BUSINESS CASE

OSLO-STHLM 2.55

THE MOST PROFITABLE RAILWAY PROJECT
IN SCANDINAVIA

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Two capital cities in Scandinavia, just 400 km apart, running through by Sweden´s most populated region. *A route between two of the fastest growing cities in Europe, uniquely linked by trade, business and culture. One might assume that there would already be an efficient transportation infrastructure in place, given the circumstances. But, as of yet, there isn't.*

Oslo-Sthlm 2.55's mission is to create a better link between the capital cities, thereby enabling better regional accessibility. The Business Case that you are now reading shows that the project would provide benefits with regards to both growth and sustainability as well as socio-economic benefits, and that the project would be, to a large extent, financially profitable. In fact, we claim that it would become Scandinavia's most profitable railway project.



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Oslo - Stockholm 2.55 AB

The work to achieve a rapid and effective rail link between Oslo and Stockholm has been going on for a long time. In 2015, the company Oslo-Stockholm 2.55 AB was formed with the main task to gather momentum behind the project. The company is owned by the regions and major cities between Oslo and Stockholm.

Owners

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Municipality of Karlstad
Region of Västmanland
Municipality of Västerås
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OSLO-STHLM 2.55

INTRODUCTION

OSLO-STHLM 2.55

HOW WE CAN ACHIEVE SCANDINAVIA'S MOST PROFITABLE RAILWAY PROJECT

Two capital cities in Scandinavia, just 400 km apart, running through by Sweden´s most populated region. A route between two of the fastest growing cities in Europe, uniquely linked by trade, business and culture. One might assume that there would already be an efficient transportation infrastructure in place, given the circumstances. But, as of yet, there isn't. The Oslo-Sthlm 2.55 company has worked hard to prove that it is possible to create a link that should have been constructed a long time ago.

Although both the Swedish and Norwegian governments report that they have increased their investments in railway, several challenges remain. Needs and requests for infrastructure investments are growing at an increasingly rapid pace. Essentially this is about creating conditions that will enable regional growth and growth in general, about business projects' and residents' needs, but it is also about laying the foundation for a new, sustainable transport system. For the cities and regions, this infrastructure, at its core, is about survival and ment to develop.

The Oslo-Sthlm 2.55 company was formed just over two years ago, based on two, important conclusions. The first conclusion concerns competitiveness related to resources. It's not enough standing in line and wait for needed investments. There are too many competing needs, and there is a clear risk of not receiving any investments at all. Also, to claim that the Oslo – Stockholm route is the only important railway investment in Sweden would be deeply dishonest. The Oslo – Stockholm route has uniquely potent possibilities, but there are many other important railway investments to compete with in both Sweden and Norway.

The second conclusion is that just demanding things is not sufficient. We also need to provide solutions. Where do we find the resources required for the infrastructure we need? How do we create a transport system that fulfils the needs and possibilities at both regional and national level? In order to accomplish this, Oslo-Sthlm 2.55 has approached this project from a non traditional perspective compared to most other Swedish and Norwegian infrastructure projects. We have dug deeper to find out more about the possibilities and conditions, We have examined the entire process from A-Z, or rather, from railway planning to financing, realization and railway traffic, and we have collaborated closeley with the business sector and authorities from the very start.

In order to understand the results, we are now presenting, some context is needed. In early 2015, a privately initiated project known as the Infrastrukturkommissionen (the Infrastructure Commission), led by, among others, Allan Larsson, Stefan Attefall and Maria Wetterstrand, presented their report on several, important Swedish infrastructure investments. However, one of the projects stood out from the others. The Infrastructure Commission concluded that although further study was needed, there were indications that a railway link between Oslo and Stockholm would not only provide socio-economic benefits, but also commercial benefits.

In the spring of 2017, the Oslo-Sthlm 2.55 carried out a complete cost-benefit analysis of the project. The results show positive results and great benefits with regards to regional growth and residential construction. But the socio-economic estimate also indicated a surplus. This is an aspect that is almost unique when it comes to large railway investments. In studying the figures in greater detail, it was obvious that travelers would reap great benefits, but it was also obvious that future train operators would

also gain great benefits. In order to further study the commercial potential that would to a large extent attract private investments in the necessary infrastructure constructions, we decided to issue an RFI (Request For Information).

In the spring of 2017, the Oslo-Sthlm 2.55 company issued the RFI . We contacted representatives from the financial sector, train operators, construction companies and infrastructure consultants, and provided them with a description of the project. Our point of departure was to jointly investigate different ways of moving forward to create a better railway. We were overwhelmed by the response. We have spent a year collaborating with about 20 large companies to find solutions that would quickly enable the construction of a new railway and to identify revenues in order to avoid having public finances bearing the entire costs; to find a method where that public finances, and society in general, are not burdened by all the risks in the final analysis. Some compromises have been necessary. It has been necessary to study appropriate examples and discuss what solutions are both financially and politically possible.

The work has made it possible to present a proposal for the construction of the Oslo – Stockholm link as well as how to fund and pay for it. A proposal for how various actors can contribute to the process and take full responsibility for the project. A proposal that means that the most suited actors for each individual part of the project also assume full responsibility for their contributions. Therefore, we are now able to present a proposal that major business sector actors believe is feasible and that could contribute to solving one of our greatest, political challenges: To construct the infrastructure that many people believe we need. We hope that our contribution can help to create a better railway link between Oslo and Stockholm, but furthermore, that we can contribute to increased knowledge in general and social growth.

Oslo-Sthlm 2.55's mission is to create a better link between the capital cities, thereby enabling better, regional accessibility. The most important aspect, of course, is that the project actually comes to fruition. But our Business Case also shows that the project would benefit both growth and sustainability as well as socio-economic development, and the project would be, to a large extent, financially profitable. In fact, we claim that it would become Scandinavia's most profitable railway project. We argue that there are good reasons for pursuing the vision of the construction of a better link, and in collaboration with the Norwegian and Swedish governments we would like to continue to work on project-planning and funding for a better railway link between Oslo and Stockholm.

Jonas Karlsson
CEO, Oslo-Stockholm 2.55 AB

OUR PROPOSAL

Oslo-Stockholm 2.55 AB proposes that the Swedish and Norwegian governments assign a coordinator who, in collaboration with the company and regional actors, is endowed with a clearly defined and mandated area of responsibility to investigate the possibilities of the Oslo – Stockholm project, which entails travel times of less than three hours in accordance with the Swedish Transport Administration's SPM using external funding, and is mandated to move ahead to the next stage in the planning process by developing localisation studies and railway plans.

SUMMARY

BUSINESS CASE

Oslo-Stockholm 2.55 AB has developed a proposal to enable traveling between Oslo and Stockholm in under three hours. Unlike the Sweden Procurement Case (Sverigeförhandlingen), which focuses on studying the high-speed railway system between Stockholm - Malmo and Stockholm - Gothenburg, this proposal is based on conventional train services with a maximum speed of 250 km/h. Reducing travel times to less than three hours would allow the railway to compete with air travels with regards to total travel times. In order to realize this, it will be necessary to:

1. Reinforce some sections of existing tracks in accordance with the Swedish Transport Administration's plans for the railway, as stated in their Study of Proposed Measures (SPM)

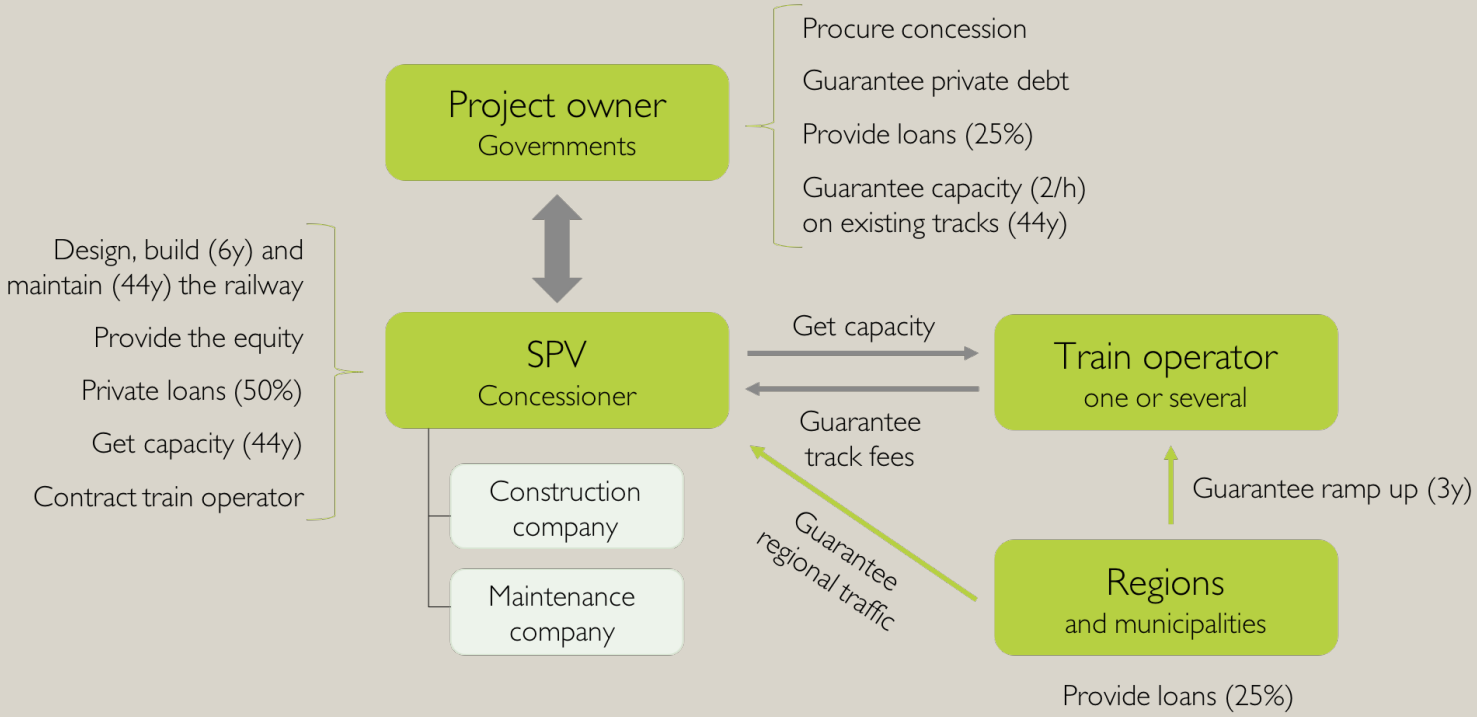
2. Construct two new lines, the Nobelbanan track (Örebro – Kristinehamn) and the Gränsbanan track (Arvika - Lillesström)

At present, roughly 3.4 million people live in the area between the two capital cities. The distance between the cities is just over 400 km, and much of the existing infrastructure is of sufficient quality already. There are 1.4 million air flights between Arlanda and Gardermoen each year, but only 200,000 train trips. All in all, this means that train transportation is well placed to increase it´s market shares. An improved railway system would entail both a significantly greater capacity for freight transport and significant improvements in regional train transportation, but it is the large amount of air flights that promises strong, financial opportunities.

The project proposal is socio-economically viable and would provide a total benefit to a value of SEK 67 billion, as estimated by Sweco, from passenger transportation alone. Benefits arising from freight transportation and so-called "wider economic benefits", have not been included in the estimate. These amount to significant additional values. There is a differentiated business sector along the line mainly centred around banking, financing and insurances, tourism, and the forestry and pulp industry. Additionally, there are a number of universities and colleges as well as other forms of knowledge clusters. Improved availability will enable increased collaboration, innovation and growth. The cost-benefit analysis that has been carried out shows that the business sector will develop and create more jobs, which will produce a gross regional production surplus of approximately SEK 1 billion per year. It is also estimated that residential construction will increase by about 10%, which would result in a net contribution of approximately 10,000 residences in Västerås, Örebro and Karlstad. The railway will also contribute to the development of a sustainable transportation system. As a result of fewer air flights, carbon dioxide emissions will be reduced by approximately 45,000 tons per year. Additionally, carbon dioxide emissions from cars and lorries will also be reduced. Also, encouraging airline travelers to use the train has such significant market potential that if the Oslo-Sthlm 2.55 proposals are chosen for the construction of the new lines, the project will also be financially profitable. This means that Oslo-Sthlm 2.55 shows that the project can be funded to a large extent using private capital, thereby avoiding any burden on public finances. The majority of declarations of intent as stated by market operators confirm that the present business case is of interest to said operators.

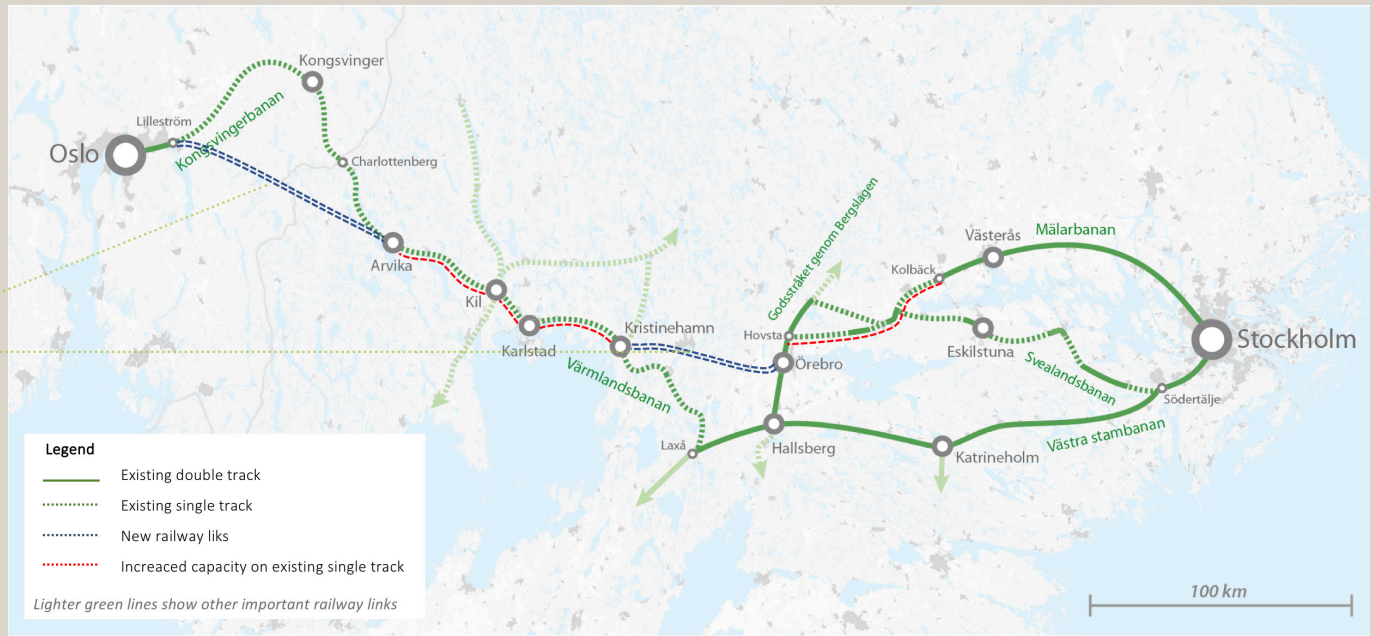
By using private capital as part of a co-funding project for the two new lines, we could complete the project at least 10 years earlier than current plans allow for as described in the Swedish Transport Administration's SPM that is based on traditional grant funding. Most studies in the field show that by involving private capital in the project we can achieve increased cost efficiency compared to traditional grant funding or wholly public lending.

THE OSLO – STOCKHOLM 2.55 IS BASED ON A CONCESSION MODEL WHICH INCLUDES REVENUE RISKS



The Oslo - Sthlm 2.55 is based on a concession model that includes revenue risks. The State is not burdened by any revenue risks, but instead issues credit guarantees in order to keep capital costs down. The project company (the Concessioner) receives their revenue from the train operators via user-fees (standard track fees plus a special track fee) that are nonnegotiable for the contracted period and by increasing the number of trains operating on the line to meet the demands of increased trips.

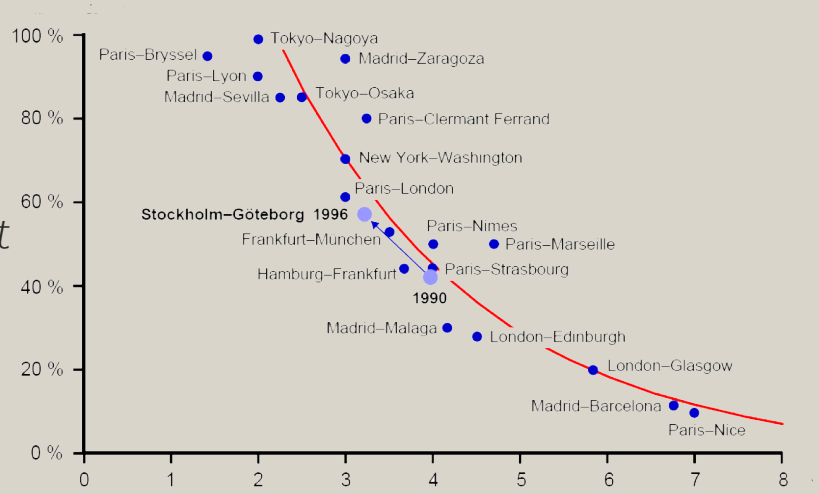
The concession is issued to the owner company (Special Purpose Vehicle - SPV) by the State and the assets will be transferred to public ownership upon expiration of the concession period. In this case, the concession will be issued by the state for a period of 6+ 44 years. The state will ensure allocation of capacity to the SPV during the period of concession. The SPV will arrive at agreements for contracted periods of 10 years, or more, with the train operators.



The figure shows the existing line and proposed line.

The revenue model is based on train operators being able to create sufficient surplus in order to be able to pay the project company (the Concessioner, the SVP) a special track fee that would make the project financially viable. Assuming 1.9 million train trips by the year 2030 between Stockholm and Oslo, at an average ticket price of SEK 700, and additional ticket revenues from another 2.2 million train trips on line sections along the line, the project group's estimates indicate that the train operator has a high likelihood of achieving long-term profitability. This is based on train transport gaining approximately 60 – 65% of market shares in a market that is confined to air transport and train transport, and this assumption fully matches previous experiences, as shown in the figure below.

"...train transport gaining approximately 60 – 65% of market shares in a market that is confined to air transport and train transport, and this assumption fully matches previous experiences..."



The project for constructing new lines (investment amounting to about SEK 40 billion) is estimated to be profitable even without grant funding, given that the weighted average capital cost (WACC) can be maintained at a maximum of 3.3%. Based on reasonable estimates of grant funds from Norway, Sweden and the EU, the project's Internal Rate of Revenue (IRR) is expected to amount to approximately 5%. Based on a 50 year period (6 years of construction + 44 years of concession/operations), discounted cash flows are shown in the figure below. The sensitivity analysis shows that the project could loose one fifth of its revenues and still be profitable. Furthermore, there are additional benefits that have not been studied in depth which could contribute to additional profits.

The basic estimate is based on 90% debt and 10% equity. However one basic condition is that reinforcement work on some existing lines as described in the Swedish Transport Administration's SPM has been completed in time for the new, privately funded lines. The possibility of a gradual, comprehensive allocation of capacity for traffic along the entire route between Oslo and Stockholm is crucial with regards to revenues that would attract private funding.

The Swedish Transport Administration's SPM has already laid the foundation for future railway plans in Sweden, and the Norwegian Railway Directorate's study on Choice of Concept will reach the same goal in 2018. Declarations of intent, as agreed upon with the RFI respondents, indicate that market operators have a strong interest in the project. Regional actors have indicated that they are prepared to participate and contribute to implementation of the project. Additionally, the EU commission is currently revising the so-called core network corridors[1]. The government proposes to the EU commission, in the Ministry of Enterprise and Innovation's press release, published March 21, 2018, that the current core network corridor "Scandinavia – the Mediterranean", which currently only reaches as far as Stockholm, should be extended all the way up to the Swedish/Finnish Haparanda border and to Oslo via Örebro.

Oslo-Stockholm 2.55 AB proposes that the Swedish and Norwegian governments assign a coordinator who, in collaboration with the company and regional actors, is endowed with a clearly defined and mandated area of responsibility to investigate the possibilities of the Oslo – Stockholm project, which entails travel times of less than three hours in accordance with the Swedish Transport Administration's SPM using external funding and is mandated to move ahead to the next stage in the planning process by developing localization studies and railway plans.

"Oslo-Stockholm 2.55 AB proposes that the Swedish and Norwegian governments assign a coordinator who, in collaboration with the company and regional actors, is endowed with a clearly defined and mandated area of responsibility to investigate the possibilities of the Oslo – Stockholm project"

[1] Core network corridors are specified transport routes intended to improve interconnecting links in Europe. The goal is to plan and develop infrastructure based on needs and available resources. The core network corridors include all kinds of traffic (roads, railways, domestic waterpaths, maritime transport routes and airports) and special connecting hubs for different kinds of traffic (international harbors, domestic harbors, airports and railway terminals).

1.0 BACKGROUND

OSLO-STHLM 2.55

There are 3.4 million people residing in 50 municipalities and working in 9 employment market regions along the Oslo-Stockholm line. The two capital cities, Oslo and Stockholm, are today among the fastest growing cities in Europe. There is a differentiated business sector along the line, which leans towards banking, financing and insurances, tourism, the forest and engineering industry. Additionally, there are a number of universities and colleges as well as other forms of knowledge clusters.

There is significant trading between Norway and Sweden as well as between Oslo and Stockholm based in many years of experience. The countries' business sectors are strongly integrated. Today, Norway, alongside Germany, is Sweden's largest goods export market. There are approximately 2,600 Swedish companies operating in the Norwegian sector while 60,000 Swedish residents are employed by Norwegian companies.

This extensive trade relationship contributes to the Stockholm - Oslo line being heavily trafficked. Much indicates that this rapid increase in passenger and freight transport will continue. However, the railway system has significant deficiencies that are evident in capacity problems, punctuality problems and significant availability shortages. This results in slow travel times between the Stockholm-Oslo endpoints as well as between several of the regional submarkets. In order to meet demands resulting from continued developments along the line, the railway will have to be expanded.

The cost-benefit analysis of railway expansions between Oslo and Stockholm shows:

- A viable socio-economic balance between benefits and costs
- Much of the benefits will be incurred by private operators which means that they can be capitalized. This makes the project unique and it allows the state and private operators to share the risks related to the implementation of the project

The RFI was received with much enthusiasm, and in all, 21 respondents replied. Proposals were submitted by companies in Europe, South Korea and China, which provided unique insights and valuable information.

1.1 REQUEST FOR INFORMATION

THE PROCESS

In early 2017, the Oslo-Stockholm 2.55 AB company initiated a Request for Information process, hereafter an RFI process, in order to gain increased understanding of the private business sector's interest in the project.

The RFI process is an information gathering process that operates completely independent of The Public Procurement Act (LoU) and the procurement process. Received replies are not deemed to be binding bids, but rather documented information.

The RFI process primarily requested information about various, possible implementation models concerning upgrades to the existing railway, including new railway links and proposals for various funding models, i.e. a Design, Build, Finance, Operate & Maintain-model (DBFOM-model).

The RFI was received with much enthusiasm, and in all, 21 respondents replied. Proposals were submitted by companies in Europe, South Korea and China, which provided unique insights and valuable information. Below is a list of the respondents and which parts of the model they have contributed to. In addition to the respondents, the project has also received support from Borealis, EIB, Infranode, NIB and SNC Lavalin. This has provided Oslo-Stockholm 2.55 with much valuable input during the project. Based on the project's findings, the proposal will only be commercially viable if commercial operators show interest in it.

The RFI was received with much enthusiasm, and in all, 21 respondents replied:

- Acciona
- China Railway Siyuan
- Deusche Bahn
- Engie-Ineo
- FS Links
- GS E&C
- Gülermak
- Iridium Dragados
- Jernhusen
- KPMG
- Meridiam
- MTR
- OHL Spain
- Pareto Securities
- Ramböll
- Ranken
- SEB
- SJ
- Skanska
- Stadler
- TSO

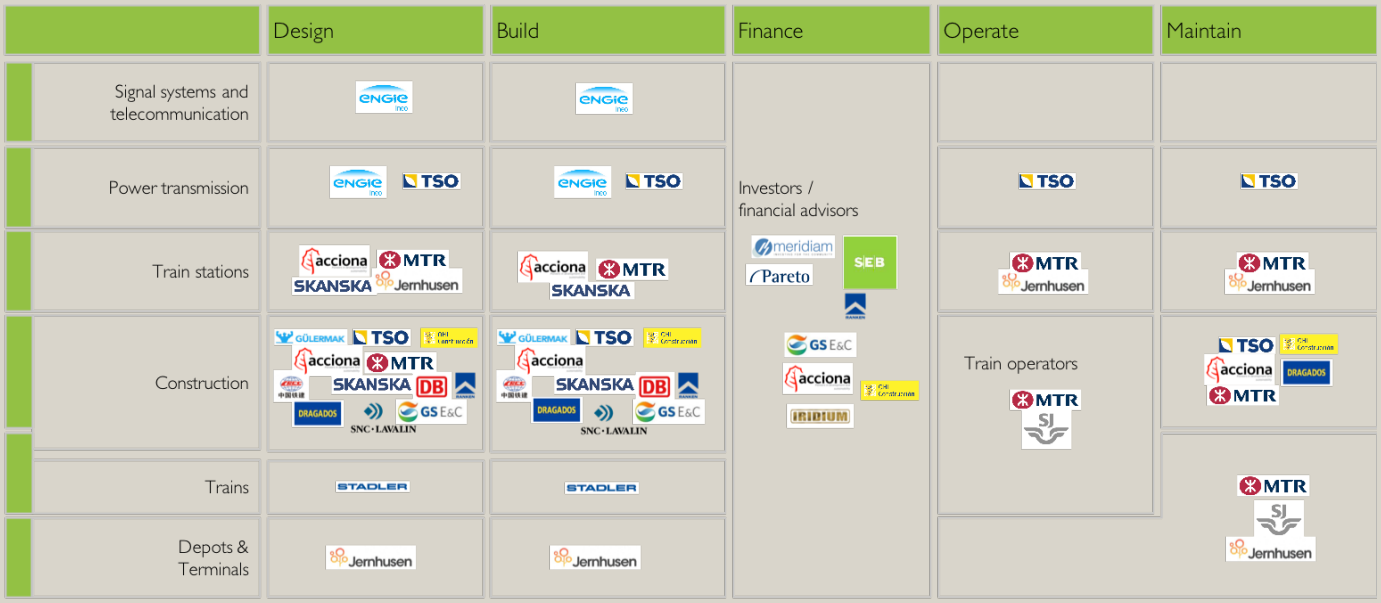


Figure 1 Respondents' operative areas based on which parts of the DBFOM model they have contributed to (horizontal rows) and which supply objects (vertical columns).

2.0 THE OSLO-STOCKHOLM LINE

OSLO-STHLM 2.55

The direct distance between Oslo and Stockholm is just over 400 km. 3.4 million people live along the route, divided into 50 municipalities and nine employment markets, and constitutes one of Scandinavia's most populated regions. On a daily basis, the line already services extensive passenger and freight transport. Due to an increasing population and a strong business sector, passenger and freight transport have increased steadily over the years. A high degree of regional, national and international availability is crucial for continued social developments. The present infrastructure, however, is not equipped to meet the demands of a efficient and, in the longterm, sustainable transportation system.

2.1 RAILWAY AND TRAVELLING TODAY

CAPACITY ISSUES

The existing railway between Oslo and Stockholm is of inconsistent quality, and modern tracks connect to old lines with capacity issues. The Kongsvingerbanen track in Norway consists of a single track and connects to the Värmlandsbanan track at the national border following a long, northern curve. The Värmlandsbanan track also consists of a single track. There is no track between Kristinehamn and Örebro which means that trains have to take a detour via Laxå and Hallsberg. The Mälarbanan track and the Svealandsbanan track were built in the late 1990s and are of a reasonably high standard but consist partly of single track, which restricts capacity.

Today, it takes approximately 5 hours and 20 minutes to travel by train from Oslo to Stockholm, and there are three to four trips a day. Long-distance trains travel from Stockholm along the Västra stambanan track and turn north onto the Värmlandsbanan track at Laxå. Approximately 205,000 travelers travel by train between the two capital cities each year, and another 95,000 travel across the border to one of the cities along the line

There is a well-developed regional rail system between Stockholm- Västerås/Eskilstuna-Örebro which is used by a large number of commuters. It currently takes just under two hours to travel between Örebro and Stockholm. The Mälarbanan track via Västerås currently services a little over 4 million regional trips a year, and the Svealandsbanan track via Eskilstuna just over 2 million regional trips.

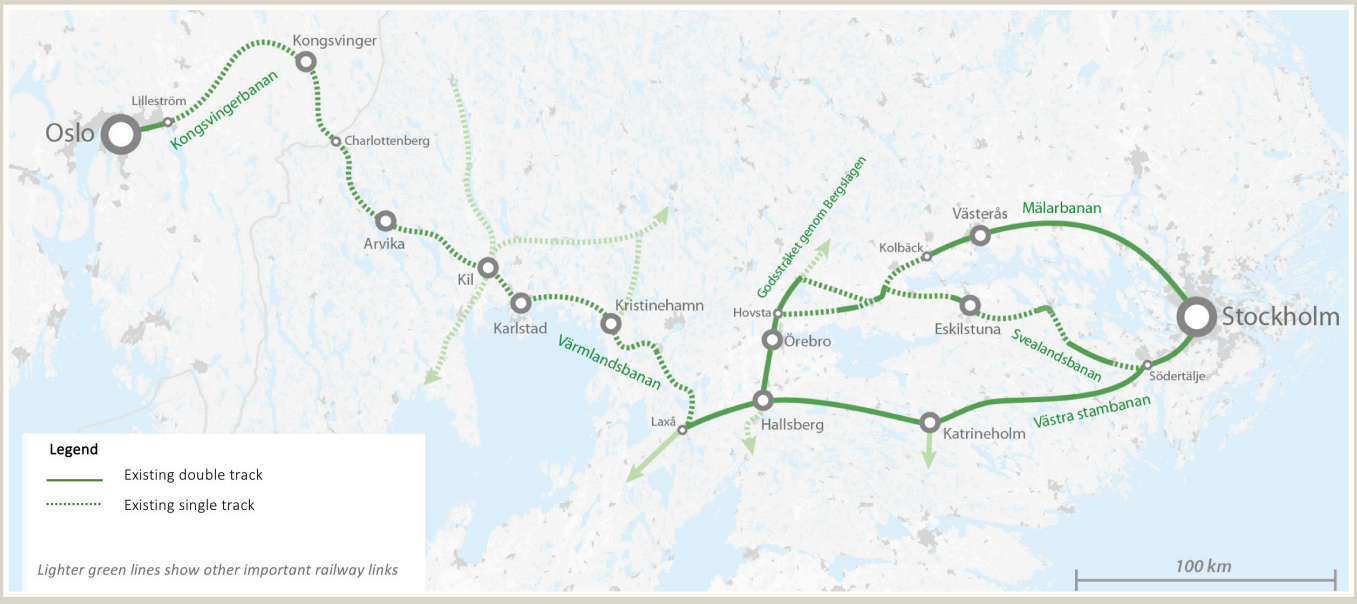


Figure 2 The existing railway between Oslo and Stockholm

2.2 AIR TRAVEL AND THE ROLE OF THE RAILWAY

1.4 MILLION TRIPS

There are just over 20 flights a day between Oslo and Stockholm in each direction, and they provide for 1.4 million trips a year. It takes three hours to travel from center to center, including connecting trips and transfer times.

The importance of travel times when competing with air travel becomes apparent when market shares of the Oslo – Stockholm market are compared to the Gothenburg-Stockholm market. Long distance trains between Gothenburg and Stockholm, in most cases, take just over three hours, and trains have a 60% market share. The distance between Stockholm and Oslo is roughly the same, but traveling by train takes 5 hours and 20 minutes, rather than three hours, and the market share is only 10 – 15%.

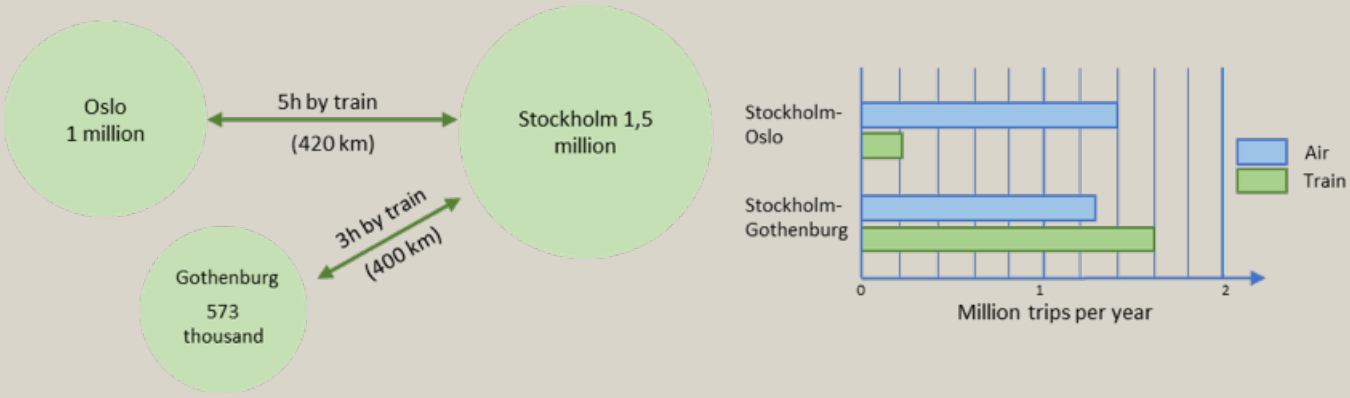


Figure 3 Current travel times affect train competitiveness in comparison to air travel

2.3 THE SWEDISH TRANSPORT ADMINISTRATION'S STUDY OF PROPOSED MEASURES (SPM)

MAXIMUM THREE HOURS

The Swedish Transport Administration published their Study of Proposed Measures for the Oslo – Stockholm line in November 2017. Among other things, they state that:

- There are strong indications of a continued and rapid expansion of both passenger and freight transportations
- There are availability and traffic safety issues in relation to these developments
- The railway system has capacity issues, punctuality issues and very poor availability as shown, among other things, by slow travel times between the Stockholm and Oslo endpoints as well as between several of the regional submarkets

In order to keep up with future developments, measures are needed to increase the transport system's capacity and availability as well as regulate its effect on the environment and climate. The transport system's greatest deficiencies are to be found in the railway system. Additionally, developments in the railway system are deemed to be the transportation area that has the greatest potential, in line with the overall long-term goals.

Long-term goals for the railway can be summarized as:

- Increased competitiveness
- Maximum travel time between Stockholm and Oslo of three hours
- A transport system that attracts daily commuters between selected hub cities

Time schedules have been set for two target years, 2030 and 2040. They indicate which goals could be reached within a certain time-frame, given that the planning process and funding processes are ready.

It is necessary to expand the existing railway between Örebro and Västerås, and Kil and Kristinehamn in order to restore operational railway conditions and meet the market's demands of increased

traffic by 2030. Further expansions of the existing railway by 2040 are expected to be required, including two completely new railway links, i.e., the Nobelbanan track and the Gränsbanan track. These expansions will enable increases in traffic and heavily reduced travel times between Stockholm and Oslo as well as several of the regional submarkets. The proposed measures for the railway will promote both passenger and freight transports. The new railway links will relieve sections of the existing railway network of some of the traffic burden.

The fact that the study of proposed measures confirms the initial Oslo-Shlm 2.55 estimates is viewed as a very strong argument. The next chapter describes the project and how the target year of 2040 can be adjusted to 2030 instead.

IT`S ALL ABOUT TIME

The travel time's importance in competing with flying becomes apparent when the market shares for Oslo-Stockholm are compared with Gothenburg-Stockholm. With the fast train between Gothenburg and Stockholm, the travel time is approximately 3 hours and the train has a market share of 60 %. Between Stockholm and Oslo, the distance is pretty much the same, yet the travel time takes more then five instead of three hours, and the market share is only 10-15%.

3.0 PROJECT DESCRIPTION

OSLO-STHLM 2.55

A strong demand for transportation services, as well as a partially already well-developed railway, creates unique conditions for the Stockholm-Oslo line. A new transportation line for international, national and regional railway transports can be established at a reasonably low cost. Cost analyses have shown that the proposed investments could contribute to creating a socio-economically viable and long-term, sustainable transportation route. Additionally, the large number of long-distance travelers means that the route is of commercial interest.

3.1 THE SCOPE OF THE PROJECT

NEW LINES

The proposed railway expansions, within the framework of the project, are based on the existing railway system and multi-staged expansions aimed at increasing capacity and reducing travel times. The map below shows the links that will need to expand their capacity as well as new links that will be needed. The two new links are the Nobelbanan track between Örebro and Kristinehamn (62 km) and the Gränsbanan track between Arvika and Lilleström (96 km).

In the present business case, Oslo-Sthlm 2.55 has decided to focus on construction and funding for the two new links. A special track fee will be charged for the use of new links which will be used to cover investment costs. In addition to the new links, extensive investments in the existing railway network will also be necessary. We assess that a different funding model will be required in which the government assumes greater responsibility. There are several reasons for this: firstly, the existing railway has already been funded using public funds, and secondly, the railway is already in use and is a part of current traffic plans. Furthermore, there are extensive requirements to consider with regards to railway traffic when expanding the existing railway. This entails a somewhat different approach in which the benefits of rapid construction must be weighed against public needs for maintaining current traffic flows.

In line with the proposed measures, i.e., expansion of the existing railway and construction of the two, new links, travel times would be shorter and the traffic on some sections of the existing railway system would be reduced, thereby enabling an increase in freight transport. Additionally, long-distance train transportation would be able to access a significantly larger intermediate market after the transfer from the Västra stambanan track to the Mälarbanan track. Upgrades and expansion costs of the entire railway between Oslo-Stockholm are estimated to amount to around SEK 64 billion. Approximately two thirds of investment costs consist of new railway links, and one third consists of capacity developments along lines that currently do not have double–tracks.

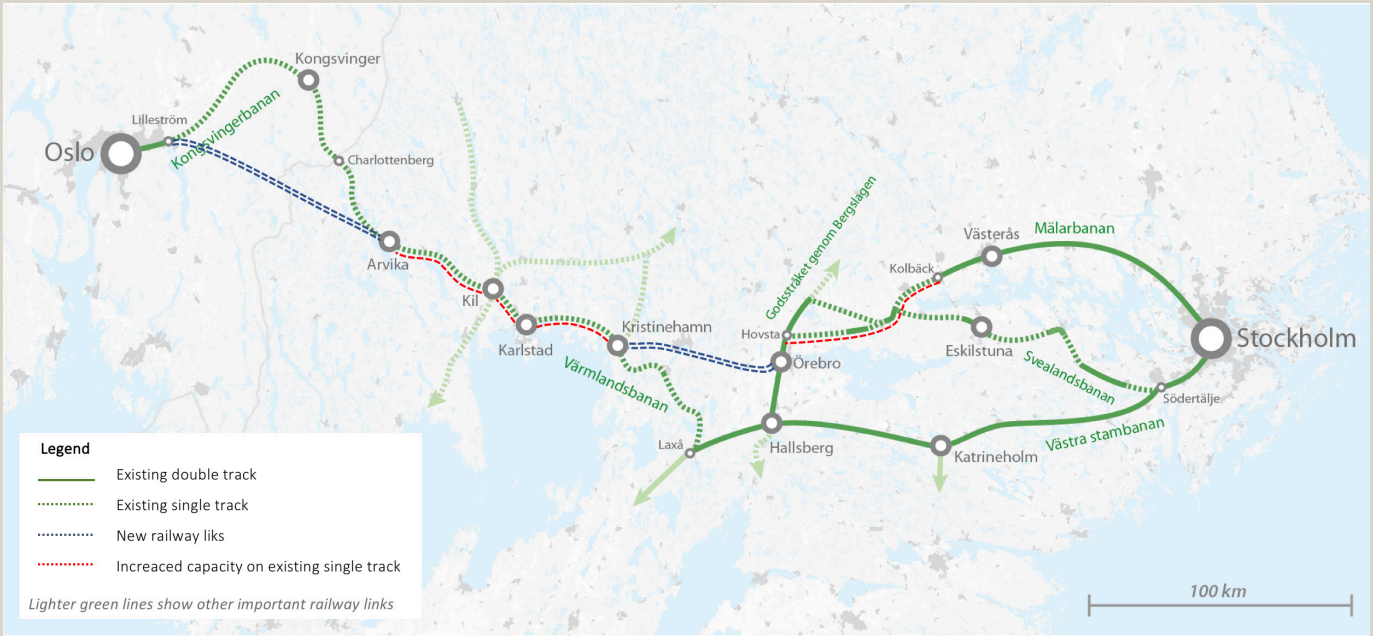


Figure 4 - The existing railway, and future capacity developments and expansions. The Swedish Transport Administration (basic map of the existing railway), adaptions by Oslo-Sthlm 2.55

3.2 UNDER THREE HOURS

REDUCING TIME

Market analyses have shown that reducing travel time to three hours between Stockholm and Oslo is necessary with regards to daily two-way trips. Three hours is a necessary requirement if train transportation is to become a significant competitor with air travel. Capacity analyses have shown that trains with a maximum speed of 250 km/h would be able to travel between Stockholm and Oslo in two hours and 55 minutes, including four stops along the way. A direct train could travel the distance in 2 hours and 40 minutes.

If the route's new infrastructure is developed to allow for speeds of up to 250 km/h, several sections of the existing railway can be used. Partly because sections of the railway are already dimensioned to cope with speeds of up to 250 km/h and partly because the speed differences in comparison to other traffic on the line would not be significant enough to prohibit other types of traffic.

3.3 ALLOCATION OF RAILWAY CAPACITY

The Swedish passanger train market was wholly reregulated and opened in 2012. The Swedish Transport Administration is responsible for allocating capacity on the public railway network. The allocation process is governed by the Railway Act (2004: 519) which is based on various EU directives. Allocation of capacity is currently issued on a yearly basis. The allocation process shall be neutral and all applicants must be treated equally. Should any disputes arise between various applicants, the dispute will be settled based on socio-economic priorities.

The allocation process has sometimes been criticized for adopting an annual allocation process that is deemed to be an obstacle for commercial operators who wish to invest and develop a long-term business that is connected to a specific market. This issue has been investigated by the Swedish transport administration and also by the Sverigeförhandlingen's (The National Negotiation on Housing and Infrastructure) work on high-speed railways[2]. In order to clarify conditions for the operators, this study proposes changes to regulations that govern priority criteria and the possibilities of awarding framework agreements.

Oslo-Sthlm 2.55 estimates that changes in the allocation process similar to The National Negotiation on Housing and Infrastructure's proposals will be necessary to enable a funding model in which an operator agrees to a long-term commitment to compensate the SPV for the use of the new railway links between Stockholm and Oslo. Also, the Swedish and Norwegian regulations, related to allocation of capacity, must be harmonized.

Capacity analyses have shown that trains with a maximum speed of 250 km/h would be able to travel between Stockholm and Oslo in two hours and 55 minutes, including four stops along the way. A direct train could travel the distance in 2 hours and 40 minutes.

[2] MEMO – New rules for allocation of capacity, prioritisation criteria, framework agreements etc., Setterwalls 2017 routes and airports) and special connecting hubs for different kinds of traffic (international harbors, domestic harbors, airports and railway terminals).

3.4 TRAVEL FORCAST

2.3 MILLON TRIPS 2040

In collaboration with the current regional and national traffic authorities and train operators[3], a traffic goal has been developed for the Oslo-Stockholm line. Traffic within the greater region links cities and employment market regions allows for quick and frequent commuting. For longer trips, long-distance trains connect Oslo and Stockholm and the trip take less than three hours, including four stops along the way. Capacity analyses have been carried out to ensure that all types of traffic can access the tracks.

The travels forecast is based on the following traffic goal. By reducing travel times from five hours to just under three hours while simultaneously significantly increasing the number of departures, the number of trips between Stockholm and Oslo will increase from today's about 200,000 trips per year to 2,300,000 by 2040.

Today there are about 1,600,000 trips made by plane and train between Stockholm and Oslo every year. About 200 000 of them are made by train ("To day" in the figure below). Until the year 2040, the organic growth of the travel market is expected to be about two per cent per year mainly due to growing economy and an increasing population ("Base line 2040" in the figure below). When the new railroad opens for traffic, the travel market will increase even further. This is explained by the fact that train passengers will start using the train more frequently at the same time as new passengers will be attracted to the railway ("New railway" in the figure below). In addition, a large transfer is expected from other means of transport to train. In the travel market between Stockholm and Oslo, it is primarily the flight passengers who will switch to the train, but also a considerable amount of car travelers ("Transfer from air and road" in the figure below).

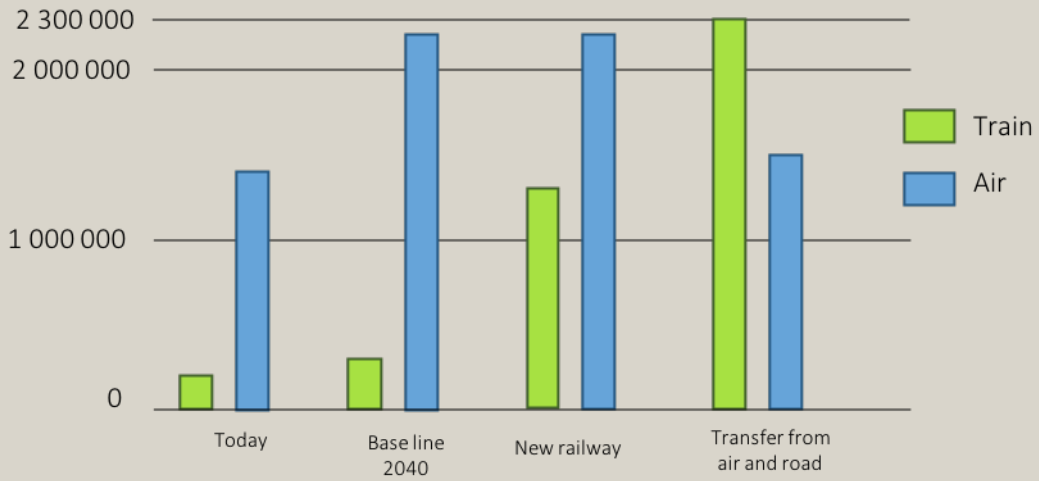


Figure 5 Travel forcast

In addition to long-distance traveling between the capital cities, traveling to and from the cities within the region will also increase. There are an additional 600,000 regional trips across the border per year, and another 2,200,000 regional trips in Sweden. Here, too, reduced travel times and an increased number of trips contribute significantly to this strong development.

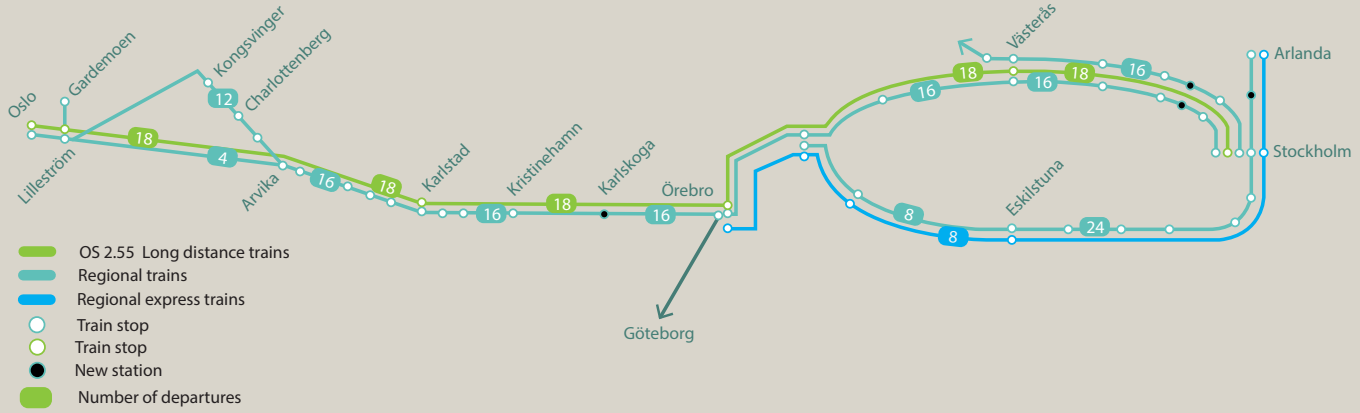


Figure 6 Traffic goals for the line with a fully developed railway

[3] SJAB, Värmlandstrafiken and Mälab

3.5 SOCIO-ECONOMIC VALUES

67 BILLION SEK

In order to estimate the value of the impact of the new railway, a socio-economic estimate has been prepared. The estimate is based on the Swedish Transportation Administration's forecasting model (SamPers/Samkalk) and has been supplemented with estimates of such values that would result from the link to Norway. The results show that the socio-economic benefits would amount to SEK 67 billion.

Impact	Value Sweden, SEK Billions	Value Norway, SEK Billions	Total value, SEK Billions
Producer surplus	8,500	12,400	21,000
Budget effects	400	600	1,000
Consumer surplus	23,500	15,500	39,000
External impact	400	3,800	4,200
OAM, reinvestments	200	1,800	2,000
Sum	**33,100**	**34,100**	**67,200**

Table 1 Socio-economic benefits

Of particular interest is the large, expected producer surplus, i.e., the expected gains for the train traffic companies for trips to/from Norway. The results show that market operators will have considerable interest in developing train transportation. The consumer surplus, i.e., the travelers' time gains, also represents a large portion of the total value. Reduced travel times allow the traveler to spend more time on other things that they value higher. Commuters traveling to work will gain more leisure time and business travelers will have more time for meetings in other locations. In all, this provides for a uniquely strong socio-economy.

Freight transport benefits and so-called "wider economic benefits" have not been included in the estimate. These amount to significant additional values. There is a differentiated business sector along the line which mainly centers around banking, financing and insurances, tourism, and the forestry and pulp industry. Additionally, there are a number of universities and colleges as well as other forms of knowledge clusters. Improved availability will enable increased collaboration, innovation and growth. The cost-benefit analysis[4] that has been carried out shows that the business sector will develop and create more jobs, which will produce a gross regional production surplus of approximately SEK 1 billion per year. It is also estimated that residential construction will increase by about 10%, which would result in a net contribution of approximately 10,000 residences in Västerås, Örebro and Karlstad. The railway will also contribute to the development of a sustainable transportation system. As a result of fewer air flights, carbon dioxide emissions will be reduced by approximately 45,000 tons per year. Carbon dioxide emissions from cars and lorries will also be reduced.

3.6 SIGNIFICANT BENEFITS ARE AN INCENTIVE FOR RAPID COMPLETION

The socio-economic value of SEK 67 billion, as stated above, will be created over a 60 year period and discounts are based on present value. When counted on an yearly basis, the benefits amount to approximately SEK 2.5 billion. Additional benefits that have not been quantified should be added to this amount. Each year that the commencement of traffic operations is delayed therefore entails a significant loss of benefits. That in itself motivates quick completion of the project.

[4] Lundberg, etc. (2017), Oslo-Stockholm Cost-benefit analysis 2040, Sweco

3.7 TIME SCHEDULE

AIMING FOR 2030

The time schedule is based on traffic operations being up and running by 2030, and an overview of measures necessary to achieve this is shown in the figure. It is important that the reinforcements that the Swedish Transport Administration are responsible for are constructed simultaneously and are ready in time for the new lines.

Construction time for the new lines is estimated to take 6 years (the Nobelbanan track and the Gränsbanan track). This estimate is based on discussions with various construction companies and the actual results of the construction of the Tours-Bordeaux line, as described in the present report.

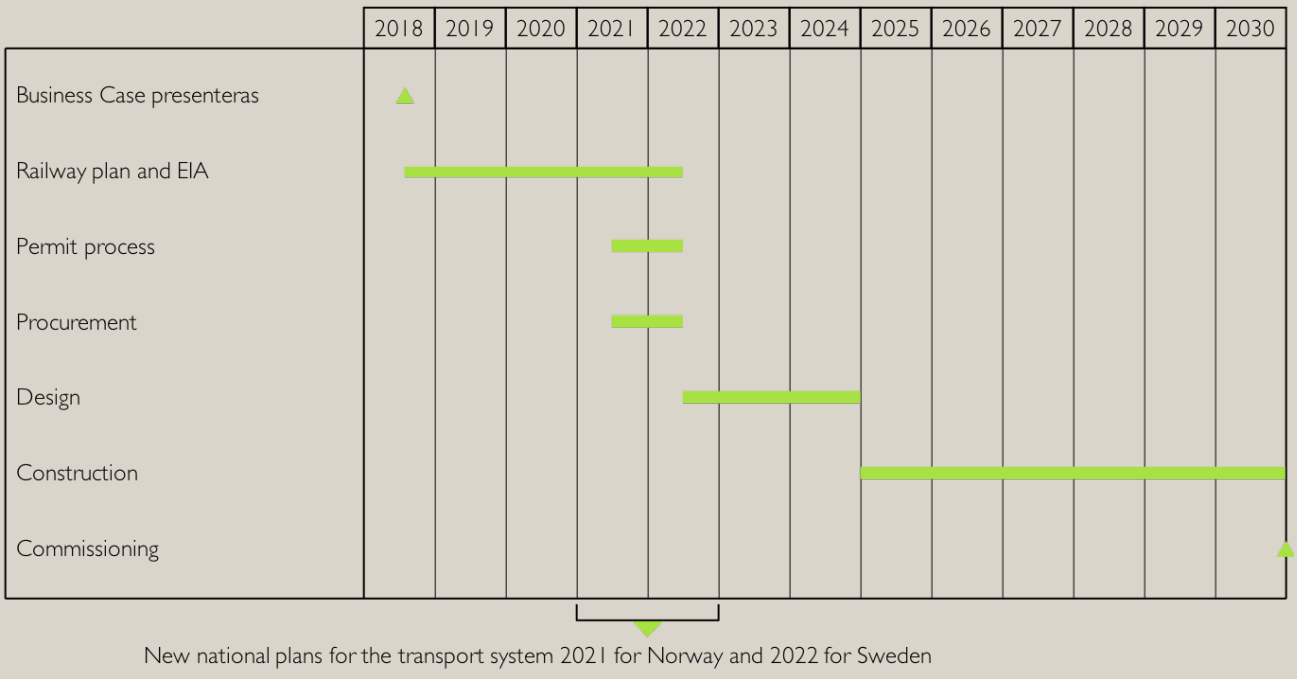


Figure 7 Overall time schedule

4.PROPOSED IMPLEMENTATION MODEL FOR OSLO-STHLM 2.55

CONCESSION MODEL, INCLUDING REVENUE RISKS

Oslo-Sthlm 2.55 has choosen a concession model, which entails that revenues are obtained from the users, unlike that of the collaboration model. The project company, Concessioner (SPV – Special Purpose Vehicle), assume responsibility for revenue risks in contrast with having public guarantees as is the case in availability-based collaboration models. The concession model creates a powerful incentive for SPV to provide as commercially attractive solutions as possible. If the operator is not able to run a profitable business, it will result in a lack of user-fees.

The proposed concession model would enable the Oslo-Sthlm 2.55 project to attract private capital and thereby carry out the project with a lesser impact to public finances compared to more traditional models.

Oslo-Sthlm 2.55 studied a number of railway project plans in Europe and found that the Tours – Bordeaux line is a good example of a similar project. This line commenced operations in 2017, following a 6-year construction period, and has reduced travel time between Paris and Bordeaux by one hour.

4.1 THE PROPOSED MODEL – THE CONCESSION MODEL

CONCLUTIONS

Some owners prefer a collaboration model with compensation based on availability to the concession model. They claim that the weighted average capital cost would be significantly lower if revenues are guaranteed and the only risks remaining are availability and construction risks. Oslo-Sthlm 2.55 is aware of this fact, but argues the following:

- From the public point of view, the collaboration model with availability-based compensation is viewed as public finances assuming the risks while private operators retain the gains. We would like private operators to share the risks
- In order to keep the total weighted average capital costs at a reasonable level, the State would need to issue credit guarantees to those private banks that are expected to finance at least half of the loans for the new track lines

Therefore, the model we propose is the concession model, which in contrast to the collaboration model with availability–based compensation entails that the revenues are obtained from the users while the project company is liable for the revenue risk rather than receiving a public guarantee.

4.2 THE CONCESSION MODEL'S ORGANISATION

PRIVATE FUNDING

The public authority, in this case the Governments (the project owner), will transfer all responsibility for project planning, construction, funding and promoting the goal of the concession (infrastructure and establishment) to the SPV - (the Concessioner) as well as the risks involved to the private operator. We propose that the SPV (the Concessioner) assumes the commercial risks (hereafter, "traffic risks") in connection with the use of the infrastructure and establishment. The infrastructure user (the train operator) shall pay standard user-fees for the use of the tracks as well as a special fee (special track fees), i.e., in line with the principle that "the user pays". In the absence of user-fees from the users (the train operators), SPV shall bear the deficit burden. User-fees shall be agreed to be the train operator's responsibility for the first year and can thereafter be adjusted upward depending on the number of additional trains put into operation. The concession will be issued by the State and be based on a 10-year agreement period or more. In this case, the concession will be issued by the state for a period of 6+44 years. The state will ensure allocation of capacity to the SPV during the period of concession. The SPV will arrive at agreements for contracted periods of 10 years or more with the train operators.

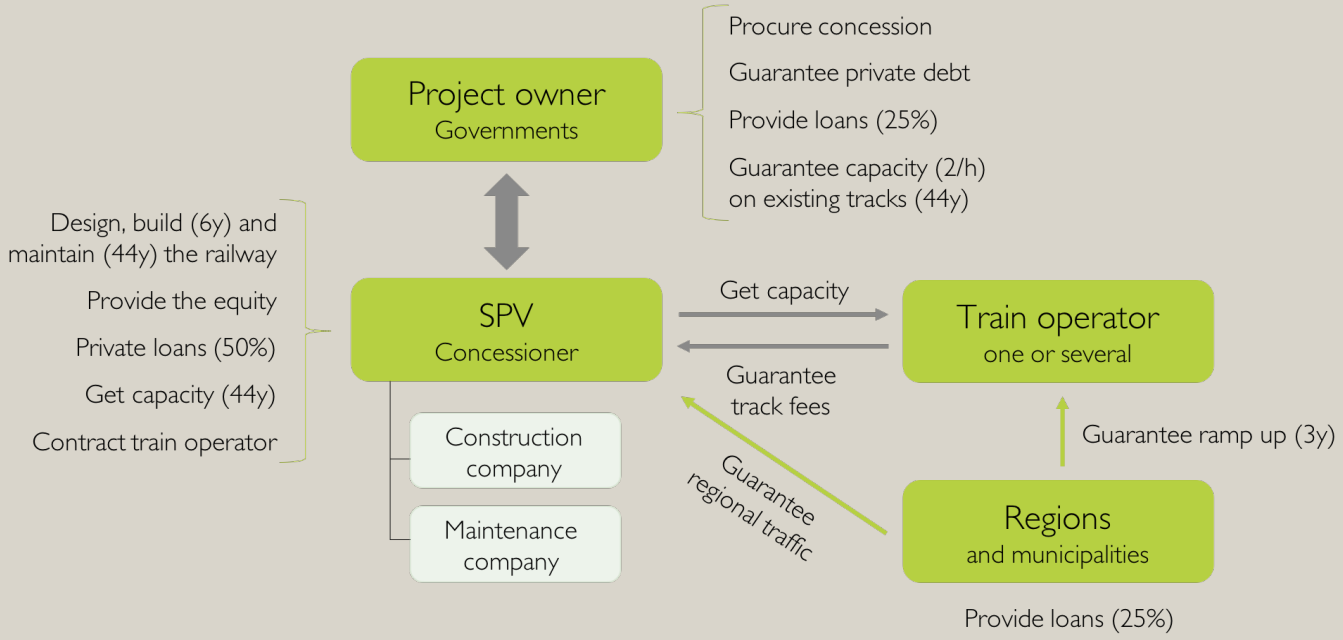


Figure 8 Concession model and revenue risks. The figure provides an overview of the model that Oslo – Stockholm 2.55 is based on.

4.3 THE OWNERS SHALL FORM A PROJECT COMPANY

SPECIAL PURPOSE VEHICLE (SPV)

Models that involves private capital can be designed in various ways, but they share a basic commonality in that the infrastructure generally continues to be public property. This model is often described as a DBFOM-model (Design, Build, Finance, Operate & Maintain). The DBFOM model is based on the State granting one or several of the project company's operators, or "Special Purpose Vehicle – SPV" operators, the right to manage, design, construct, allocate funding, operate and maintain an establishment, e.g., a railway, for a previously determined time period and at a previously determined price.

4.3.1 RISK-SHARING BETWEEN STAKE HOLDERS

Sharing the risks between the various operators will in the final scenario depend on contractual terms in the signed agreements. However, it is clear there are revenue risks when using a concession model. In this set-up, this applies mainly to users of the infrastructure and establishments (the train operators) and in extension the project company (the Concessioner), which run the risk of not receiving user-fees.

Initially, the State does not incur any revenue risks and its commitment is confined to issuing credit guarantees to private banks in order to keep loans as low as possible. This commitment leads to provisions for expected losses must be stated in the balance sheet when said losses have not been compensated by fees, which (please see Public credit guarantees). The regions/municipalities will provide guarantees for interest payments that the SPV is obliged to pay during the first three years of operations.

The regions/municipalities will provide guarantees for interest payments that the SPV is obliged to pay during the first three years of operations.

BUSINES

OSLO-ST

Two capital cities in Scandinavia, apart of just over 400 km, separated by Swede
cities in Europe, uniquely linked by trade, business and culture. One might assume that there
But yet, there isn't. Oslo-Sthlm 2.55's mission is to create a better link between the capital c
regards to both growth and sustainability as well as socio-economic benefits, and that the pr
Scandinavia's most pro

There are 1.4 million air flights between Arlanda and Gardermoen each year, but only 200,000 train trips. All in all, this means that train transportation is well placed to increase market shares.

Todays travle time: 5 h 20 minutes

The project proposal is socio-economically viable and would provide a total benefit to the value of SEK 67 billion from passenger transportation alone.

Oslo-Sthlm 2.55 have been collaborating with about 20 large companies to find solutions that
avoid public finances having to bear the entire costs; to find a method that would entail that
The work has made it possible to present a Business Case for the constru

Oslo-Stockholm 2.55 AB proposes that the Swedish and Norwegian gove
regional actors, is endowed with a clearly defined and mandated area of re

SS CASE

HLM 2.55

n's most densely populated region. A route between two of the fastest growing
would already be an efficient transportation infrastructure in place, given the circumstances.
ities, thereby enabling better, regional accessibility in between. It would provide benefits with
oject would be, to a large extent, financially profitable. In fact, we claim that it would become
ofitable railway project.

At present, roughly 3.4 million people live in the area between the two capital cities and much of the existing infrastructure is of sufficient quality already.

OS 2.55 travle time: 2 h 55 minutes

As a result of fewer air flights, carbon dioxide emissions will be reduced by approximately 45,000 tons per year. Carbon dioxide emissions from cars and lorries will also be reduced.

t would quickly enable the construction of a new railway and to identify revenues in order to
t public finances and society in general are not burdened by all the risks in the final analysis.
uction of the Oslo – Stockholm link as well as how to fund and pay for it.

rnments assign a coordinator who, in collaboration with the company and
esponsibility to investigate the possibilities of the Oslo – Stockholm project.

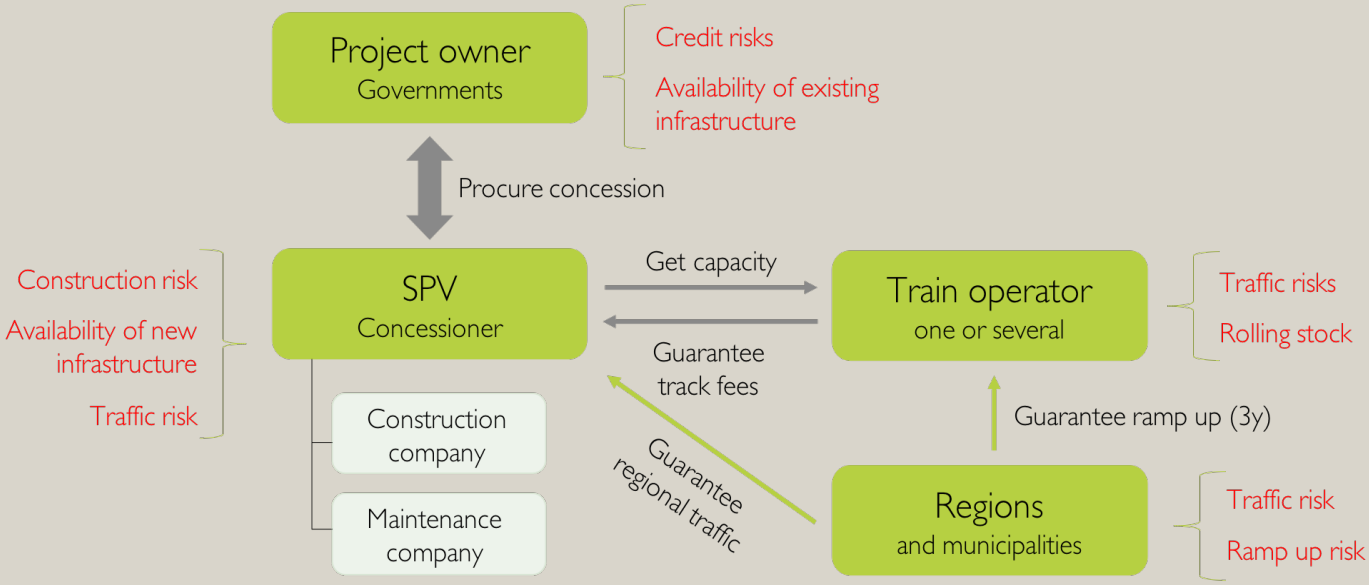


Figure 9 The concession model with shared risks

4.3.2 PROFIT-SHARING WITH THE STATE/REGION/MUNICIPALITY DURING RUNNING OPERATIONS

The construction risk is significant when seen from an investor's perspective. This is partly due to expectations that the construction period will take a long time to complete (6 years), but mainly due to the fact that revenues gained from the project are based on well-functioning infrastructure along the entire line between the capital cities. Sections that need to be reinforced with double-tracks are beyond the private operators' control since it is up to the Swedish Transport Administration to propose such reinforcements. However, in this case significant risks can result in very significant benefits. The benefit is that if the project is constructed according to plans, and successfully attracts the estimated number of travelers, private owners will be able to re-finance the company at a profit while the railway is in operation. This is because e.g. national pension funds, which require low-risk projects and therefore have low expectations of financial returns, will view the railway as a sound investment.

In order for the State/region/municipality to benefit from any profits resulting from re-financing, we propose the establishment of a profit-sharing model. The Parties will be obliged to co-fund parts of the new lines in order to receive profit shares in the event of future re-financing. It is possible to organise the owner structure in a number of different ways in order to ensure that the State/municipality/region continues to maintain control of the project and/or is entitled to shares of future profits, despite the capital being provided largely by the private sector. Prioritised equity (e.g. preference shares) loans etc. are financial instruments that may be useful for governing the profit sharing.

Commencement of traffic operations at an earlier point in time will result in socio-economic benefits arising quicker, and by simultaneously expanding current railways and railway links operations could commence at least 10 years earlier than estimated in the *Swedish Transport Administration's Study of Proposed Measures (SPM).*

4.4 EFFICIENCY BENEFITS OF THE CONCESSION MODEL

COMPARED TO TRADITIONAL MODELS

The travel time target between Oslo and Stockholm of under three hours, as stated in the Swedish Transport Administration's Study of Proposed Measures (SPM), is estimated to be reached by 2040, at the earliest. However, grant-funded infrastructure tends to be subject to delays. Commencement of traffic operations at an earlier point in time will result in socio-economic benefits arising quicker, and by simultaneously expanding current railways and railway links operations could commence at least 10 years earlier than estimated in the SPM, as shown in the figure below.

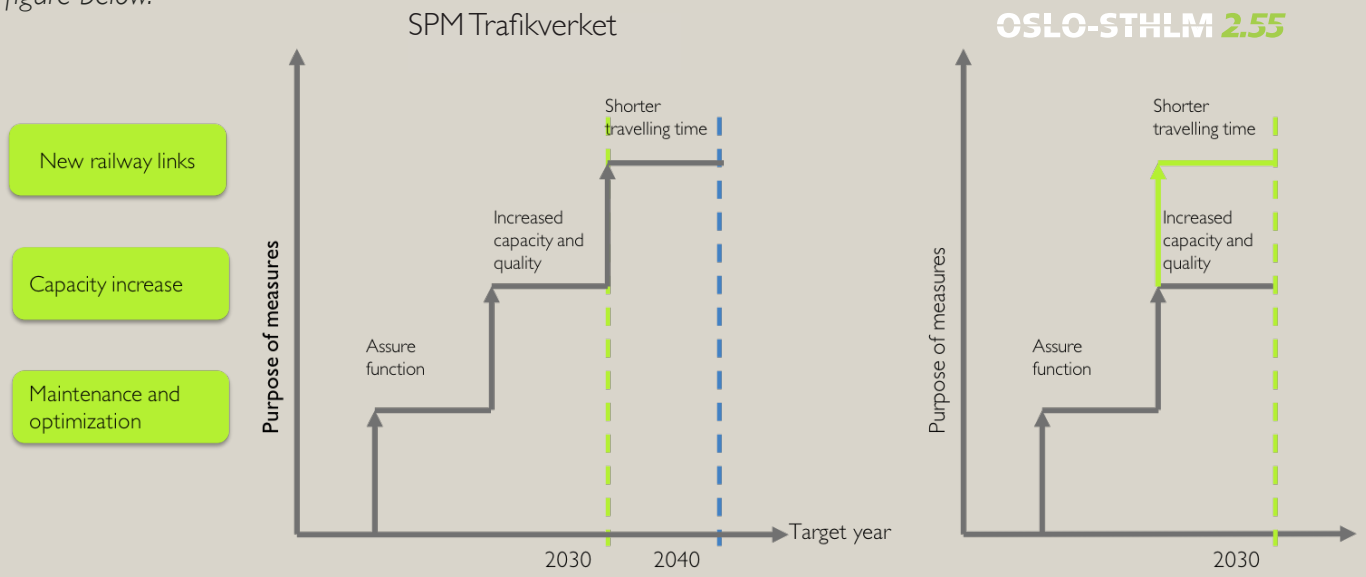


Figure 10 The proposed project allows for completion at least 10 years earlier than current plans (The Swedish Transport Administration's SPM)

Grant funding means that not even profitable projects can begin until public finances allow for such budgets. Furthermore, profitable projects must compete with other important commitments. Grant funding entails a large burden on public finances, which tends to complicate carrying out important infrastructure investments within the framework of a single comprehensive project. Investments are divided up and the full cost-benefit effects take longer to realize. Models in which private investors depend on revenue from infrastructure users produce the opposite effect; completing the project quickly becomes an important factor when the project is dependent on maintaining sound finances. By focusing on life-cycle costs and long-term commitments, a better overall economy can be achieved.

The study "Finansiering av infrastruktur med privat kapital?" (Financing Infrastructure Using Private Capital?)[5] shows that traditional projects have an average cost increase of approximately 35% counted from the time of approval, which can be compared to 12% for projects involving private capital. Starting from the actual date of agreement, the costs of projects involving private capital increase marginally while projects financed using traditional grant funds increase by more than 10%. This is based on general conclusions and of course there are exceptions. Several of the companies involved in the RFI process have worked on similar projects and confirm that there are efficiency benefits to be gained from this kind of project. The Oslo-Stockholm model presented by the project group also entails that commercial operators assume traffic risks related to investments. These risks will therefore not have an impact on public finances.

Another alternative to traditional grant-funding which has been the subject of much debate recently is the option to finance the project entirely using loans issued by the Swedish National Debt Office. This debate has mainly revolved around new mainlines for high-speed trains.[6] The Oslo-Sthlm 2.55 project would, of course, be highly profitable under these conditions. The State enjoys lower capital costs than other operators, and the revenues would be able to fully provide sufficient returns on investments. Under these conditions, public debt would increase. Current financial policies are such that they constitute an obstacle to major debt-financing.

[5] "Finansiering av infrastruktur med privat kapital?" SOU 2017:13 (Financing Infrastructure Using Private Capital?)

[6] Nya stambanor kräver alternativ finansiering, DN Debatt, March 16, 2018 (New mainlines require alternative funding, DN Debatt, March 16, 2018)

5.0 FINANCIAL ANALYSIS OF THE PROJECT

OSLO-STHLM 2.55

Financial analyses of the project at this early stage are by necessity based on a number of assumptions. Oslo-Sthlm 2.55´s goal throughout the entire process is based on the fact that the project will only be commercially feasible if the operators deem it to be of financial interest. Moving the project forward is therefore ensured by verifying most of the estimates in collaboration with RFI respondents.

Estimates of the project's profitability can be summarised as:

1. *The project will be profitable without grants and provide an IRR (Internal Rate of Return) of around 3,3 %.*
2. *The project's IRR will exceed 5% if grants, e.g. from the EU, amount to at least SEK 13 billion.*

5.1 GENERAL INFORMATION ABOUT THE REVENUE MODEL FOR RAILWAYS

BUSINESS MODEL

The revenue model is based on the train operator realising a sufficient financial surplus from their business model to pay the project company (the Concessioner, SPV) a large enough fee to ensure profitability. Regional traffic services procured by the State or regional transport authorities are not based on strict business perspectives and would probably not generate sufficient surplus. If regional traffic services incur a special track fee, this would also mean increased costs for regional public transport authorities.

5.1.1 DESCRIPTION OF THE REVENUE MODEL FOR OSLO – STOCKHOLM 2.55

RAILWAY FEE AND A SPECIAL TRACK FEE TO SPV

The option to charge train operators with railway fees is currently regulated. This is based on the principle of marginal-cost pricing, which means that the fees must correspond to costs related to running the railway vehicle. Investment costs may not be included in railway fees; however, construction costs and gains may, in some cases, be covered by special track fees. Special track fees may include compensation for long-term costs for new projects that increase the railway system's efficiency and would not be feasible without special track fees. SPV's revenues will therefore be based on railway fees in accordance with the marginal cost-pricing principal as well as a special track fee. The special track fee will be significantly higher than the railway fee.

The amount of the special track fee will primarily depend on the Concessioner's weighted average capital costs and the amount of the initial investment witch can be covered by various grants (EU grants, national grants, regional and municipal grants). In reality, however, the train operator before needs a sufficient ticket sales surplus, in order to pay the Concessioner an appropriate special track fee to fund the project. It is crucial for the interested train operators to have an understanding of possible revenues to be gained on endpoint trips (Oslo-Stockholm). This is where significant revenues can be obtained. If the train operator's estimates according to the following example do not add up, it will not be feasible to carry out the project in accordance with the proposed concession model since no train operator would be prepared to pay the required special track fee to SPV:

Oslo-Sthlm 2.55´s goal throughout the entire process is based on the fact that the project will only be commercially feasible if the operators deem it to be of financial interest.

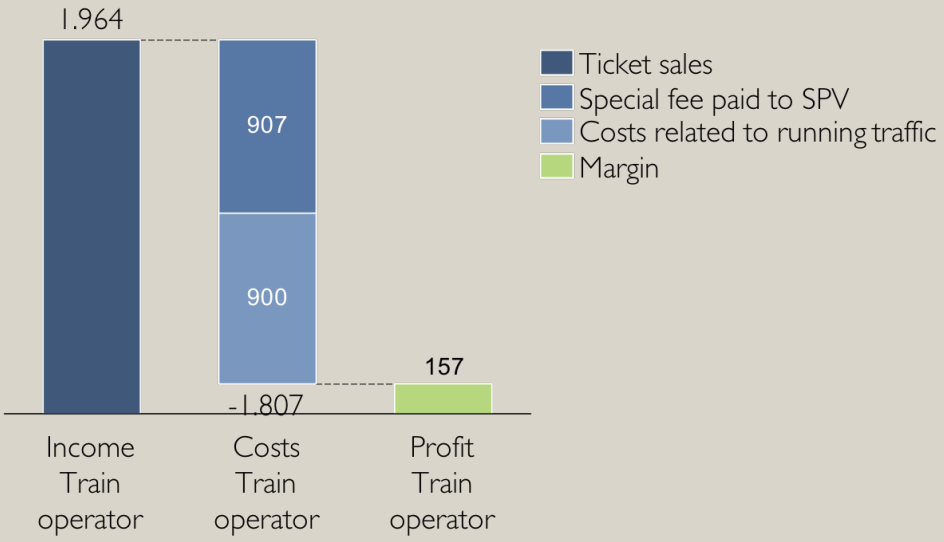


Figure 11 The train operator's estimates to sufficiently cover a special track fee to the Concessioner – example Oslo – Stockholm 2.55.

5.1.2 ENCOURAGING AIRPLANE TRAVELERS TO TRAVEL BY TRAIN

PROMISES A POWERFUL, POTENTIAL MARKET WHICH WOULD MAKE THE PROJECT FINANCIAL VIABLE

Currently, trains have market shares amounting to just over 10% on the Oslo-Stockholm line, in relation to airplane transport. This market share is very low mainly due to longer train travel times which entail, for example, that travelling by train is currently not an option for a day-tripper. This project would mean that travel times could almost be halved compared to current train travel times between the capital cities.

Comparisons of total travel time between Oslo and Stockholm are stated below. It is important to point out that a large number of business travelers make day-trips, which means that the total travel time is very important. Furthermore, it is well known that business travelers often work while travelling. Upgrading the railway between Oslo-Stockholm would make that option much more feasible.

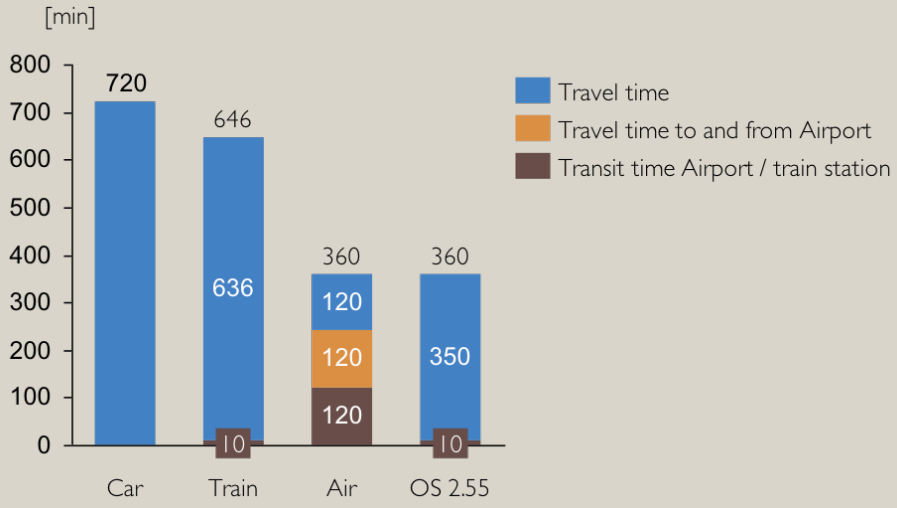


Figure 12 Time it takes for a two-way trip between Oslo – Stockholm on weekdays.
Source: Google Maps and estimates by PA Consulting.

Studies of similar, international projects show that if travel times are similar to the OS 2.55, train transport can expect market shares of between 65% and 85%. On the Stockholm – Gothenburg line, train trips account for 65% of all trips, but travel times, in this case, by train are about quarter of an hour longer, and a large number of air flights are carried out between smaller airports (Landvetter-Bromma), which means that waiting times at airports are somewhat reduced in comparison to the Oslo-Stockholm line that runs in between two international major airports (Gardemoen-Arlanda). An additional aspect is the fact that there are a greater number of transfer flights between Gothenburg – Stockholm than between Oslo – Stockholm. Assuming 1.9 million train trips by the year 2030 between Stockholm and Oslo at an average ticket price of

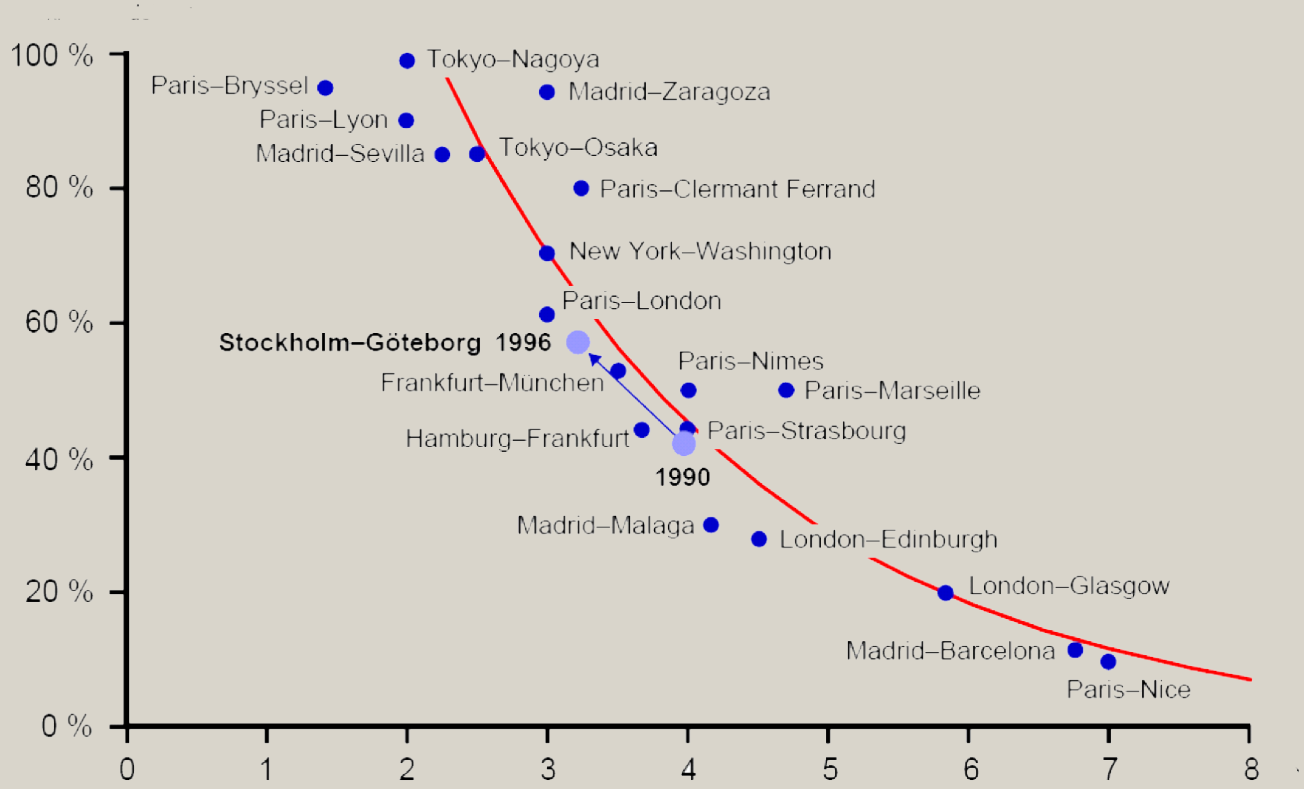


Figure 13 International experiences of air travel and train travel market shares as a function of travelling time by train.

SEK 700, and additional ticket revenues from another 2.2 million commercial train trips made on line sections along the line, the project group's estimates indicate that the train operator has a high likelihood of achieving long-term profitability. This is based on train transport gaining approximately 60 – 65% of market shares in a market that is confined to air transport and train transport. As KTH's analysis (KTH Railway Group, Center for Research and Education in Railway Technology and Oslo-Sthlm 2.55) has shown previously in the report, there are some routes that have basically been completely outmaneuvered by train transport.

5.1.2.1 TICKET PRICES

Most travelers choose SAS when flying. Currently, SAS runs 15 direct flights per day, Norwegian runs 7, while SJ runs 4 trains per day. Oslo-Sthlm 2.55's estimates are based on 18 trips a day initially at a ticket price of SEK 700. This means that it would be difficult for airline companies to run a profitable business in the long run. The figures are based on an analysis carried out by KTH[7] as well as Oslo-Sthlm 2.55's analysis.

Flight taxes which will come into effect on April 1 2018 might also be invoked to support the proposal that train transport is capable of taking market shares from airlines. Taxes on trips within Europe that do not exceed 6,000 km will amount to SEK 60, which means that the Stockholm-Oslo line will carry an ad-

[7] KTH Railway Group, Center for Research and Education in Railway Technology and OS 2.55

ditional cost of SEK 60. According to Dagens Nyheter (March 26, 2018) the majority of Sweden's population views flight taxes in a positive light, which indicates that this tax will remain in place for the foreseeable future. When this flight tax is included in the estimates as an increase in airplane ticket prices, the situation appears to be even more beneficial for trains.[8]

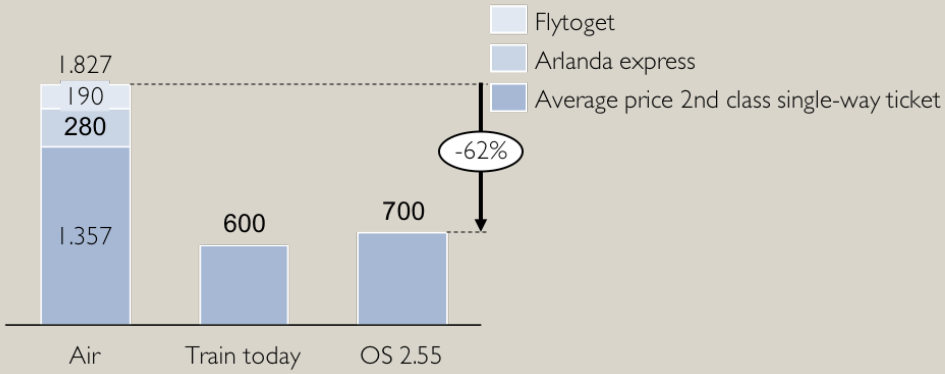


Figure 14 Comparison of current ticket prices

5.1.3 THE TRAIN OPERATOR'S POSSIBILITY TO PAY A SPECIAL TRACK FEE TO THE SPV

When the railway is in operation the Concessioner's revenue shall correspond to the normal railway fee including a so-called "special track fee". This fee will fund the entire project. The train operator will need to guarantee a minimum fee for as long as the operator is responsible for train travels. The train operator is therefore liable for any risks related to ticket prices that do not cover the special track fee, but at the same time, SPV takes the risk of estimated increases in train travelling (which should further drive special track fee increases during the period) not meeting expectations.

This means that the train operator needs to make sure that he bases carrying capacity estimates on reasonable calculations. KTH estimates that the train operator will aim for an operating margin (margin before interests and taxes) of 8% (EBIT/sales). The project's commercial potential is described in 5.1.1, and it is estimated that 1,9 million endpoint trips and 2.3 million regional trips will take place in the first year (2030). In the table below the regional trips are adjusted to endpoint trips and togheter they sum 2.8 million trips. The average price of trips between endpoints is estimated at SEK 700. Revenue from travelers would then amount to SEK 2.1 billion in the first year. After deducting costs of SEK 900 million, the train operator will have the option to pay roughly SEK 900 million per year to the Concessioner. These costs are based on estimates by KTH, with some adjustments Trip AB[9] has prepared the revenue model based on KTH's various expectations.

Simplified estimate of maximum special railway fees		
General expectations		
EBITDA margin	8%	
Revenue, train operator		
Trips year 1 (adjusted)	2.8	Million
Average price one-way ticket	700	SEK
Revenue year 1	1960	Million SEK
Revenue, regional traffic		
Revenue, regional traffic, year 1	166	SEK Million
Costs		
Costs excl. special railway fees	900	Million SEK
Special track fees	907	Million SEK
Financial result		
EBITDA	157	Million SEK

Table 2 Estimated basis for profitability calculations – train operator.

[8] KTH Railway Group, Center for Research and Education in Railway Technology and OS 2.55
[9] Oslo-Sthlm 2:55 - Analysis of Prognoses and Estimates, Professor Emeritus Bo-Lennart Nelldal, KTH Railway Group, Dec. 19 2017

5.1.4 REGIONAL TRAFFIC SERVICES

WILL ALSO PAY FOR USING THE NEW LINES

Publicly procured regional traffic services fulfill other functions within the transport system than do commercial long-distance train services. Regional train services along the route are assumed to be already procured in order to ensure basic transportation needs such as daily commuting. Travelers often use some form of season tickets that entail a low degree of compensation for financial costs. The trips often cover short distances (~50–150 km), there are more stops along the way and the average speed is lower. Oslo-Sthlm 2.55 presumes that a special track fee will be charged for each link, and the fee is expected to comprise half of the fees paid by commercial traffic services. For the sake of simplicity, the fee has been estimated at SEK 13,000 for each train on the Nobelbanan track, and SEK 27,000 for each train on the Gränsbanan track.

Based on the above-mentioned arguments, the project group estimates that publicly procured traffic services will pay just over SEK 160 million in special track fees to SPV in the first year. This sum corresponds to just over 10% of SPV's total revenues and is based on an estimated 16 daily trips on the Nobelbanan track and 4 daily trips on the Gränsbanan track.

5.2 PROFITABILITY OF THE PROJECT

TRAVELLING WILL INCREASE

The Concessioner (SPV) must have a financial plan that entails that revenues from special track fees of SEK 1.1 billion in the first year will be sufficient to make the project profitable. Since special track fees paid by the train operators will increase according to number of trains, a basic estimate of the increase in trips is necessary. Oslo-Sthlm 2.55 have choosen to base their expectations on the Swedish Transport Administration's own estimates and previous developments (between 1992 and 2016, long-distance train trips increased by 69% in Sweden)[10] but also on expected population growth in the regions along the line. The project is based on an estimated 2 % increase in trips per year between year 1–30 and thereafter 1% per year. The revenue period will last from 2030 to 2073 (44 years), and the estimated period is therefore 50 years (6 years for construction followed by 44 years of operations). Inflation is estimated at 2% per year and ticket prices (revenue) will only be adjusted according to indexed inflation.

In the event that the agreement with the train operator is not valid for more than 10 years, Oslo-Sthlm 2.55 would still expect a high likelihood of operators willing to run trains on the line beginning in year 11 and onwards. The opportunity to make a good profit will increase organically over time as more and more passengers elect to travel by train. It´s even possible that air transport will simply be outmaneuvered, which actually has occurred on some lines abroad.

Since SPV will be responsible for operations and maintenance of the railway, this cost item must be added to estimates while simultaneously being offset by standard railway fees. Technical consultant company Ramböll expects said costs to amount to SEK 64 million . These costs (and revenues) are based on

The opportunity to make a good profit will increase organically over time as more and more passengers elect to travel by train, and it is even possible that air transport will simply be outmaneuvered, which actually has occurred on some lines abroad.

10 Traffic analysis, 2018

indexed inflation. Depreciation is calculated based on linear depreciation methods and depend on the type of establishment in accordance with the following:[11]

- Tunnels and bridges – 120 years
- Other railways – 60 years
- Land, permitting, roads etc. 40 - years
- Electricity, signs and telecommunications – 20 years

The present chapter also includes estimates of investments and reinvestments as well as proposals for grants.

The train operator is obliged to pay track fees as well as special track fees to the Concessioner based on use. Since train trips are expected to increase in the first 30 years, (by roughly 2% per year), actual revenue from the fees is also expected to increase.

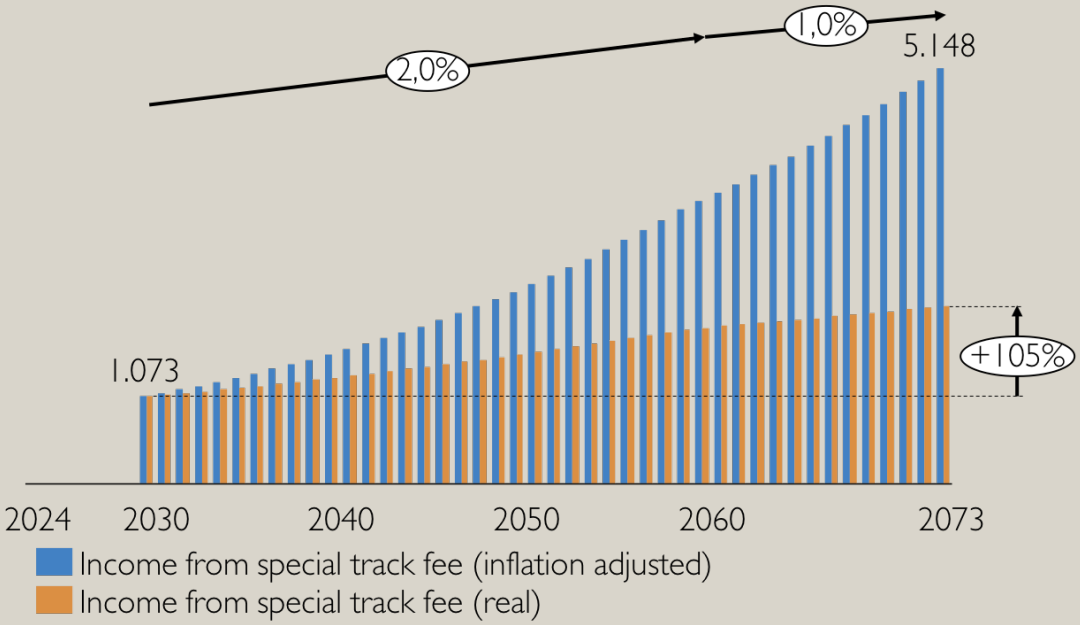


Figure 15 Estimated revenues from use-fees.

The project is estimated to be profitable without grants, but in general, it is possible to apply for grants such as:

1. EU grants
2. National grants
3. Regional or municipal grants

Oslo-Sthlm 2.55 estimates are based on a reasonable expectation that said grants would amount to up to SEK 10 billion for this kind of project. In order for the project's profitability to reach 5% IRR, grants of approximately SEK 13 billion are necessary.

[11] Oslo - Stockholm 2.55, Presentation of cost analysis for line section Lilleström – Arvika, Stockholm, March 16, 2018, Ramböll

5.2.1 INVESTMENTS, REINVESTMENTS, RUNNING COSTS AND RESIDUAL VALUE

With regards to estimates of initial investments, reinvestments and running costs, Oslo-Sthlm 2.55 has hired technical consultant company Ramböll [12] to study these points further. Chapter 6.2.5 has a sensitivity analysis that shows the impact of significant adjustments to these estimates.

5.2.1.1 INVESTMENTS, REINVESTMENTS (CAPEX) AND DEPRECIATION PERIODS

Since the majority of the investments will have a depreciation period of 120 years, a large part of the assets will be far from depreciated by the time they are transferred to public ownership (e.g., the Swedish Transport Administration) upon expiration of the concession. The residual value of approximately SEK 18 billion will result in a positive cash flow by 2073. Ramböll's analysis is based on the expectation that no reinvestments will be made for tunnels, bridges or other railways, but rather only electricity, signs and telecommunication systems will be renewed during the concession period. Costs for maintenance, not activated on the balance sheet (CAPEX), are included in O&M costs.

Category	Initial investment (MSEK)	Depreciation period (years)	Re-investments (BSEK)
Tunnels and bridges	27,425	120	0
Other railways	7,706	60	
Land, permitting, roads etc.	2,129	40	1,602
Other	3,441	20	5,063
Sum	40,700		6,665

Table 3 Investments, depreciation periods and reinvestments

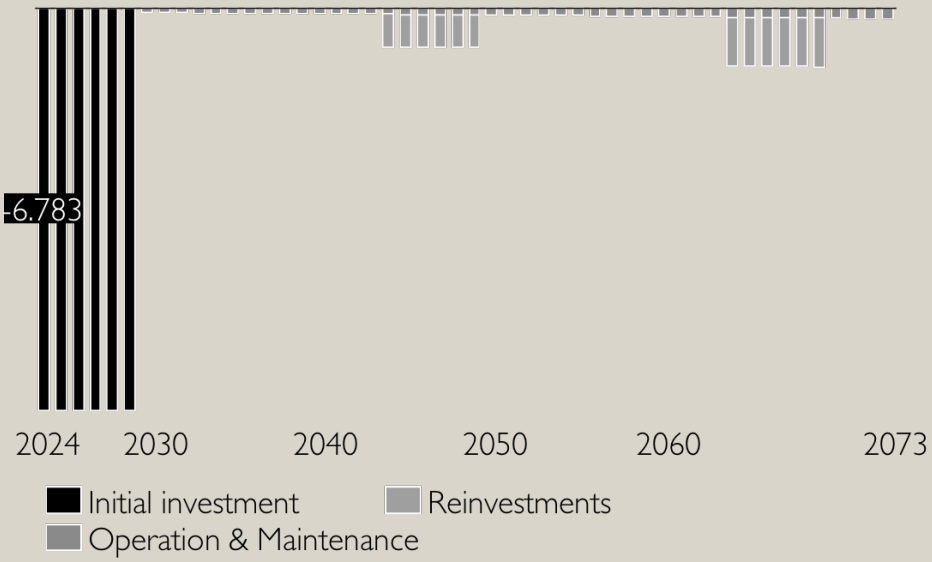


Figure 16 Estimated investments, reinvestments and running costs

[12] Oslo - Stockholm 2.55, Presentation of cost analysis for line section Lilleström – Arvika, Stockholm, March 16, 2018, Ramböll

5.2.2 THE LENDER'S PERSPECTIVE

The interested investors have provided Oslo-Sthlm 2.55 with estimates of general terms and conditions that can be expected with regards to debt financing. The project is based on the assumption that 90% of the investment amount will be financed via loans, and that the State and the regions will borrow 25% respectively, and the remaining part shall be provided by private banks. The following nominal interest rates are applicable according to the finacial actors who participated in the project:

- The State: 1.2%
- Regions: 1.8%
- Private banks: 2.8%

Other conditions have been simplified and show that loans will have a period of grace during the construction period. However, the interest will be accumulated. For the first 5 years, the loans will be installment-free while interest will be paid in full. Commencing from the sixth year of operations, the entire loan will be payable over a 30 year period.

In order for the amortization schedule to add up as planned, grants are necessary. A less aggressive amortization schedule would allow the project to fully finance itself.

Currently, trains have market shares amounting to just over 10% on the Oslo-Stockholm line, in relation to airplane transport. This market share is very small mainly due to longer train travel times which entail, for example, that travelling by train is currently not an option for a day-tripper. This project would mean that travel times would almost be halved compared to current train travel times between the capital cities.

5.2.2.1 PUBLIC CREDIT GUARANTEES

Required measures along existing lines that are currently not equipped with double-tracks comprise a third of total investments. These commitments, previously referred to as "brown-field", are planned to be implemented using traditional methods. The new lines to be constructed between Lilleström and Arvika as well as between Kristinehamn and Örebro ("green-field") are proposed to be financed by the concession owner (the SPV). This means that roughly 2/3 of the initial investment can be financed with a low net impact on the public balance sheet.

The lowest possible cost for borrowed capital can be achieved in accordance with the proposed model if the State, via the Swedish National Debt Office, issues credit guarantees to the Concessioner. The State will provide guarantees and loans for such measures, as determined by Parliament and the government. Loans and guarantee provisions issued by The Swedish National Debt Office are governed by the Budget Act, the Lending & Secured Finance Act and EU State aid regulations. Public guarantee obligations entail that the State guarantees another entity's financial commitments, and the State assumes the credit risk. When issuing the guarantee, the State charges a fee corresponding to the estimated financial loss, as estimated by the State. Public reserves increase and public reserve requirements will also increase by the same amount. Public net finances remain unchanged as well as the State's credit rating. In contrast to public loans issued by the state, the guarantee does not affect the State's need for loans and public debt, e.g. there is no net impact on the balance sheet as long as the fees correspond to the expected loss. In some cases Parliament may decide that the guarantor or borrower does not have to pay a fee, or that the fee should be lower than fees that reflecting the actual costs. Parliament may then allocate funds to the State budget to pay the fee in connection with a standard review of the budget. In these situations, the provisions may exceed the fees and thus affect the balance sheet under "Other provisions" (said provisions amounted to SEK 614 million in 2016 for the National Debt Office). The figure below shows the current distribution of the National Debt Office's guarantees.

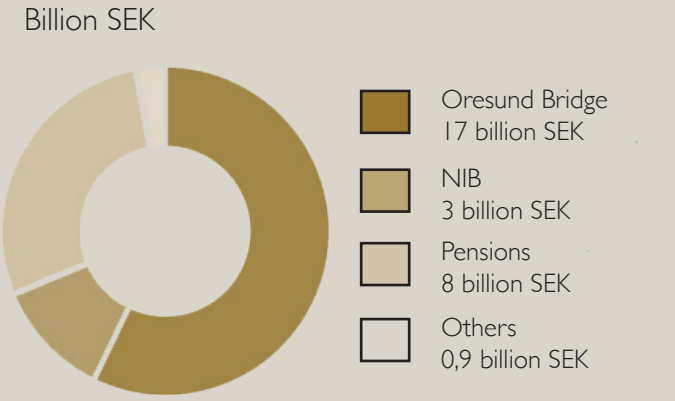


Figure 17 Distribution of the National Debt Office's credit guarantees. Source: https://www.riksgalden.se/sv/omriksgalden/Garantier-och-utlaning/Riksgaldens-garantier-och-lan1/Vara-garantier/

5.2.2.2 REGIONAL/MUNICIPAL GUARANTEES

TO COVER INTEREST RATES FOR THE FIRST THREE OPERATIVE YEARS

Discussions with investors and financial advisers have made it clear that the revenue risk is difficult to manage (Meridiam, Infranode etc.). If investors are not prepared to invest any capital without the provision of some form of guarantees, Oslo-Sthlm 2.55 proposes that the regions/municipalities provide guarantees to cover interest rates for the first 3 years of operation. The project group deems that the risk of SPV not generating sufficient revenue to cover the debts during the first 3 years is low, but also realises that it may take some time for travelers to become accustomed to, and travel by, train instead of airplanes.

The above-mentioned proposal could mean that the regions/municipalities initially are less inclined to provide grants.

Oslo – Stockholm 2.55 proposes that the regions/municipalities provide guarantees to cover interest rates for the first 3 years of operation.

5.2.3 WEIGHTED AVERAGE CAPITAL COSTS

Weighted average capital costs (WACC) are used to calculate the project's discounted projected cash flows. When the sum of discounted cash flows reaches a positive level, the project is profitable. Oslo-Sthlm 2.55 has collaborated with the interested investors when assessing reasonable WACC estimates.

Estimated equity costs (11%) are not based on CAPM (Capital Asset Pricing Model), but rather on qualified estimates backed up by said investors involved in the project. Public credit guarantees regarding debt liability, whitch the government must provide together with guarantees provided by the regions/municipalities for the first 3 years, entail that the cost of debt can be kept low partly because since the project group is able to finance 90% by way of loans and partly because the resulting interest will be kept low, as previously described under 5.2.2, The Lender's Perspective.

Equity	10%
Cost of equity	11%
Debt	90%
Cost of debt	2.15%
Weighted average cost of capital (WACC)	**2.65%**

Figure 18 Weighted average cost of capital.

5.2.4 DISCOUNTED CASH FLOWS AND INTERNAL RATE OF RETURN

The figure below describes operative, positive and negative discounted cash flows from the project for the entire period, i.e., 6 years of construction and 44 years of revenue flow. The results of the estimates amount to a Net Present Value (NPV) of SEK 7 billion and an IRR (Project IRR) of 3,3 % in the base case. In order to achieve an IRR of 5%, the project will require grants corresponding to approximately SEK 13 billion.

Figure 19 Profitability – discounted cash flow sum in SEK billions

In summary, the estimates indicate that the project would be profitable without any grants, but in order to achieve an IRR of 5%, which would attract additional investors, grants would be necessary.

The project's operative cash flows for cases that do not include grants and cases that do, including taxes, and accumulated discounted cash flows, are shown on next page.

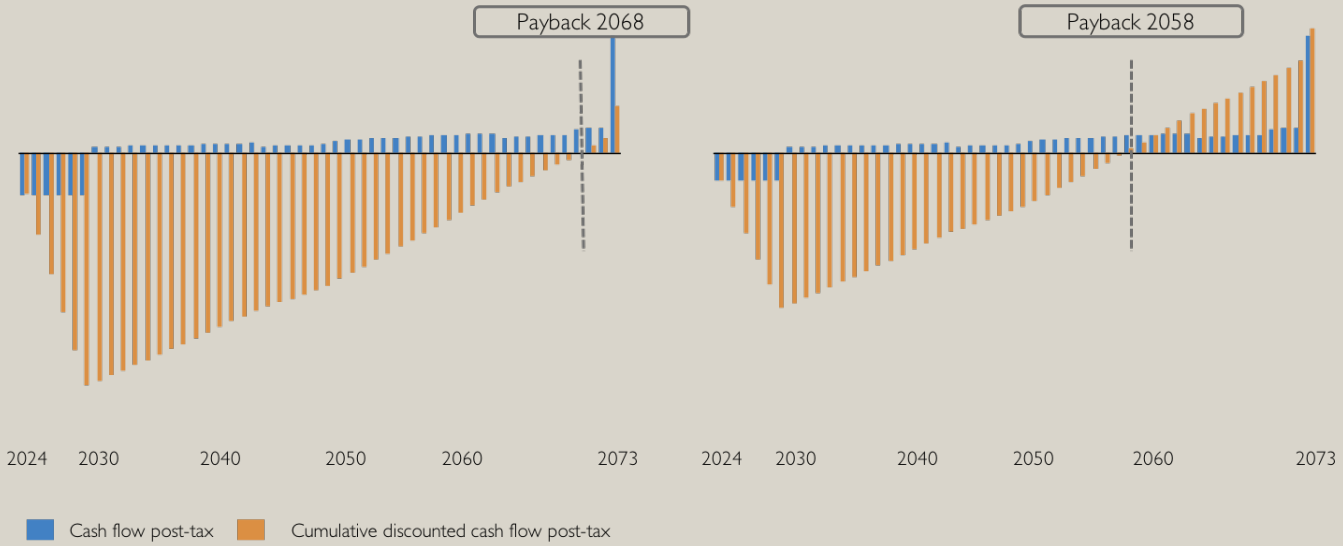


Figure 20 Profitability - refund based on accumulated and discounted cash flows after tax.

5.2.5 SENSITIVITY ANALYSIS

As previously described in the report, financial analyses of the project at this early stage are based on a number of assumptions. By presenting a sensitivity analysis of the net current value, it is possible to arrive at a more precise estimate of the variables that will have the greatest impact on expected profitability.

The sensitivity analysis shows that share of debt could be decreased to about 80 percent (from 90 percent) before the business case becomes un-profitable. In case grants are recived (13 BSEK) the share of debt should be above 65% to assure profitability. Variations in estimates of increased number of travels would have a significant impact as will any significant changes to discount rates (WACC). Combined initial investments and grants would, of course, also have a significant impact. As shown below, the project could lose one fifth of its revenues and still be profitable.

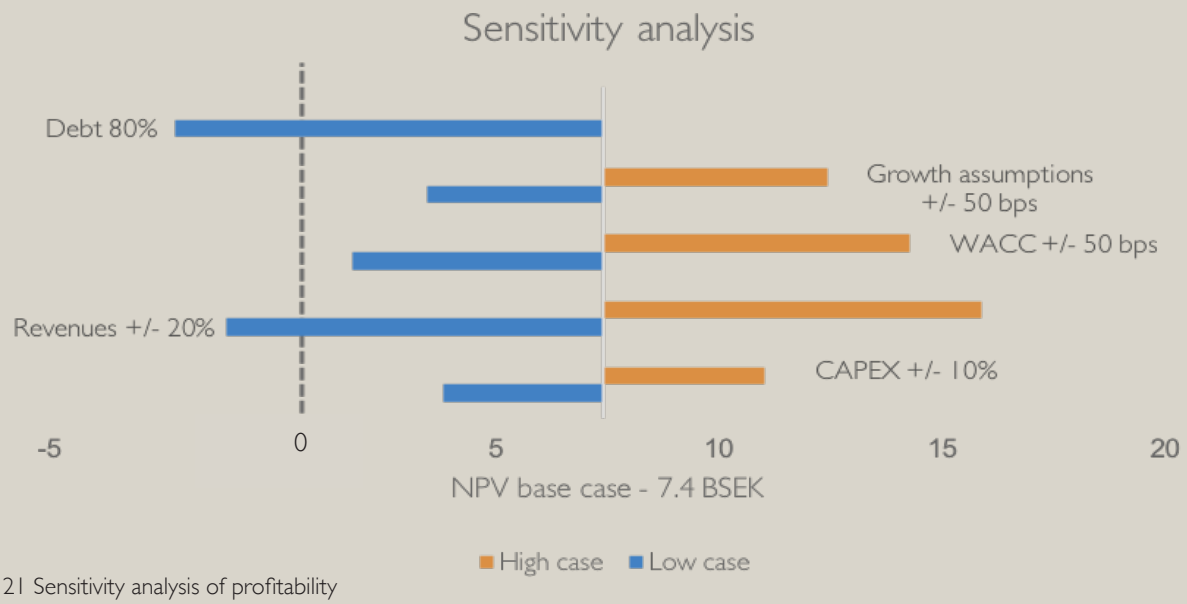


Figure 21 Sensitivity analysis of profitability

5.3 FINANCING STRUCTURE

The financing structure will not be ready until the procurement stage. However, Oslo – Stockholm 2.55 have based their work on a hypothesis that has been verified by interested investors as follows below. The financing structure is not, however, controlled by Oslo-Sthlm 2.55 and one may therefore end up with very different results.

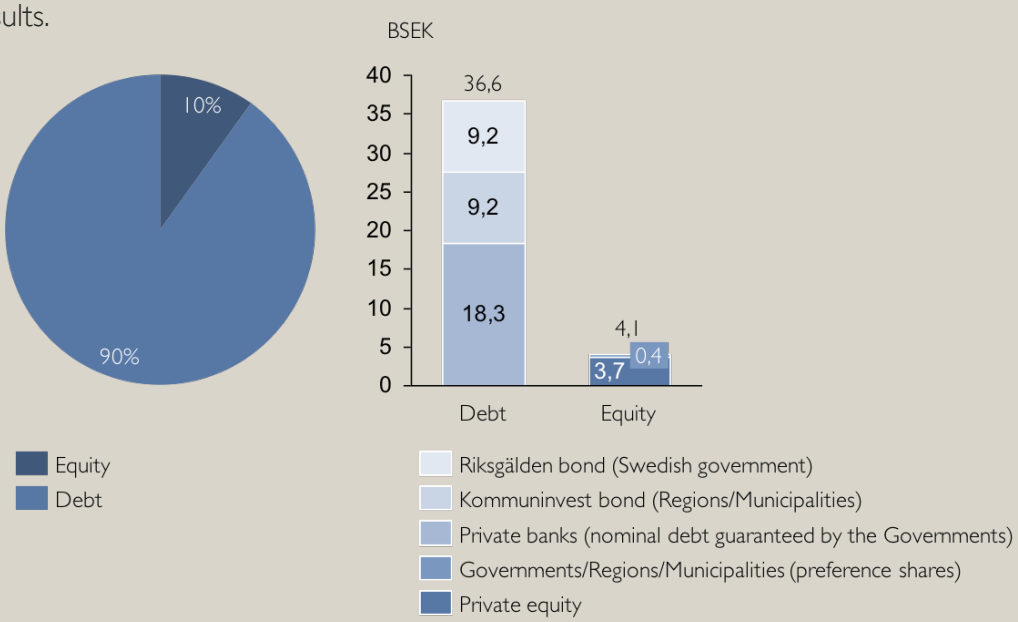


Figure 22 Proposals for the financing structure

The Swedish government's commitment, with regards to the above-mentioned structure, concerns partly the fulfilment of the Swedish Transport Administration's SPM, i.e., constructing and funding the reinforcement of existing railways (SEK 20 – 25 billion) and partly guaranteeing (via public credit guarantees) private loans (SEK 18 billion) as well as issuing a bond loan amounting to SEK 9 billion, via the Swedish National Debt Office. With regards to the regions and municipalities, this entails issuing a bond loan via Kommuninvest as well as committing to debt liability for the first three years of operations.

The government/regions/municipalities need to ensure profit-sharing in the event that the SPV is subject to divestment, which can, for example, be accomplished via an additional, minor equity contribution.
Within the framework of the project, the EU, Norwegian government and regions/municipalities are expected to contribute up to SEK 13 billion in grants for the new railway lines this would reduce the need for funds relative to the above figure.

In early 2017, Oslo-Sthlm 2.55 conducted a full cost–benefit analysis of the project. The results indicated great benefits with regards to regional growth, residential construction and many other things. But the socio-economic estimate also indicated a surplus. This is an aspect that is almost unique when it comes to large railway investments.

6.0 LEGAL CONSIDERATIONS

OSLO-STHLM 2.55

Setterwalls' role in the Oslo-Sthlm 2.55 is to contribute with legal counselling. Based on experiences from other, similar projects, a large number of legal issues arise in this kind of project. Key issues that have been identified in the present phase revolve around the allocation of capacity and fees in accordance with the Railway Act, bilateral Sweden/Norway aspects and legal, public procurement issues. These issues are briefly described below. Additional legal issues will, of course, become relevant as the project continues to progress.

Based on the project's proposed route and choice of concession model, the allocation of capacity on this line should preferably be based on a long-term perspective. If sufficient capacity cannot be provided, the plan will lose some of its attractiveness in the eyes of potential Concessioners. In accordance with the Railway Act, the infrastructure manager shall allocate capacity based on fees or in accordance with priori-ty criteria that entail a socio-economically efficient use of the infrastructure. Therefore, an analysis must be carried out to study how these rules will impact the project, and potentially, as a result new legislation may be proposed.

Track fees and other fees will constitute a significant source of revenue for the project. Initially, Setterwalls assessed that it might be possible to charge higher fees as well as special fees, in accordance with the Railway Act. Charging such fees is based on the fact that the market should be able to bear the costs of said fees and that the project should be viewed as a special infrastructure project.

With regards to bilateral aspects, differences between national regulations need to be studied further. Sweden is bound to comply with EU regulations with regards to railway legislation issues. Within the EU, there are a number of different railway packages, which to great large extent have been incorporated into Swedish railway regulations. However, Norway is not a member of the EU, but as a party to the EEA Norway complies with EU railway package regulations. One notable difference between Swedish and Norwegian railway regulations concerns the rules surrounding priority criteria when allocating capacity. These differences need to be studied further.

Setterwalls has been involved in developing models in Appendix 1, Alternative Implementation Models. With regards to concession models, relevant contractual terms, risk-sharing, liability-sharing and compensation models need to be studied further. However, even at this early stage it can be noted that one or several procurement processes will need to be conducted, in accordance with the law on concessions. It is therefore necessary to clarify which parts of the project will be the object of procurement processes and which authority is to be responsible for the procurement process. It is important to take into consideration both bilateral aspects as well as governmental, regional and municipal parties' stance on the project.

In conclusion, at present Setterwalls does not envision any insurmountable, legal obstacles to the conclusion of the project.

7.0 CONCLUSION

OSLO-STHLM 2.55

3.3 million people live in the region. The distance is short. Much of the existing infrastructure is of sufficient quality already. High-speed trains would not be needed to compete with air travels. There are 1.4 million air flights between Stockholm and Oslo each year, but only 200,000 train trips. All in all, this means that train transportation is well placed to increase market shares. This also means that it would be possible to not only finance but also identify potential revenues for private investors in a better railway between the capital cities. An improved railway system would entail a significantly greater capacity for freight transport and significant improvements in regional train transportation, but it is the large amount of air flights that promises strong, financial opportunities.

In early 2017, Oslo-Sthlm 2.55 conducted a full cost–benefit analysis of the project. The results indicated great benefits with regards to regional growth, residential construction and many other things. But the socio-economic estimate also indicated a surplus. This is an aspect that is almost unique when it comes to large railway investments. It is also in compliance with the goal of reaching a 70% reduction in carbon dioxide emissions produced by the transport sector by the year 2030.

Our proposal enables train travels along the capital city section under three hours by the year 2030. To accomplish this, the following items are necessary:

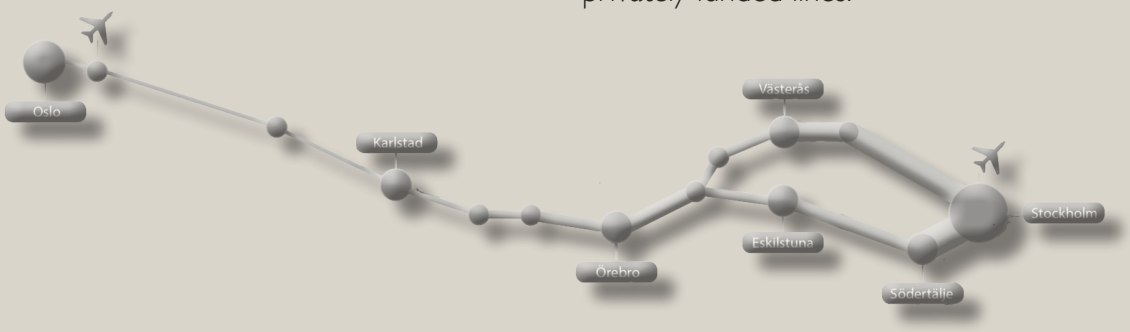
1. Reinforce some parts of existing tracks in compliance with the Swedish Transport Administration's plans (SPM) for the line
2. Construct two new lines, the Nobelbanan track (Örebro-Kristinehamn) and the Gränsbanan track (Arvika-Lilleström)

Co-investments involving private equity for the two new railways will allow the project to be completed at least 10 years earlier than current plans provide for as stated in the Swedish Transport Administration's SPM, which is based on traditional financing.

Oslo-Sthlm 2.55 proposes to implement a concession model which includes revenue risk. The public sector does not retain the revenue risk, but will provide credit guarantees to keep the weighted cost of capital down. The project company (the Concessioner) will receive revenue from the train operators via user-fees (standard railway fees plus special track fees).

The project for constructing new lines (investment amounting to around SEK 40 billion) is estimated to be profitable even without grant funding, given that the weighted average capital cost (WACC) can be maintained at a maximum of 3.3 %. Based on reasonable estimates of grants from Norway, Sweden and the EU, the project's internal rate of return (IRR) would be around 5%, which is assessed to be at a level that should increase the number of interested equity investors. This is based on an estimate of 90% borrowed capital and 10% equity.

However, a fundamental prerequisite is that the Swedish Transport Administration implements their current plan to reinforce some existing lines which will be ready for use at the same time as the new, privately funded lines.



7.1.1 BENEFITS THAT HAVE NOT BEEN STUDIED IN DETAIL BY THE PROJECT GROUP

There are a number of additional benefits that have not yet been fully studied by Oslo – Stockholm 2.55. Two of these benefits are discussed below:

1. Studies carried out by KTH of ticket prices for endpoint trips along the capital city line indicate that most travelers are willing to pay a decidedly higher price today than the proposed price in the project, once the new railway has been established. When these travelers decide to travel by train instead, the demand for first-class tickets will increase and prices can be adjusted accordingly. Oslo-Sthlm 2.55 is of the opinion that this potential has not yet been fully studied.

2. Once operations are up and running it is expected that property values will increase along the line. This partly concerns public transport stations and stops, but also concerns other kinds of properties adjacent to the establishment. Based on this, it is theoretically possible to develop different models for the transfer of land value to the company holding the concession. In these cases, SPV would be provided with additional revenues. However, one could also consider the opposite situation and, rather than using a model that is based on sharing these increased values between regions and municipalities, they could instead deploy initial investment grants to ensure that the line actually becomes reality. They would then be able to view the increase in land value as a return on investments.

7.1.2 REVISION OF EU'S CORE NETWORK CORRIDORS

The EU commission is currently revising the so-called core network corridors.[13] The government proposes to the EU commission, in the Ministry of Enterprise and Innovation's press release, published March 21, 2018, that the current core network corridor "Scandinavia-the Mediterranean", which currently only reaches as far as Stockholm, should be extended all the way up to the Swedish/Finnish Haparanda border and to Oslo via Örebro.

This is significant and very good news for Oslo-Sthlm 2.55 which, should the proposal be approved, will be able to apply for co-financing from the EU's CEF Fund (Connecting Europe Facility). This enables us to continue to work on the project, and Oslo – Stockholm 2.55 expects to be able to increase the work pace throughout the planning phase, while work on the railway plan will be able to receive further funding.

Our proposal enables train travels along the capital city section under three hours by the year 2030. To accomplish this, the following items are necessary:

1. Reinforce some parts of existing tracks in compliance with the Swedish Transport Administration's plans (SPM) for the line

2. Construct two new lines, the Nobelbanan track (Örebro-Kristinehamn) and the Gränsbanan track (Arvika - Lilleström)

[13] Core network corridors are specified transport routes intended to improve interconnecting links in Europe. The goal is to plan and develop infrastructure based on needs and available resources. The core network corridors include all kinds of traffic (roads, railways, domestic waterpaths, maritime transport routes and airports) and special connecting hubs for different kinds of traffic (international harbors, domestic harbors, airports and railway terminals).

7.1 NEXT STAGE OF THE PROJECT

Our proposal is based on The Transport Administration's Study of Proposed Measures (SPM). Public and private operators in both Sweden and Norway have shown increased interest in the project. Coordinated measures to construct this link between Sweden, Norway, various regions and business sectors have now become a reality.

Oslo-Stockholm 2.55 AB proposes that the Swedish and Norwegian governments assign a coordinator who, in collaboration with the company and regional actors, is endowed with a clearly defined and mandated area of responsibility to investigate the possibilities of the Oslo-Stockholm project, which entails travel times of less than three hours in accordance with the Swedish Transport Administration's SPM using external funding, and is mandated to move ahead to the next stage in the planning process by developing localisation studies and railway plans.

"Oslo-Stockholm 2.55 AB proposes that the Swedish and Norwegian governments assign a coordinator who, in collaboration with the company and regional actors, is endowed with a clearly defined and mandated area of responsibility to investigate the possibilities of the Oslo-Stockholm project"

REFERENCES AND SOURCES

The present report has been prepared by PA Consulting Group (Åsa Hansson and Torbjörn Severinsson) with assistance by Trip AB (Martin Sandberg), Setterwalls (Ulf Djurberg) and in close collaboration with Oslo -Stockholm 2.55 AB. Oslo-Stockholm 2.55 AB have, in addition to the PA Consulting Group and Trip AB, contracted the following parties to prepare the basis for the report:

- KTH (travel economics)
- Ramböll (Gränsbanan track analysis)
- Setterwalls (legal aspects)
- Sweco (cost-benefit analysis and capacity analysis)

ADDITIONALLY, THE FOLLOWING OPERATORS HAVE CONTRIBUTED TO ADVANCING THE PROJECT:

- Acciona
- Alsh
- Borealis
- CMC di Ravena
- EIB
- Engie-Ineo
- Gülermak
- Infranode
- Iridium Dragados
- Jernhusen
- Kommuninvest
- Meridiam
- MTR
- NIB
- OHL
- Pareto Securities
- SEB
- SNCF
- SNC-Lavalin
- SJ
- Skanska
- Stadler
- TSO

The Director of the French Treasury (Direction Générale du Trésor) has also contributed via Salim Bensmail's participation.

BIBLOGRAPHY

Lundberg, Anders m.fl. (2017), Oslo-Stockholm Nyttoanalys 2040, Sweco

Nelldal, Bo-Lennart (Professor Emeritus) 2017-12-19, Oslo-Sthlm 2:55 – Analys av prognoser och kalkyler, KTH Järnvägsgrupp (Analysis of Prognoses and Estimates, KTH Railway Group, 19/12/2017)

OPS-lösning för Östlig förbindelse?-Internationell utblick samt svensk finansiell och politisk kontext, WSP

Oslo -Stockholm 2.55 presentation av kostnadsanalys för delsträcka Lilleström – Arvika, 16 mars 2018, Ramböl.l

Pressmeddelande Näringsdepartementet http://www.regeringen.se/pressmeddelanden/2018/03/forlangning-av-transportkorridor-till-norrland-och-norge/

SOU 2017:107 Slutrapport från Sverigeförhandlingen. Infrastruktur och bostäder – ett gemensamt samhälls-bygge

Åtgärdsvalsstudie - Förbättrad tillgänglighet inom stråket Stockholm-Oslo, november 2017, Trafikverket (Study of Proposed Measures-Improved Availability on the Stockholm-Oslo Line, November 2017, The Swedish Transport Administration)

BUSINESS CASE

OSLO-STHLM 2.55

THE MOST PROFITABLE RAILWAY PROJECT
IN SCANDINAVIA

OSLO-STHLM 2.55