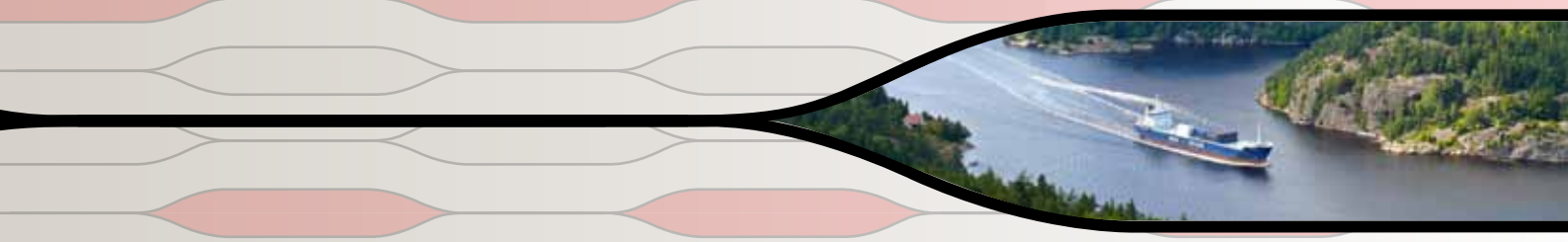
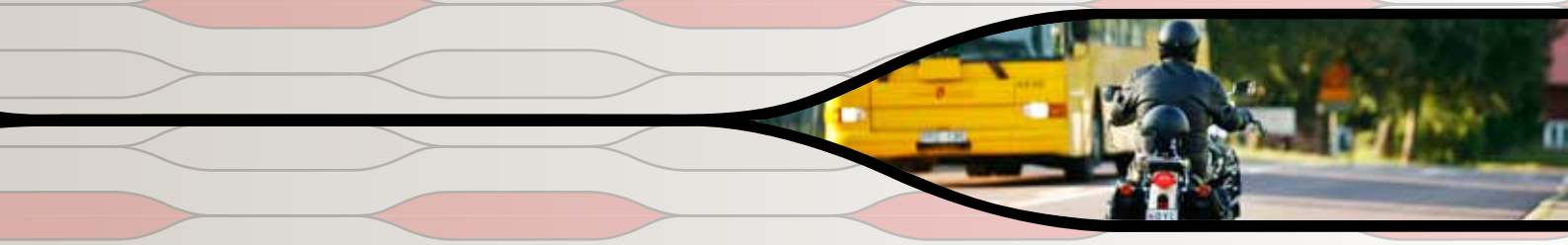
TRAFIKVERKET
SWEDISH TRANSPORT ADMINISTRATION

The Swedish Transport Administration's capacity investigation





Summary main report

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An investigation which focuses on capacity and efficiency

The Swedish Transport Administration was commissioned by the Government to investigate the requirements of increased railway capacity up until 2050. The findings of the investigation were reported in their entirety by 30 April 2012. An interim report on increased capacity within the railway system for the period 2012–2021 was submitted on 30 September 2011.

The continued work is partly concerned with that which is to be achieved by 2050, in accordance with the original Government commission, and partly with the extended investigation comprising the national road network, maritime transport and aviation within the plan period, and all four modes of transport by 2025.

The Swedish Transport Administration has carried out an integrated and in-depth analysis of the efficiency and capacity-increasing measures which could be implemented into the transport system through the national road network and within maritime transport and aviation during the periods 2012–2015 and 2016–2021. The task has been further widened to include proposals on measures for the whole of the transport system for 2022-2025. This deals with measures which will increase capacity and contribute to a more robust and efficient usage of the transport system in its entirety.

On 27 April 2012, the Swedish Transport Administration submitted the commissioned report concerning capacity and efficiency in the transport system to the Government. The commission encompassed all forms of transport and a time frame up until 2021 (same time frame as the current infrastructure plans) and up until 2025, and in addition, an outlook toward 2050. In accordance with the Government's decision, the work has concentrated on measures which provide increased capacity and which contribute to a more robust and efficient utilization and a long-term sustainable transport system. This means that we have not described additional needs such as traffic safety, noise pollution levels, accessibility for people with disabilities or measures for managing severance effect or the effects of climate change such as increased water flow.

The results of the investigation will comprise one of the supporting documents for the Government's upcoming infrastructure proposition, which in turn shall form the basis of a review of the current National Transport Plan (NPT). The proposals of the capacity investigation are consequently not a new plan.

The Swedish Transport Administration's proposals follow the four-step principle

In its commission to the Swedish Transport Administration, the Government has emphasized the application of the four-step principle in the investigation. The four-step principle entails possible Investments to the transport system being examined step by step.

The four step principle is an important tool in the work to maximize the capacity of the transport system.

Step 1 – Rethink
Measures that can affect the need of transportation and choice of transport mode

Step 2 – Optimise
Measures that make the utilization of existing infrastructure and vehicles more efficient

Step 3 – Improve
Limited amount of reconstruction and improvements

Step 4 – Invest
New constructions and major improvements

Instruments of control are examples of the two first steps "Optimise" and "Redirect". Railway fees which optimize the use of the railway system, and municipal parking policies that encourage more people to use public transport, or to travel by bike or foot, are some examples of how potentials can be used more effectively. In order to have the intended effect, then we must also promote competition between the different modes of transport. We need more knowledge and information about the various effects of these instruments of control. However, the Swedish Transport Administration does not have all instruments of control at its disposal.

The greatest deficiencies in the transport system up until 2025

Capacity deficiencies are already evident in parts of the transport system. Through an increased demand for travel and transport services, deficiencies in capacity and efficiency may arise in new areas over the coming years.

The greatest capacity deficiencies at present are in the railway system and within and around metropolitan areas. Track capacity does not correspond to the demand for public transport in metropolitan areas. In the Stockholm region, there are also capacity problems in the road and cycle path networks which are expected to worsen.

The travelling times and supply of long-distance train traffic on the stretches Stockholm–Göteborg and Stockholm–Malmö risk becoming worse as a result of increased freight and regional train traffic. The combination of traffic with different speeds entails in itself a limitation of capacity – a limitation which can be reduced with increased prioritization of traffic with the same speed or increased separation of traffic.

Arlanda airport's emissions ceiling and noise pollution requirements can lead to considerable limitations of the accessibility of air traffic to the airport and of the scope of air traffic.

There are, in general, long travelling times from the interior of Norrland to the County centre and central districts. There are also long travel times and difficulties with increasing commuting possibilities in the south-eastern parts of the country.

Road and railway capacity is insufficient for goods traffic to be able to manage the expected demand for ore transportation in Norrbotten and Bergslagen. The West Coast main line, south of Hallandsås, is a remaining bottleneck for goods traffic which makes it impossible to realise the full potential of a completed tunnel through Hallandsås. The capacity of the East Coast main line does not allow for the expected demand for goods traffic to be satisfied. There are also capacity deficiencies in the connections to certain nodes for goods transportation, for example, the shipping lanes in Trelleborg, Luleå and Hargshamn. The railway connection to Gävle harbour even lacks electrification. There are difficulties in meeting the demand on the Hallsberg–Göteborg and Hallsberg–Malmö stretches, and a lack of structure for traffic distribution in Stockholm.

At present, negotiations concerning guidelines for the trans-European transport network (TEN-T) are proceeding at the EU level. The Commission's fundamental requirements of the Swedish addition include, among other things, adaptation of the road and railway network to higher standard demands as well as for low-trafficked stretches, and construction of the North Bothnia Line.



What could happen by 2050?

The forecasts shall primarily be seen as an indication of the development which can be expected if no measures are implemented beyond the current plans, and if no political decisions are made about taxes, charges or other policy instruments.

The forecasts of future traffic provide an illustration of the challenges that society may have to meet. Behind the changes in traffic are trends such as increased global trade, increased concentration of populations in cities and a changed population structure, with more elderly in Europe. The Swedish Transport Administration has produced forecasts for the development of traffic up until 2030 and 2050. The forecasts are based on input data from well-established sources. It should be noted that infrastructure investment can only marginally affect the total number of journeys and good transportations. Therefore, if demand is to be affected to a significant extent, policy instruments are required.

With the conditions that were presumed, the forecasts show that goods transportation and regional passenger travel will increase in particular. The total passenger transport work is calculated to increase by 63 per cent, and more on the railway than on roads. Goods transport work is expected to increase by 61 per cent between 2006 and 2050. According to the forecasts, imports and exports calculated in tons will double, while domestic transport amounts will only increase marginally. It may be noted that transportation to and from the rest of Europe are completely dominated in tonnage, calculated in 2006, and it is estimated to be the same in 2050. The largest increases by far in absolute numbers will occur in transportation to Eastern Europe.

The Swedish Transport Administration's conclusions and proposals

It is not possible to solely build in order to solve the capacity deficiencies considering the dramatic traffic increases that are expected by 2050. The Swedish Transport Administration primarily recommends the following:

- **More usage of policy instruments to affect the traffic.** In the long term, the traffic should bear the costs for usage of the infrastructure and its effects on the surroundings. Community planning is also an important tool for affecting the need for transport in the long term, and in this regard, collaboration is required between many actors such as planners, municipalities and industry.

- **Operation and maintenance of the existing system is prioritized** as the vast majority of transportation in the future will use transport infrastructure that exists today. Operation, maintenance and reinvestment need to be carried out so that the proportion of unplanned interruptions as a result of acute remedial measures is reduced. This applies in particular to the railway, but there is also a need to allocate more funds in order to ensure the function of the highly-trafficked road network.

- **Streamlining measures provide large benefits at relatively low cost** and need to be carried out continually. Examples of trimming measures are the construction of traffic information signs, median barriers, measures on slip roads and ramps, platform extensions and passing tracks.

After taking into account the effects that can be achieved with measures according to steps 1-3 of the four-step principle, consideration is made of what additional development through new investment is required in order to increase capacity and efficiency. The Swedish Transport Administration's principle focus is presented in the figure below, which should be read from the bottom upwards.

The Swedish Transport Administration has chosen to present the opportunities for development in the form of different packages: goods package, metropolitan package, passenger transport package and climate package, which respond to different deficiencies up until 2025, and to challenges and potential that the Swedish Traffic Administration has identified up until 2050. Within every package, the idea is to follow the same principles as in the figure, that is, that measures in accordance with steps 1–3 receive highest priority, together with a few step 4 measures which are seen as urgent. In the high level for each package are step 4 measures which lie on the next priority level, if additional funds are devoted to transport infrastructure.

Within each package, the Swedish Transport Administration has prioritized and highlighted initiatives that should be implemented at lower and higher ambition levels. The "low level" is an investment level that is lower than the present one, and corresponds to what is required for successive adaptation of the transport system with smaller measures, whereby small measures are implemented as and when critical needs arise. The "high level" corresponds to a more powerful strengthening of transport infrastructure, which requires greater investment and which corresponds to the greatest shortfalls in terms of capacity and efficiency.

- Goods package Large increases in transport volume/transport work will occur in all types of traffic in the long term. During the course of the investigation, it has become evident that industry and regions have high hopes that the railway shall be used for an increasingly large share of goods transportation. The Swedish Transport Administration estimates that the potential exists to transport more goods by rail, but that a considerable increase in railway transport costs requires policy instruments and significant investments that cannot be fully justified from a socioeconomical standpoint. The starting point in the Swedish Transport Administration's goods package is to create the conditions for good functioning of the entire system by using all types of traffic efficiently. In the lowest level, the most obvious deficiencies in the system are remedied in order to maintain the functional standard, particularly on railways, but also with regard to the bearing capacity of roads. In shipping, it is primarily a matter of the dredging of shipping lanes in order to allow the passage of larger ships.

- Metropolitan Package Population growth will occur to a large extent in metropolitan regions. The demand for passenger transport is therefore expected to increase significantly in these areas up until 2025 and by 2050. Limitations currently exist in the opportunities for the infrastructure to cope with the current demand for public transport. The capacity deficiencies are greatest in Stockholm, where roads, railways and cycle paths are affected. The package with proposals for prioritization of initiatives is suggested for Stockholm, Göteborg and Malmö. The packages also encompass initiatives which increase the capacity of the connections between metropolitan areas and the surrounding countryside.

- Passenger transport package The most important functions for long-distance passenger transports are the travel possibilities between metropolitan areas, primarily Stockholm and regional centres, between nearby regional centres as well as to the biggest tourist destinations in Sweden, and to airports for journeys abroad. The different types of transport need to complement each other in order to ensure a reasonable supply, good capacity and acceptable travelling times. Socioeconomic assessments show that one of the alternatives investigated for high speed railways between Stockholm–Göteborg/Malmö demonstrated calculable benefits which were the same size as the costs. The benefits were lower than the costs for other alternatives. The same applies to the option to upgrade the

South and West main lines to higher speeds. At the same time, it is clear that there are significant capacity deficiencies along stretches which need to be remedied. The Swedish Transport Administration's recommendation is to begin a separation of different types of train traffic through building separate tracks from the terminal points in such a way that a continuous high-speed network is possible in the longer term. For regional travel, measures for efficient and attractive commuting to work are prioritized.

- Climate package. Technological development, policy instruments and physical planning towards a less transport dependent society are crucial for the achievement of climate goals in the transport sector. A climate scenario has therefore been produced which contains an ideal picture in which climate goals have been achieved. The climate scenario also covers which measures and policy instruments are required in order to achieve this ideal. Overall, it concerns the crucial choice of which path Swedish climate and transport policy take. The measures in the climate package by themselves are not nearly sufficient to achieve the climate goals; they need to be supplemented with the additional measures and policy instruments which were suggested in the climate scenario. In general, it can be said that parts of the development package defined for metropolitan areas, goods and passenger transportation support a development towards a limited climatic impact. A development in accordance with the climate scenario will demand a re-examination of road investment whilst the need increases in relation to measures that increase the capacity of public transport and goods transportation by rail and ship.

Financing

Proposals for forms of finance in a long-term perspective. The starting point is that State budgetary allocation will also constitute the primary source of finance in the future. User financing should also become increasingly important. Municipal and private co-financing should be applied in situations where certain conditions are met. Investment measures which aim at making the operation of transport infrastructure more efficient should be financed through borrowing. Special financial arrangements can be required for large and complex investment projects.

The costs of administration of transport infrastructure between 2012–2025 have been calculated in accordance with the following:

	2012 – 2021			2022 – 2025
	Increase 2012-2021	**Increase per year**	**Increase per year**	**Range per year**
Maintenance and reinvestment				
Rail	23,3	2,3	8,2	8,2
Road	12,7	1,3	11,6	12,2
Total maintenance and reinvestment	**36,0**	**3,6**	**19,8**	**20,4**
Streamlining measures				
Rail	2,0	0,2	0,4	0,7
Road	3,1	0,3	0,8	0,9
Total streamlining measures	**5,1**	**0,5**	**1,2**	**1,5**
Investments				**Complete ongoing projects**
Rail	**12,7**			
Road	**0,0**			**13,3**
				+
				Package proposal

SEK 13.3 billion is required between 2022–2025 in order to complete the investment projects which are predicted not to be finished by the end of 2021.

In order to further increase the capacity, investment in new and upgraded infrastructure is necessary. Prospective investment measures identified have been grouped into measures packages:

- a goods package
- a metropolitan areas package for Stockholm, Göteborg and Malmö
- a passenger traffic package for the rest of the country
- a climate package

The measures in the packages can be initiated and partly finished during the period up until 2025.

Parts of the suggested increase in costs 2012–2025 will be financed by increased track access charges and the Swedish Transport Administration's own increased efficiency.

The future costs (2026–2050) of administration (traffic control, operation, maintenance and reinvestment) of railway and road infrastructure have been estimated, based on a number of development strategies. The results show that the costs will increase marginally, as the expansion of infrastructure compared with today's level is marginal despite the investments being extensive in absolute figures.

- The costs for roads are expected to increase by between 0–3 per cent or SEK 0–10 billion in addition to the base scenario, depending upon the choice of development strategies.

- The costs for railways are expected to increase by between 0–5 per cent or SEK 0–10 billion in addition to the base scenario, depending upon the choice of development strategies.

Financing of the proposed measures will primarily be comprised of State budgetary allocation, but track access charges and the Swedish Transport Administration's increased efficiency continue to contribute. It is also estimated that increases in co-financing and productivity in the construction industry could contribute to the financing.

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