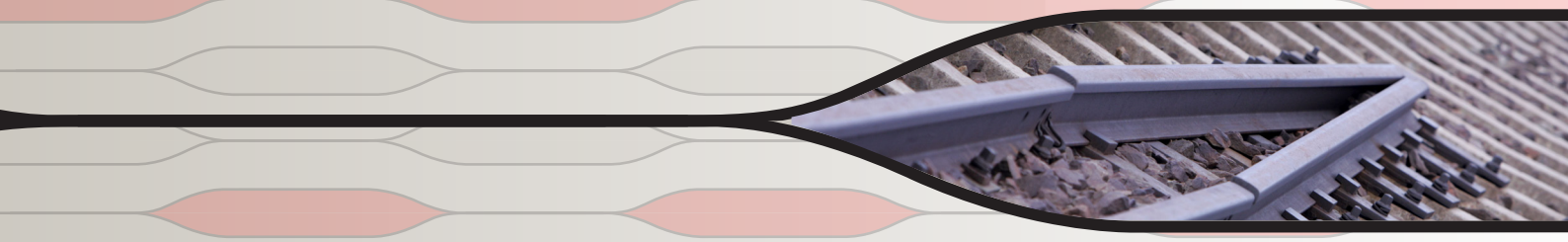
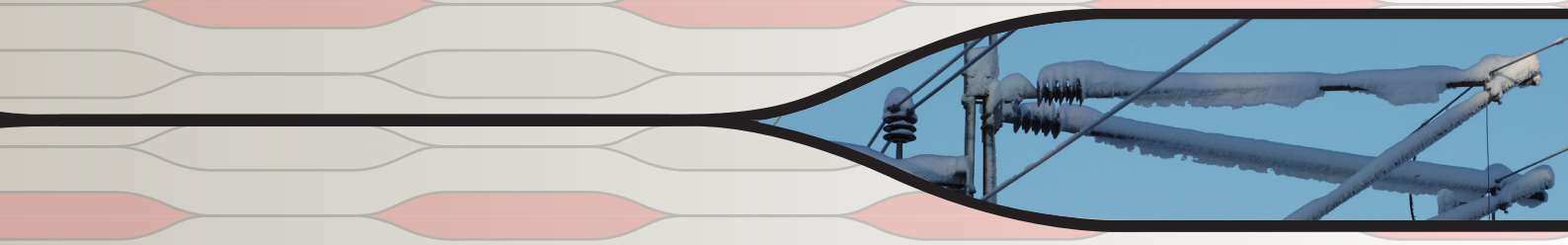
TRAFIKVERKET
SWEDISH TRANSPORT ADMINISTRATION

Investigation of capacity in the Swedish railway system

– suggested solutions for the years 2012-2021





Summary

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The Swedish Transport Administration's capacity investigation

The Swedish Transport Administration has been commissioned by the Government to investigate the requirements of increased railway capacity up until 2050. The findings of the investigation shall be 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. This report reflates to the interim report for the period 2012–2021.

The interim report has been submitted and a summary of its proposals can be found in the report entitled A Summary of proposals for the requirements of increased railway capacity – suggested solutions for the years 2012-2021.

The aim of the interim commission of the period 2012–2021 is not to produce a new national plan for the railway system or to revise existing plans; the interim commission is intended to suggest additions to the plan, in order to increase the robustness and capacity of the railway system.

The interim commission has been limited so that it only deals with shortcomings which are directly connected to capacity, based on the current situation and a reasonable assessment of the extent of the traffic. Therefore, only measures concerned with increasing the capacity of the existing system are proposed and not measures which, for example, are concerned with development of the traffic system or improved traffic safety.

The current railway infrastructure is under a great deal of strain. The railway system has capacity shortcomings both in terms of its punctuality and its robustness. The amount of traffic is greater than ever and the trains themselves are heavier, wider, higher and longer, which directly affects maintenance requirements. In order to keep up with the aging of the infrastructure, maintenance and re-investment needs to be increased, compared with current levels. One effect of neglected maintenance, in combination with the high capacity usage is the great number of traffic disruptions currently occurring. If the number of disruptions was reduced, this would enable higher capacity usage and increased punctuality. The report describes the shortcomings in the system for the years 2011, 2015 and 2021. The delays which occur are not just caused by shortcomings in the physical infrastructure, but also by the railway companies, operational management and by accidents. On a national level, disruptions every year bring about further delays amounting to approximately 13 million minutes .

The measures proposed by the report are aimed at substantially improving punctuality, robustness and capacity within the Swedish railway system. Some of these can be brought about within the resource framework of the existing plans, but a significant part of the measures require an expansion of the resource framework. That which can be achieved through the redistribution of resources over time primarily involves making smaller investments earlier, within other measure areas (trimming measures).

The proposed measures can be categorized as follow:

A. Measures which can be carried out within applicable frameworks and through redistribution within the period of the plan

B. Measures which can be carried out through redistribution of resources over time

C. Measures which require an increase in the resource framework

The proposed measures which require an increase in the resource framework can be described in four ambition levels:

C1) Maintain capacity and punctuality at today's levels

C2) Restore the system to the levels for which it is designed

C3) Strengthen capacity in the existing system through trimming measures

C4) Increase capacity in the areas with the most shortcomings through new investments

SEK (millions)	A	B	C1	C2	C3	C4
Proposed increased framework			14,500	23,300	25,300	38,025
Finance through making the Swedish Transport Administration more efficient			10,950	10,950	10,950	10,950
Remainder to be financed with additional grants or loans			3,550	12,350	14,350	27,075

The Swedish Transport Administration proposes that the increased railway charges be used for operation, maintenance and re-investment.

All measures proposed by the Swedish Transport Administration contain control measures. The Swedish Transport Administration needs to differentiate the railway charges and introduce new economic control measures into the existing charging structure in order to bring about an effective distribution and usage of its capacity. One example of this is quality charges which are currently being introduced. In the development of economic control measures, attention shall also be paid to administrative control measures, i.e., those where charges are not involved. It is about prioritization criteria and bottle-neck plans, amongst other things. All in all, the Swedish Transport Administration believes that control measures will be effective components in the achievement of a more effective capacity usage.

The maintenance situation within the Swedish railway network varies for the different parts of the infrastructure. In order to avoid disruptions and, in certain cases, due to safety demands, the ambition is that every piece of the infrastructure which has reached the end of its useful life shall be replaced. It has been assessed that SEK 63.3 billion is required to cover re-investment and maintenance over the coming 10 years, in order to meet both current requirements and to deal with the latent requirements. The requirement of current maintenance measures is assessed to be approximately SEK 31.7 billion. Just over half of this is for track maintenance. The re-investment required for previously neglected maintenance is estimated at SEK 8.8 billion and, over the next 10 years, other parts of the infrastructure valued at approximately SEK 22.8 billion will deteriorate to such an extent that they will also need to be replaced.

The Swedish Transport Administration believes that it is important to carry out trimming measures within the railway system. These are often smaller investment measures which, as a rule, cost less than SEK 50 million each and which are intended to increase capacity within the system. Examples of trimming measures are simultaneous approaches and extended passing tracks and platforms.

The Swedish Transport Administration proposes bringing forward a few of the most important capacity-increasing investment objects contained in the current national plan, objects which are currently set to be put into operation later in the plan period. Furthermore, several other new, smaller capacity-increasing measures are proposed for implementation before 2015. As a complement to these, several other capacity-increasing investments are proposed to be instigated by 2021 and a larger number of investments should be investigated for a possible decision on their implementation by 2021, in order to correct the most serious capacity limitations.

Apart from the measures proposed by the Swedish Transport Administration, measures also need to be undertaken by other operators, so that the railway system can work as efficiently as possible, i.e., maintenance of rolling stock and properly functioning terminals and depots.

As far as the implementation of the proposed economic control measures is concerned, the Swedish Transport Administration has a preliminary development plan which extends up to and including 2015. As far as the administrative control measures are concerned, there is no documented development plan. The Swedish Transport Administration assesses however that the development of these will follow a similar structure to that of the economic control measures and that they can be expected to be introduced in the period leading up to 2015.

The Swedish Transport Administration is working on a detailed implementation plan for operational, maintenance and re-investment measures for 2012–2013. This will be completed in December 2011. Particular attention must be paid to the short-term lack of resources which currently exists within the Swedish contractor market; also, the Swedish Transport Administration must consolidate internal skills and resources, and access to the infrastructure must be guaranteed. The Swedish Transport Administration is also working on the production of more long-term plans for maintenance and re-investment measures.

Those investments which it has been suggested should be brought forward will be carried out using the production plan as a starting point.

It is thought that the capacity situation will be considerably improved after the introduction of the proposed investment measures, but not all of the stretches which have major capacity limitations will be improved by 2021. The measures will reduce capacity problems in the busiest sections, but certain problems will remain due to increased traffic levels. For those investments where the Swedish Transport Administration suggests investigation into their possible implementation, their scope and usefulness needs to be examined.

A socio-economic assessment of increased maintenance and re-investment budgets shows that their usefulness outweighs the costs involved. The proposed increased budget level for maintenance and re-investment measures means that the tracks can be maintained at their current standard and this in term means that an additional increase in the number of delays is avoided. The budget level will also lead to a reduction in delays, compared with current levels.

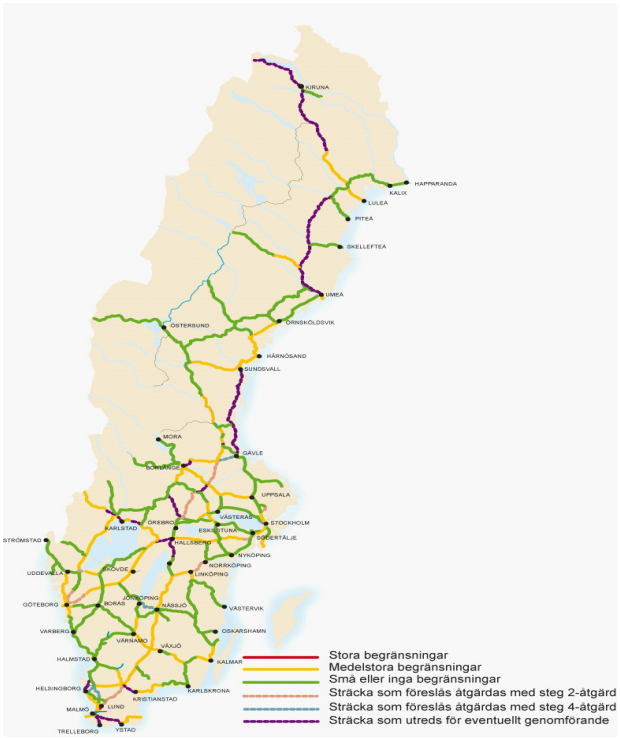
Assessment of the effect on the environment has been focussed on proposed future measures. This is due to the fact that the proposed measures already accounted for are, to a large extent, based on measures in the established plan which have already been assessed for environmental impact. In summary the Swedish Transport Administration assesses that there is a risk of considerable negative environmental impact due to noise, the effects of barriers and congestion in areas meriting protection. With suitable protective and compensatory measures, the majority of these risks can be eliminated and in certain cases even lead to a positive environmental impact.

The continued work is partly concerned with that which is to be achieved by 2050 and partly with an extended analysis of measures for increased efficiency and capacity within all four modes of transport by 2025.

Capacity limitations in 2021

-after the investigation's proposed measures

- Major levels of limitation
- Medium levels of limitation
- Low or zero levels of limitation
- Route proposed to be rectified by step 2 measures
- Route proposed to be rectified by step 4 measures
- Route being investigated for possible implementation



The continued work

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 task comprising the national road network, shipping and aviation within the plan period, and all four modes of transport by 2025.

According to the Parliament's decision regarding the widening of the investigation into increased capacity within the railway system, the Swedish Transport Administration shall carry 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 shipping and aviation within the periods 2012–2015 and 2016–2021. The task shall be 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.

In the work being carried out in terms of the 2050 time perspective, the railway transport needs of the transport system shall be highlighted, capacity shortcomings shall be identified and proposals for measures to increase capacity shall be reported.

The Swedish Transport Administration will analyse different development strategies, including alternatives involving increased standard speeds. Proposals for improvements in the transport system shall be tested step by step, according to a four step approach. Socio-economic efficiency will provide guidance in the choice of measures, and socio-economic assessments shall be made for the various different measures, as well as an analysis of the need for further investments which may arise in other parts of the transport system. A comparison between other countries where the railway network is of great importance shall be carried out and attention shall also be paid to the development of the TEN-T network.

From a long-term perspective, it is reasonable to place the railway system in a larger context and to study the whole of the transport system. Various different conceivable development strategies for the Swedish transport system will be examined. The strategies will highlight different possible directions regarding the strengthening of the railway system's capacity, up to 2050. They will highlight where there is likely to be demand for the increased capacity and they will assess the socio-economic efficiency required of the various different measures. Environmental assessments will also be carried out.

The following development strategy categories will be examined:

- Gradual adaptation to demand shifts: one basic alternative which is constructed free of bottle-necks, user fees are used for utilizing existing capacity in the most effective manner with similar transport choices, and smoother transitions between the different modes of transport are facilitated. The aim is to highlight the effects of a limited alternative with low investment levels in the period up to 2050.

- Drastic capacity-strengthening measures to bring about conditions which will allow freedom of choice and flexibility in the long-term. Various scenarios for the development of a high speed railway system will be examined, as well as one alternative featuring extended main lines (Western and Southern main lines). Strategies for increased commuting capacity around major cities, increased accessibility across the whole country and increased capacity for goods transportation in particularly busy stretches will also be described. The aim is to highlight the potential and the socio-economic efficiency in several downright forcible capacity-strengthening alternatives which require a significantly higher level of investment than those in the first category. It shall be investigated if, and under what circumstances there may be a demand for such capacity increases, and if the usefulness of such increases can be expected to outweigh the costs.

- Adaptation of the transport system to clearly defined objective functions, in the first place, to achieve climate objectives. The aim is to highlight the measures required in order to reach established climate objectives. The starting point for this is partly the requirements made of the transport system which are expressed in the EU's white paper on transport, and partly the interpretation of the climate objectives which were made in the Swedish Transport Administration's "Planning basis for a climate-adapted transport system".

When studying the development strategies, options involving the other modes of transport should also be investigated, i.e., what potential is there for shipping to lighten the load of land transportation systems? Furthermore, regional and local bus transport can be effective components of a developed public transport arrangement? Flight is an important mode of transport where greater distances are concerned or where there are shortcomings in the land transportation equivalent or the latter takes too long.

The results of analyses are intended to form the basis for a discussion about how the strategies examined can be combined for the long-term development of the transport system and which recommendations the Swedish Transport Administration should draw up.

As is stated in the Government commission, the socio-economic assessments should be based on policies which the Government have already decided or announced. One prerequisite is the implementation of the National Plan for the Transport System 2010–2021, including the following up of those measures instigated within the planning period. The basis for the analyses is primarily the Long-Term Survey 2008 of the Swedish Economy, LU 200834, and Transvision's view of global scenarios. LU 2008 is concerned with developments up to 2030 but also looks as far forward as 2050 and it includes both a trend projection and a climate-adapted perspective. Transvision has formulated a basic scenario and four development scenarios. The commission encompasses the making of comparisons with other countries where the railway network is of crucial importance. The countries which have been specifically selected for this comparison are Holland, France and Switzerland. Attention will also be paid to the investigatory work ongoing in the Nordic countries and the Baltic region. The focus, as far as the EU is concerned, is the white paper on transport, the revision of the EU's transport network, the mutual corridor for the introduction of ERTMS and the introduction of a prioritized goods network.

The remaining parts of the commission shall be reported in their entirety by 30 April 2012. The Swedish Transport Administration shall have submitted their proposed measures before this date and they shall, within the submission framework, invite to and carry out a hearing.

Pivotal questions

1. **How should the transport system be adapted to the significant increase in cargo transport expected by 2050?**
2. **Metropolitan areas are growing – which measures are required to cope with this?**
3. **Policy instruments – which ones should be used, and to what extent, to control the demand for capacity within and between the modes of transport?**
4. **Combined or an increased level of separation of railway traffic?**
5. **The future role of aviation?**
6. **Adaptation to global warming – what are the requirements and can they be met?**
7. **Should the State identify and prioritize special nodes?**
8. **The future role of coastal and inland navigation?**
9. **Investment in high-speed railways and, if so, which form?**
10. **---?**

The four step principle

The four step principle implies that possible improvements in the transport system shall be tested gradually:

Step 1 – measures which can affect the demand for transport and the choice of mode of transport –comprises planning, control regulation, effect and information which have a bearing on the transport system as well as on the rest of society, in order to reduce the demand for transport or to move over to forms of transport which take up less space, are safer, or which are more environmentally friendly.

Step 2 – measures which make more efficient use of the existing infrastructure – comprises efforts within the control, regulation of effects and information directed at the various components of the transport system, in order to use the existing infrastructure more efficiently, more safely and in a more environmentally friendly manner.

Step 3 – limited reconstruction measures – comprises improvement measures and reconstructions of existing infrastructure, i.e., trimming measures or productivity measures.

Step 4 – new investment and major reconstruction measures – comprises reconstructions and new constructions which may often demand the acquisition of new land, i.e., new railway or road sections.

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