylä -

Loviisa (a semi-motorway) have been opened to traffic. The sections Paimio - Muurla, Lohja - Lohjanharju and part of Ring Road III are under construction and the conditions of the border crossing have been improved. Along the E18, there have been experiments with changing speed limits and corridors for wildlife as well as landscape and environmental art. Many land use and business opportunities opened by the new road have been taken.

The key objective of this report is to define a new development strategy as part of the transport system of the Nordic Triangle and to review and update the basis for the development of the E18. Information on the main directions of the development policy of the E18 is needed in regional, municipal and corporate decision-making on activities and land use.

The production of this report has been steered by a working group consisting of the representatives of the Road Districts of Turku, Uusimaa and South-eastern Finland and the Central Administration. The report has been drawn up under the direction of Mr. Pekka Jokela (Road Administration) by LT Consultants Ltd (Lic.Sc. (Tech.) Kari Lautso, M.Sc. Timo Kärkinen) with the following subconsultants: Mr. Kari Hietala (Kari Hietala Ltd), Senior Researcher Christer Pursiainen (Nordregio) and Mr. Antti Saurama and Mr. Tapio Karvonen (Centre for Maritime Studies, University of Turku).

Helsinki, January 2003

Finnish Road Administration

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THE E18 - THE DEVELOPMENT STRATEGY

E18 - THE ROLE AND DEVELOPMENT PRINCIPLES

The transport system of the Nordic Triangle with its roads, railways, ports and airports is a central part of the transport system that serves the whole country, southern Finland and many cities. Its international importance is high as it serves the bulk of Finland's exports, imports and international passenger transport. The Nordic Triangle is the most significant connection between the EU and Russia and an EU-prioritised scheme in the Trans-European Transport Networks (TEN).

The E18 is a central element of the Nordic Triangle. The need for intermodality and the development of port, airport and freight station connections are highlighted in its role. The development of the Nordic Triangle supports regional and local programmes of economic development. Reliability, functionality, traffic safety and environmental values are emphasised in planning and design. In addition, the roadside landscape and the high-quality design of the road environment as well as the arrangement of the telematic and other services for road users make their special demands.

THE GOALS AND MEANS OF IMPLEMENTATION

The target is a high-quality transport system with its terminals, border crossings, services and environment, serving the whole society. The goal is to construct the motorway connection Turku - Helsinki - Hamina by 2015 so that the sections Turku - Helsinki and that of Hamina are completed by 2008 and the section Helsinki - Hamina in 2015. Additionally, the Hamina - Vaalimaa section will be upgraded into a motorway in stages following the demand of traffic.

The projects will be realised as sufficiently large aggregates in order to ensure their economy and efficiency. The lifespan costs are minimised by applying new selection procedures. In order to facilitate funding, partnerships with the private sector, TEN funding from the EU and, if necessary, loans from the European Investment bank will be sought. Planning and design will progress so as to maintain preparedness for implementation on a high level.

Long-term commitment to the Development Programme of the E18 will be sought from the Government and Parliament in the programmes of governments and in state budgets.

IMPACTS

The development of the Nordic Triangle and the E18 is a response to societal and transport demand. They promote Finland's exports, imports, competitiveness and employment. The development of the E18 will put into practice transport policy goals of the MinTC and support the fulfilment of the land use development needs emerging from the growth of cities and the goals expressed by the Regional Councils, municipalities and business life of the impact area. Developing the E18 improves traffic safety and is profitable.

Commitment to the Implementation Programme (p. 13) would remove the uncertainty that hinders the realisation of the land use and other investments related to the E18. As the objective is the construction of a motorway, only measures improving safety are carried out on the existing road.

The European Road E18 in Finland



THE E18 - THE INTERNATIONAL ROLE

EU TRANSPORT POLICY A NEW, SUSTAINABLE BALANCE OF TRANSPORT MODES

It is the goal of the EU to ensure the competitiveness of European countries among the other economic powers of the world. This has been contributing to the implementation of the principle of the free movement of people, goods and services. Integration and free movement require good transport connections and supporting service systems.

EU transport policy directions have been sketched in the White Paper "European Transport policy for 2010: time to decide" where attention is paid to the means of mitigating the negative impacts of transport.

Directions that affect the development of the E18 are e.g. the promotion of intermodality and sea transport ("the motorways of the sea" and the high-quality connections of ports and terminals), special emphasis on the peripheral areas of the Community and the goal of halving the number of traffic accident victims by 2010.

TRANS-EUROPEAN TRANSPORT NETWORKS (TEN) EUROPE'S KEY TRANSPORT

The most important parts of the European transport networks form the Trans-European Networks (TEN). They cover road and rail networks, airports as well as sea and inland ports. The E18 is part of the TEN road network in Finland.

The so-called Pan-European Transport Networks complement the TEN outside the EU. Their most important corridors and areas have been defined in Crete in 1994 and in Helsinki in 1997. For Finland, the most important ones are:

- transport corridor I, Helsinki - Tallinn - Riga - Warsaw
- transport corridor 9A, Helsinki - St. Petersburg - Moscow
- the Euro-Arctic Traffic Area of Barents.

The development of the Nordic Triangle and the above schemes also support the Northern Dimension of the EU. According to the EU, the TEN funding will increase because of, inter alia, new member states. The amount of funding Finland receives is expected to remain at the present level.

THE NORDIC TRIANGLE IS AMONG THE KEY SCHEMES OF THE TEN

The multimodal Nordic Triangle is part of the TEN and consists of roads, railways, ports, terminals and airports. It links the capitals of Finland, Sweden, Norway and Denmark to each other and further to central Europe and Russia. The transport corridor is the most significant connection between the EU and Russia.

The Nordic Triangle has been designated among the primary schemes of the TEN. The Finnish section of its transport system comprises an east-west transport corridor with its roads, railways, ports and airports. The E18 from Turku to the eastern border Vaalimaa border crossing via the capital region is its central part.

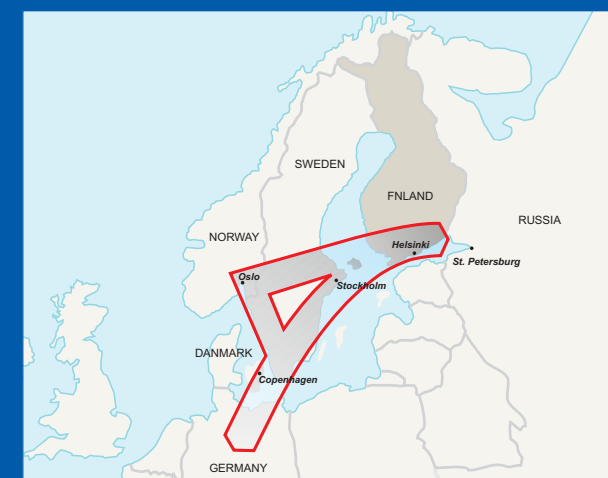
The continuation of the E18 to St. Petersburg and Moscow is among the extra-EU connections whose development the EU supports in order to enlarge the economic region eastwards. Several upgrading projects of the transport corridor are ongoing or under design in Russia.



The trunk road network of northern Europe



The Nordic Triangle



THE ROLE OF SEA TRANSPORT GROWS AND LAND CONNECTIONS IMPROVE

The EU will promote short sea shipping by linking "motorways of the sea" to the TEN. The concept means making shipping-based transport chains more competitive. This requires better connections from ports to the networks of roads, railways and inland waterways as well as improving the quality of port services.

Certain sea connections will be added to the TEN alongside of roads and railways. In the Baltic Sea, no single route will be designated as a "motorway of the sea". Instead, the network of connections and their land transport connections will be developed as a whole.

The planned concept of the "motorway of the Baltic" would include all necessary transport infrastructure and services both on land and at sea. The development strategy of the E18 takes this principle into account.

THE DEVELOPMENT OF RUSSIA IS IMPORTANT FOR FINLAND

Russia has stabilised politically in recent years and its economic development has been rapid. In the long run, it is the aim of both the EU and Russia to integrate Russia more closely to both the European and world economy. This development will markedly increase interaction and trade between Finland and Russia, which will also result in the growth of transport. In economic scenarios, the Russian per-capita GNP is predicted to grow 2.8-fold, and the value of Finnish exports and imports is forecasted to more than double by 2030.

The strategy created for north-western Russia contains a goal of developing the transport network in order to integrate with the European transport system. The same goal is in the road programmes of Russia, north-western Russia and the Leningrad Area. In practice, this can be seen in the many road, railway and port investments in progress or under design.

THE BRIDGEHEAD POSITION WILL CHANGE THE NATURE OF THE TRANSIT TRAFFIC

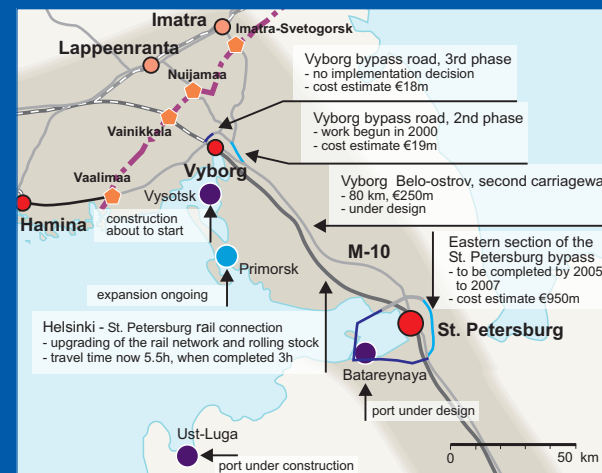
The transit traffic has had a marked economic significance for Finland. Its development is heavily dependent on the fee and tariff policies applied, border crossing conditions, alternative routes and the development of Russia's own port capacity.

As Russia is strongly developing its own port capacity, the nature of the transit traffic will change. The Finnish assets are a functioning infrastructure, safety, functioning transport-related auxiliary services and the short operation intervals in sea traffic, and these will ensure that part of the transit traffic will continue to proceed through Finland.

Foreign firms will establish warehouses and value-adding agencies in Finland for the Russian market. Their number and importance will increase creating traffic that will halt in Finland, resembling transit traffic.



Transport projects in the Corridor 9A



THE E18 - THE ROLE IN FINLAND AS A PART OF THE NORDIC TRIANGLE

THE E18 IS A PART OF A MULTIMODAL TRANSPORT SYSTEM

The basis of the transport system of southern Finland is formed by the road and rail networks that link the cities, ports, airports and terminals with each other and other Finnish centres. The E18 has a central role in this transport system, as it serves many urban areas, all the ports of the south coast and Finland's most import airport.

The role of the E18 requires its development as a part of the transport system.

This role highlights several special needs and services, such as transport-related international information services, taking account of intermodality, the development of the connections and services of terminals and border crossings, upholding environmental values and Finnish art and design.

Supporting the transport and land use systems of urban areas and municipalities also belongs to the role of the E18.

THE EU, NATIONAL AND LOCAL POLICIES CONFORM

Developing the Nordic Triangle is in accordance with EU transport policy and supports the transport policy goals and measures of the Ministry of Transport and Communications, elaborated by the road management goals and measures of the Road Administration. The conformity of the policies of the EU, the state, regions and the business life can be seen as investments made in the Nordic Triangle, and also indirectly as municipal and corporate investments in and plans about the roadside land use. Sweden and Russia are also developing the Nordic Triangle and its continuation in their territories.

The visions of the regions see the transport corridor area as a high-quality business centre for the Baltic region. The possibilities of the corridor to act as a bridgehead towards Russia are also highlighted. The Regional Councils and many municipalities have, in addition, drawn up more detailed E18-backed visions and goals for the development of their land use, business life and transport.

DEVELOPING THE E18 CORRIDOR, FINLAND'S MOST PRODUCTIVE AREA, IS IMPORTANT

The national significance of the E18 is reflected in the fact that ca. 45% of the Finnish GNP is produced in its immediate vicinity, i.e. in the roadside municipalities. The level of production (per capita) is high, almost one-third above the national mean. Production intensity (per road-km) is the highest in the country, €163m/km. The growth of production, investments and work force has been clearly above the other European roads. The good and improved accessibility created by the transport corridor has contributed to this.

Cities have needs of developing the transport system because of networking, collaboration and their growth caused by increased living space per person and migration. Thus the role of the E18 has been emphasised in statements by the Regional Councils and chambers of commerce where the development of the road has been prioritised over other transport projects. Good accessibility, smooth connections and low transport costs are also important for business life.

Transport system of the Nordic Triangle in Finland, target situation



MOST OF FINLAND'S INTERNATIONAL TRANSPORT USES THE NORDIC TRIANGLE

Ports handle 91% of Finland's exports and 68% of the imports. A "motorway of the sea" runs from Finland to continental Europe via the Baltic Sea and carries a goods flow corresponding to 12 400 lorries per day. In Finland, 64% of this flow, a total of 50mt. a year, uses ports along the Nordic Triangle.

Of all international passenger transport in Finland, 58%, and of international goods transport, 62%, use the services of the E18 corridor. In passenger transport, the share of the terminals of the E18 corridor is 94% of the international passengers in air, 100% in rail and 99% in marine traffic.

Ca. 95% of all air cargo arriving at and departing from Finland use the Helsinki-Vantaa Airport.

The above figures clearly demonstrate the international importance of the E18 transport corridor.



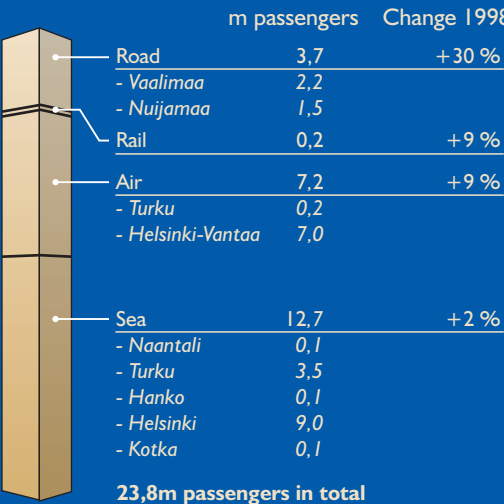
TRANSIT TRAFFIC IS ON THE RISE, RAILWAYS ARE EMPHASIZED

The economic recovery of Russia has clearly stimulated transit traffic in Finland. In 2001, a total of 5.7mt. of transit freight was transported through Finnish ports, of which 72% by rail and 28% by road. Of the rail transit, 72% was transported from westwards and of the road transit, 92% went eastwards. The amount of goods transported rose by as much as 69% from 2000. In 2002, goods transport by road has still increased.

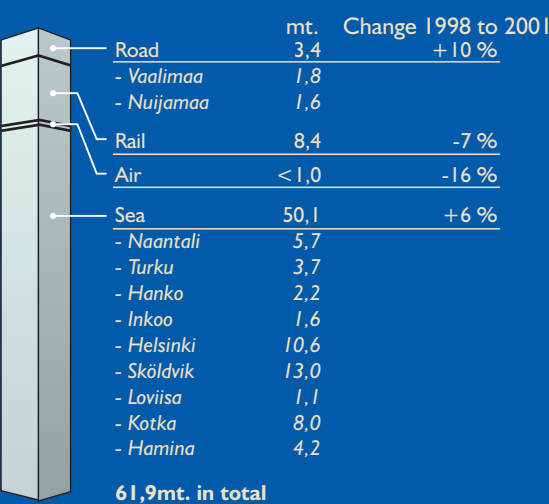
In 2001, the total amount of transit freight on roads was 1.4mt. The share of the Vaalimaa border crossing was 61%. The transit traffic between Finland and Russia has a significant impact on the number of heavy vehicles using the E18, especially on the Kymenlaakso section.

The total revenues from transit traffic in 2000 have been estimated at ca. €103m. The largest revenues were generated in rail transport and stevedoring.

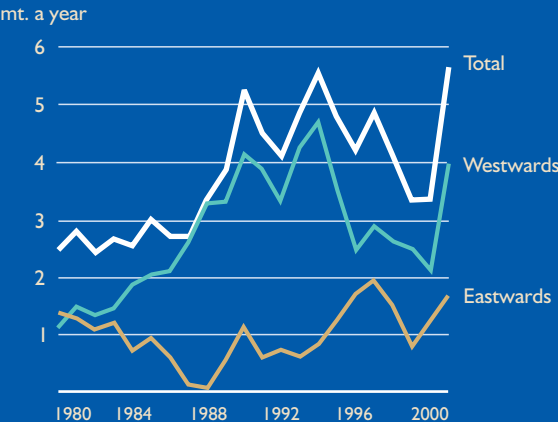
International passenger traffic in the Nordic Triangle in 2001



International goods transport in the Nordic Triangle in 2001



Development of through traffic in 1980 to 2001



THE E18 - THE TRAFFIC

GROWTH HAS BEEN FASTER THAN ELSEWHERE ON THE ROAD NETWORK

From 1998 to 2001, the average growth of traffic on the E18 has been 6% a year. During the same period, the corresponding figure for the whole trunk road network was 2.5%.

Increase of population and economic activity have contributed to the fast growth on the E18. The increase has been in accordance with traffic forecasts made for the road.

The average traffic volume for the entire E18 was 14 400 vehicles a day in 2001. Between Turku and Hamina, the figure was 15 600 vehicles. The largest flows are on Ring Road III, ca. 50 000 vehicles/day.

The share of heavy vehicles at the western end is near the national mean for highways, ca. 10%. The share grows eastwards and is double the mean at the eastern end.



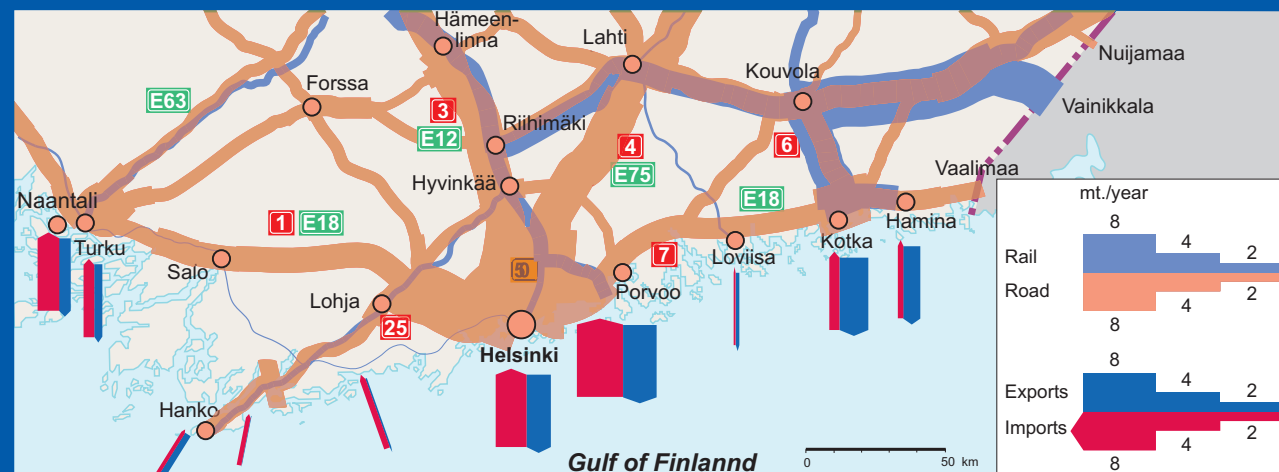
CROSS-BORDER TRAFFIC EASTWARDS CONTINUES TO GROW

The Development Study of the E18 (1995) contains a forecast for the cross-border traffic at Vaalimaa. The forecast was very well realised until 2000. In 2001, the growth was smaller than predicted. In 2002, the growth rate of traffic was as foreseen.

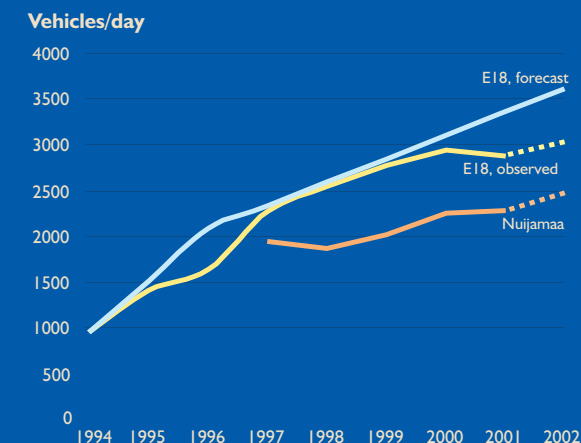
The share of lorries in the cross-border traffic at Vaalimaa has clearly declined: in 1997, it was 37% and in 2001, only 17%. The share of coaches has remained at 2%. At Vaalimaa, 48% of the lorry traffic is directed from Finland to Russia at Nuijamaa the figure is 56%.

Significant volumes of goods vehicles from the ports of the south coast make their way to the E18. The most important traffic flows come from the ports of Helsinki, Sköldvik and Turku, for each of which the average daily number of heavy vehicles using the E18 exceeds 500.

Freight flows in the transport corridor of the Nordic Triangle in 2001



Development of traffic flows on the eastern border



INTERNATIONAL GOODS TRANSPORT IS CONCENTRATED ON THE EASTERN SECTIONS

The ports in the sphere of influence of the E18 generate a flow of goods traffic of ca. 2800 vehicles/day. Of the goods types, general cargo and especially large units are mostly directed onto the E18. Almost all transit transport of general cargo use the E18 on the way to or from Russia. The road is very important for Finland's foreign trade: the value of exported and imported goods transported on it amounts to several billion euros annually.

The significance of international traffic is the highest on the easternmost sections of the road. In the Development Study of the E18, in 1995, forecasts for domestic, through and other international traffic up until 2005 were presented. According to their results, the share of international traffic is more than 80% east of Hamina, ca. 50% west of Kotka and less than 20% west of the capital region.



TRAFFIC ON THE E18 WILL GROW 30 %, CROSSBORDER TRAFFIC MORE THAN 100%

The traffic forecast for the whole E18 has not been updated in the present context. The most recent forecast is based on the material of a 1999 study where the separate forecasts used in various road projects were gathered and combined.

The average traffic flow on the E18 will be ca. 18 000 vehicles/day in 2020. The growth from 2001 is about 30%. The volume of the traffic crossing the border is being monitored and forecasts will be updated as necessary. The traffic flows will be affected by the construction schedule of the easternmost part of the E18.

It is predicted that the growth in the road traffic between Russia and Finland will slow down after 2005 so that the traffic volume at Vaalimaa would be ca. 7000 vehicles/day in 2020. This means a growth of more than 100 % from today.

Traffic forecast for the E18 in 2020 (vehicles/day)



THE E18 - THE DEVELOPMENT NEEDS AND SPECIAL FEATURES OF IMPLEMENTATION

TRAFFIC SAFETY IS A PROBLEM ON THE OLD ROAD SECTIONS

In 1997-2001, an average of 160 accidents leading to personal injury (including death) occurred on the E18 resulting in 13 deaths. The most problematic sections are Muurla - Lieviö, Loviisa - Kotka and Hamina - Vaalimaa where the occurrence of severe accidents is nearly double the national average.

The safest part of the E18 is the section Turku - Paimio, which is also the latest motorway section of the whole road. The most up-to-date methods and knowledge enable the design of safe roads.

In Hamina, the E18 runs in the street network of the city. Earlier, there were many accidents on this road section, but it has been significantly improved through lower speed limits (40 km/h) together with supportive traffic arrangements such as roundabouts.

THERE IS DAILY CONGESTION ON MANY SECTIONS EVEN NOW

Congestion of traffic hinders both passenger and goods transport. At present, queues are formed on weekdays on several two-lane sections of the E18 and on Ring Road III. The predicted growth of traffic will rapidly worsen the situation.

The sensitivity of a traffic flow to incidents increases as the capacity of the road is approached. In such situations, bad weather conditions or other incidents such as accidents may cause very long delays to road users. The lengthening of travel times and their poor predictability reduce the level of service and value of the connection for firms, residents of the area and other road users.

The role of the E18 in the transport system of southern Finland is very central in both passenger and goods transport. Therefore, reducing its incident sensitivity is of great importance.

GROUNDWATER RISKS, NOISE AND BARRIER EFFECT ARE PRESENT ENVIRONMENTAL PROBLEMS

Rising salt concentrations in groundwater and the risk related to accidents with hazardous substances are the most serious environmental problems of the E18 road. Groundwater protection is inadequate along the existing roads. Including efficient protection measures in the design of new roads can reduce the chloride concentrations of groundwater.

Noise is a nuisance in many locations along the present road. The most problematic places are the population centres of Suomusjärvi and Saukkola, Ring Road III, Perniön-lahti Bay, Karhula and Hamina.

The barrier effect of the existing road hinders the development of city and population centres. Roads with the heaviest traffic, such as highway 7 in Hamina, are perceived as functional obstacles that lower the environmental quality.

One of the aims of developing the Nordic Triangle is to reduce emissions at the transport system level.



THE E18 CONCEPT EMPHASISES THE ENVIRONMENT, SERVICES, THE LANDSCAPE AND DESIGN

Recently, road design along the E18 has aimed at reducing the negative impacts of road building on the environment and nature e.g. through tunnels, underpasses and green bridges. The share of these measures of the total design and construction costs can reach 25%.

The goals of and ideas on the design of the E18 were addressed in the 1996 report "Guidelines for planning and design for E18-road in Finland." The most important special goals related to the E18 were conveying an experience of the Finnish cultural landscape to the road user, highlighting the role of the international European Road E18 through Finnish design as well as fitting the road structures to the environment as smoothly as possible.

The roadside services of the E18 have not decreased the attraction of city centres or sprawled out communities. The goal is to increase and improve the services without compromising the level of service of roadside communities.

NEW TECHNOLOGY IS PILOTED AND USED ON THE E18

Modern applications of road and traffic technology and telematics are a special feature of the E18. In 1996-99, a pilot programme was carried out where the use of new technology in, inter alia, traffic control was tested. Subsequently, the functionality of the roadside equipment has been further improved.

In addition to developing the information provision on weather and road conditions, information on the traffic situation will be provided. Info kiosks with a touch screen have already been introduced in Kotka and Vaalimaa. The aim is to offer traffic information in a user-friendly and clear way.

Different organisations collaborate at the border crossings to develop e.g. incident information provision. At present, the Road Administration provides information on the situation at the border on the Internet with pictures of web cameras being updated every fifteen minutes. Weather information is also available.



THE E18 - THE CONSTRUCTION PROJECTS AND IMPLEMENTATION

DEVELOPMENT HAS PROGRESSED BUT SOME PROJECTS HAVE NOT STARTED

Six construction schemes remain on the E18. One of them will be completed in 2003, and parts of two others are under construction. The cost estimates of the commenced projects presented in the table below are from the 2003 state budget. Other cost estimates are not precise, as the projects are under design. The commencement of some projects

depends on land use planning and the development of traffic.

Overtaking lanes to improve safety as well as pedestrian and cycle paths and border crossing arrangements will be realised on the present highway 7 between Hamina and Vaalimaa. The construction costs of these have been estimated at €6m.

Project	Lenght	Cost estimate	Situation
Project 1 Highway 1, Paimio - Muurla	35 km	€171m	Under construction, to be opened in 2003
Project 2 Highway 1, Muurla - Lohja	50 km	€310m	To be started in 2004
Highway 1, Lohja - Lohjanharju	10 km	€59m	Under construction, to be opened in 2005
Project 3 Ring Road III, Vanhakartano - Vantaankoski	5 km	€30m	Target starting date ca. 2010
Ring Road III, Vantaankoski - Lentoasemantie	7 km	€115m	Target starting date 2006
Ring Road III, Lentoasemantie - Tikkurila	5 km	€60m	Under construction, to be opened in 2005
Project 4 Highway 7, Koskenkylä - Loviisa - Kotka	51 km	€150m	Target starting date ca. 2010
Project 5 Highway 7, Hamina	14 km	€60m	Target starting date 2006, land use planning
Project 6 Highway 7, Hamina - Vaalimaa	30 km	€50m	Target starting date 2010-2015
Total	207 km	1 005 M€	

AS THINGS LOOK NOW, REALIZATION OF HIGHWAY 7 PROJECTS WILL TAKE LONG

Between Turku and Helsinki, the sections Paimio - Muurla and Lohja - Lohjanharju are under construction. According to the implementation principle expressed in the 2002 state budget, work on the Muurla - Lohja section will start in 2004. After the completion of these, there will be an unbroken motorway between Turku and Helsinki in 2008.

In the capital region, the section Lentoasemantie - Tikkurila on Ring Road III is under construction and will be finished in 2005. The work will continue on the next section, Vantaankoski - Lentoasemantie. Subsequently, the upgrading of Ring Road III will continue between Vanhakartano and Vantaankoski.

Of the three E18 projects east of Helsinki, none is presently included in implementation programmes, although e.g. the section in Hamina should be realised urgently in order to secure the smooth flow of traffic and to alleviate environmental and barrier effects.

Road construction projects of the E18



THE METHODS OF IMPLEMENTING AND FUNDING LARGE ROAD PROJECTS DEVELOP

Main roads are implemented by providing funds for the project for the whole construction period. In the alternative life cycle responsibility model, payments are made during a long period; the better transport connections are paid with the resultant benefits. The life cycle responsibility also improves the price-quality ratio. In the future, the funding methods of large road projects are the following:

- ♦ total funding that enables the optimisation of the construction schedule;
- ♦ well coordinated scheduling of the projects that ensures the efficient taking into use of investments;
- ♦ minimisation of life cycle costs by combining the final design, construction, maintenance and possibly funding as one whole; and,
- ♦ road corridor thinking where the use of the corridor formed by the new and the old road is optimised according to e.g. trafficability, safety and environmental needs.

SINCE 1995, THE NORDIC TRIANGLE HAS RECEIVED EU FUNDS WORTH CA. €100M

The European Union supports the development of the Trans-European Networks (TEN) in its member states.

The European Council in Essen in 1994 defined 14 primary beneficiaries of EU support, one of which, and the only one in Finland, is the Nordic Triangle. Yet support has been also received for other TEN projects in Finland.

The support can amount to 10% of the construction costs. In total, Finland has received TEN funding worth ca. €100m in 1995-2001. For E18 projects, the support has been ca. 7-8% of the construction costs.

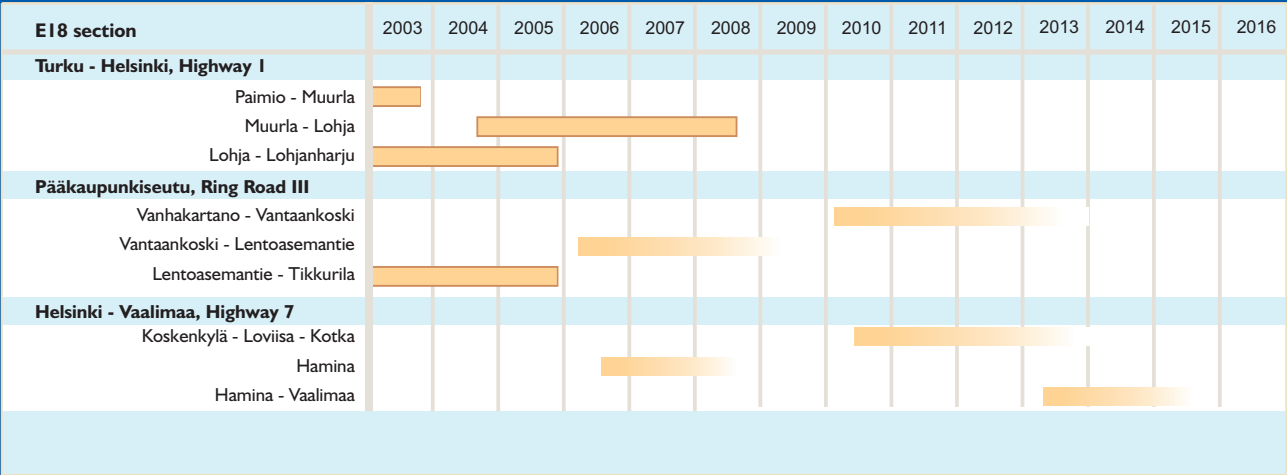
The EU funding received so far has made the funding of the schemes somewhat easier and raised their ranking in national prioritisation but it has not had a decisive financial significance for their implementation.

The EU is currently reforming the principles of TEN funding. The Nordic Triangle is likely to remain among the prioritised schemes, but otherwise the funding is shifting to the new member states and to solving the large bottleneck problems of central Europe.

The concept of the "motorways of the sea", i.e. improved sea transport connections, is seen to be able to ease the pressures faced by land transport. Thus also a "motorway of the Baltic" could rise among the priorities.

New alternatives of public-private partnerships (PPPs) are examined in the context of funding infrastructure projects, both in the EU and in Finland. In addition, loans can be sought from the European Investment Fund (EIF) and the European Investment Bank (EIB).

Target implementation programme for the E18 road projects



THE E18 - IMPACTS

THE DEVELOPMENT PROGRAMME WILL AFFECT THE WHOLE COUNTRY

The development of the E18 is in harmony with EU and Finnish transport policy goals. It also supports the goals and plans of the Regional Councils. With Sweden and Russia also developing E18-related connections in their territories, the idea of an international, functioning transport corridor is realised.

Developing the E18 affects the economies of the roadside municipalities in many ways by increasing accessibility, commuting and market areas, economic efficiency and productivity and thus investments and employment. Enhancing the international competitiveness will also attract foreign companies and investments.

The economic and employment effects will spread throughout the country, especially as regards tourism and logistics. In this field the predicted development of tourism and trade with Russia is the strongest driver of change.

THE E18 CORRIDOR WILL DEVELOP INTO A NETWORK OF CITIES

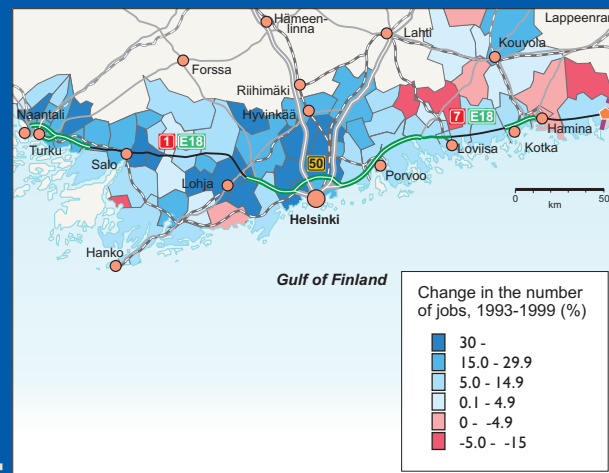
The increasing demand for housing and employment space per person together with migration will create pressure for the development of cities and transport systems. The E18 is part of local transport systems and an enabling factor for responding to the demand for new residential and employment areas as well as for developing public transport.

The interaction between the coastal cities and centres will intensify and they will form a collaboration zone and a network of cities.

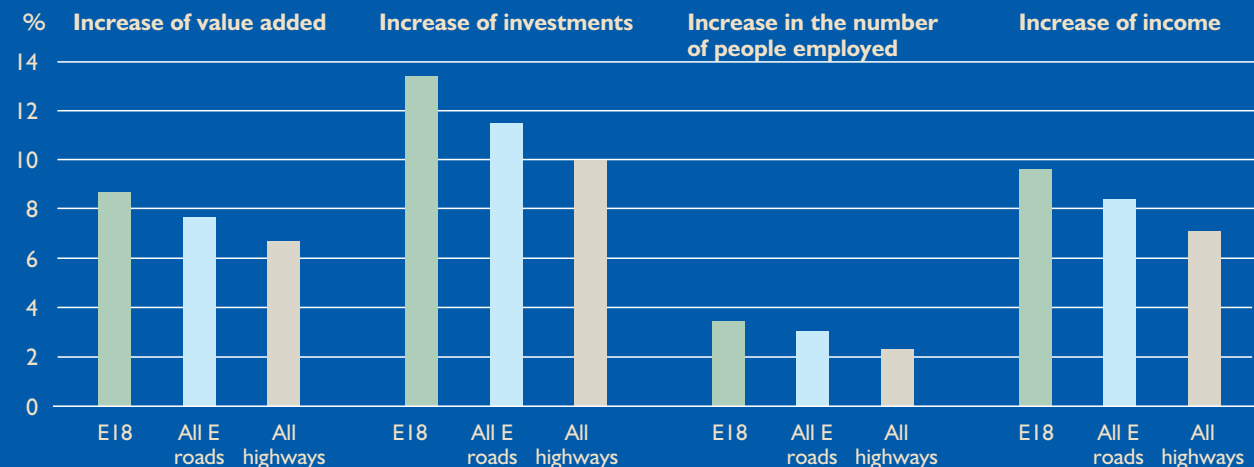
Uncertainty about the realisation of the road may hinder the land use planning of municipalities and the operations of firms and lead to inappropriate decisions on location. Investments in the impact area of the road may be postponed, which delays the benefits they produce.



Changes in the number of jobs in the E18 transport corridor from 1993 to 1999



The E18 corridor as the engine of development - values for economic indicators representing change from 1995 to 2000 in the roadside municipalities as well as along other European roads and highways in Finland



Source: Erkki Niemi: Tie, tuotanto ja talous (Roads, Production and Economy, in Finnish). Tulevaisuuden näkymiä 2/2002. Finnish Road Administration 2002

THE ENVIRONMENTAL IMPACTS ARE KNOWN AND TECHNICALLY CONTROLLED

There have been 7 statutory EIAs concerning road projects on the E18. The key impacts are as follows:

- ◆ noise along the present road will decrease, and on new sections noise abatement is easily implemented;
- ◆ the new road will in places alter a valuable cultural landscape, and endanger the nature values of some sites;
- ◆ the new road will reduce the barrier effect of the present one; and,
- ◆ the risk of groundwater pollution will decrease on the present but increase on the new road where it can be mitigated.

Public participation has raised the quality of design. New measures for abating the negative impacts, brought up during the EIA processes, have resulted in new alignments and technical solutions (e.g. noise screens, tunnels, underpasses, landscape design, plantings and green bridges).

TRAFFIC WILL BE SMOOTHER AND SAFER, THE SCHEME IS PROFITABLE

The most important impacts on traffic are the improvement of safety and the reduction of journey times and their variation. Without new road sections the capacity of the existing road would be exceeded in several places, inter alia on Ring Road III and between Loviisa and Kotka. Congestion would cause traffic to move to lower-volume roads, and accidents would increase.

A motorway is clearly safer than an ordinary single-carriageway road where the number of deaths per vehicle-km is almost fivefold as compared with a motorway. With the present traffic volumes, upgrading the E18 into a motorway would reduce the annual number of personal injury accidents by ca. 60 and save 8 lives.

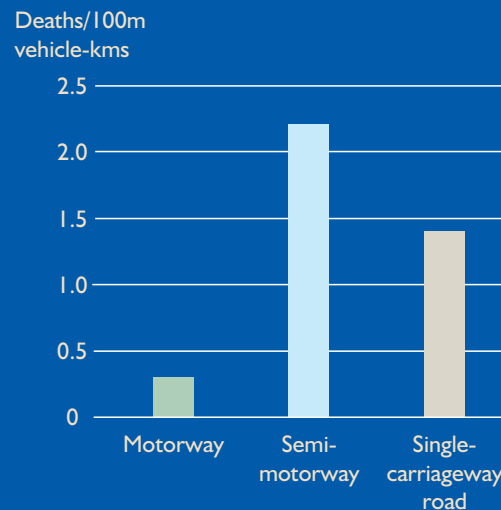
The road projects of the E18 are socio-economically profitable. The average benefit-cost ratio is 2.0.



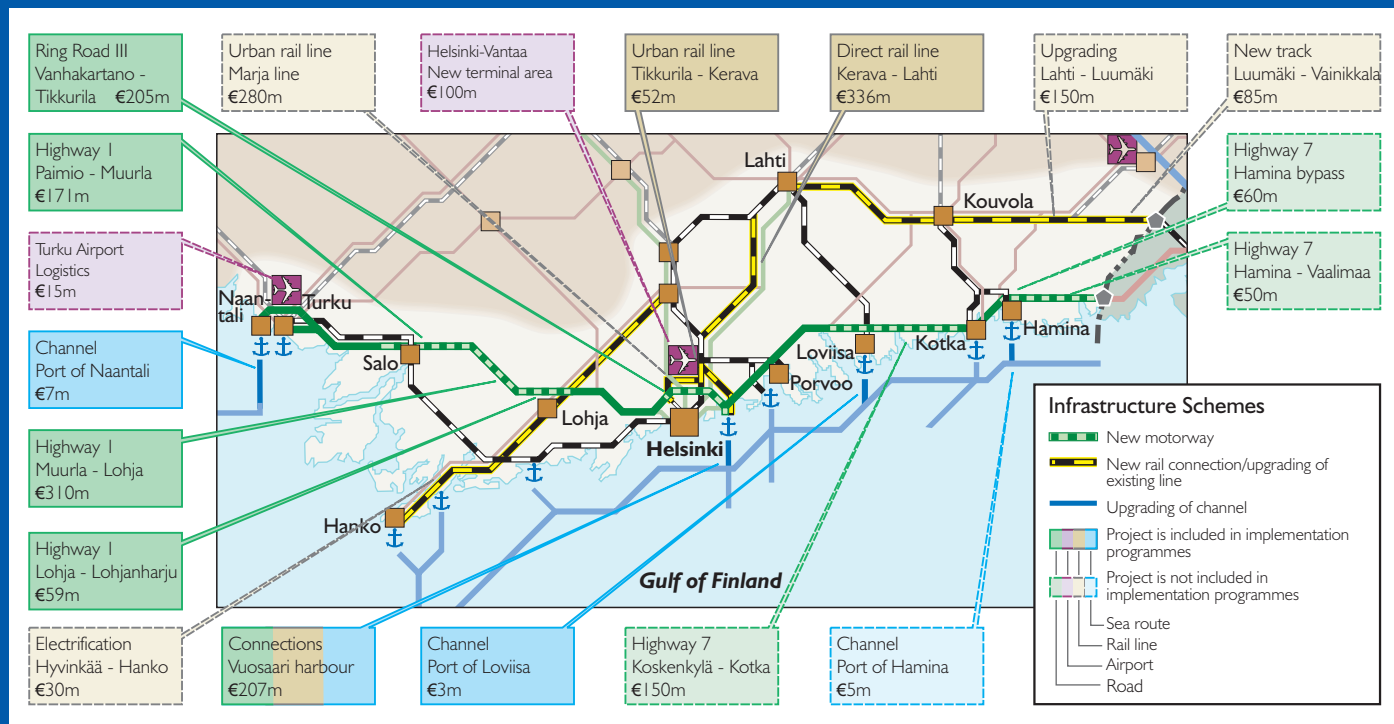
An illustration of a green bridge on highway I.



Accident rates on different road types in Finland



Transport Infrastructure Schemes of The Nordic Triangle



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