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Impact Assessment Programme

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Abstract

The National Transport System Plan guides the maintenance of the Finnish transport system and its development into the distant future. The plan will include an assessment of the current state and future operating environment of the Finnish transport system, the objectives for the transport system and the measures for meeting the objectives. National transport system planning will become a continuous process, which makes the development of the Finnish transport system more predictable and effective.

When implemented, the transport system measures will have an impact on features such as the climate, the environment, society, the movement of people and transportation in the business sector. The impact assessment will increase understanding of the effects of developing the transport system, thus supporting both planning and decision-making. The assessment will render the planning solutions and decisions more transparent. The preparation of the National Transport System Plan assesses how the objectives set for the transport system are met. An environmental assessment will be made of the Transport System Plan according to the Act on the Assessment of the Effects of Certain Plans and Programmes on the Environment (200/2005).

The impact assessment programme describes the starting points and the objectives of the National Transport System Plan and the assessment of its impacts, the progress of the preparations, the impacts assessed and the interaction related to the preparations. The assessment programme is available for viewing in the autumn of 2019, and citizens, the authorities and stakeholders may express their views to support the preparations for planning and assessment.

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Tiivistelmä

Valtakunnallinen liikennejärjestelmäsuunnitelma ohjaa Suomen liikennejärjestelmän ylläpitoa ja kehittämistä pitkälle tulevaisuuteen. Suunnitelmassa tullaan esittämään Suomen liikennejärjestelmän nykytilaa ja tulevaa toimintaympäristöä koskeva arvio, liikennejärjestelmän tavoitteet sekä toimenpiteet tavoitteiden saavuttamiseksi. Valtakunnallisesta liikennejärjestelmäsuunnittelusta muodostuu jatkuva prosessi, mikä tekee Suomen liikennejärjestelmän kehityksestä ennakoitavampaa ja vaikuttavampaan.

Liikennejärjestelmän toimenpiteillä on toteutuessaan vaikutuksia esimerkiksi ilmastoon, ympäristöön, yhteiskuntaan, ihmisten liikkumiseen ja elinkeinoelämän kuljetuksiin. Vaikutusten arvioinnilla lisätään ymmärrystä liikennejärjestelmän kehittämisen vaikutuksista ja tuetaan näin suunnittelua sekä päätöksentekoa. Arvioinnilla tehdään suunnitteluratkaisuista ja päätöksistä läpinäkyvämpiä. Valtakunnallisen liikennejärjestelmäsuunnitelman valmistelussa arvioidaan liikennejärjestelmälle asetettujen tavoitteiden toteutumista. Liikennejärjestelmäsuunnitelmasta tehdään viranomaisten suunnitelmien ja ohjelmien ympäristövaikutusten arvioinnista annetun lain (200/2005) mukainen ympäristöarviointi.

Vaikutustenarvioinnin ohjelmassa kuvataan valtakunnallisen liikennejärjestelmäsuunnitelman ja sen vaikutusten arvioinnin lähtökohdat, tavoitteet, valmistelun eteneminen, arvioitavat vaikutukset ja valmisteluun liittyvä vuorovaikutus. Arvioinnin ohjelma on nähtävillä syksyn 2019 aikana, jolloin kansalaiset, viranomaiset ja sidosryhmät voivat lausua näkemyksensä suunnittelun ja arvioinnin valmistelun tueksi.

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Referat

Den riksomfattande trafiksystemplanen styr driften och utvecklingen av Finlands trafiksystem långt in i framtiden. I planen presenteras bedömningen av nuläget för Finlands trafiksystem och den framtida omvärlden samt målen för trafiksystemet och åtgärderna för att nå målen. Den riksomfattande trafiksystemplanen utgör en kontinuerlig process, som gör utvecklingen av Finlands trafiksystem mera förutsägbar och verkningsfull.

När åtgärderna för trafiksystemet genomförs har de konsekvenser för till exempel klimatet, miljön, samhället, människors mobilitet och näringslivets transporter. Genom konsekvensbedömningen ökar förståelsen av konsekvenserna av utvecklingen av trafiksystemet och på så sätt stöds planeringen och beslutsfattandet. Genom bedömningen görs planeringslösningarna och besluten mer transparenta. I beredningen av den riksomfattande trafiksystemplanen görs en utvärdering av huruvida de mål som ställts för trafiksystemet har nåtts. När det gäller trafiksystemplanen görs en miljöbedömning enligt lagen om bedömning av miljökonsekvenserna av myndigheters planer och program (200/2005).

I programmet för konsekvensbedömning beskrivs följande i fråga om den riksomfattande trafiksystemplanen och bedömningen av dess konsekvenser: utgångspunkterna, målen, beredningsprocessen, de konsekvenser som ska bedömas och växelverkan inom beredningen. Programmet finns till påseende på hösten 2019 och då kan medborgare, myndigheter och intressenter framföra sina åsikter till stöd för beredningen av planeringen och bedömningen.

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Contents

TO THE READER

The National Transport System Plan will guide the maintenance of the Finnish transport system and its development into the distant future. The plan will include an assessment of the current state and future operating environment of the Finnish transport system, the objectives for the transport system and the measures for meeting the objectives. The plan includes a twelve-year action plan.

According to the Government Programme, the global development of the route network will be determined as part of the National Transport System Plan. In addition, the functionality and the need for change in terms of the decree on the main roads and their service level will be processed in connection with the work carried out on the transport system. According to the Government Programme, solutions for separate funding will be added alongside the direct budget funding on a project-by-project basis. The project will not be separated from the development of the entire route network and the transport system plan, in order to use the most cost-effective and functional solutions. In addition, a cooperation network will be launched according to the Government Programme. The duty of the Corporation network will consist of developing emission indicators to be used as a basis for taxation. The results of the work on emission indicators will be taken into account in the work carried out on the National Transport System Plan. According to the Government Programme, the objectives for reducing transport emissions should correspond to the Finnish carbon neutrality objective. By 2030, Finland will halve its transport emissions compared to the 2005 level. This is a step towards carbon-free transportation.

The measures in the Transport System Plan will have an impact on features such as the environment, society, the movement of people and transportation in the business sector. The impact assessment will increase understanding of the effects of developing the transport system and support the transparency of planning and decision-making. The preparation of the National Transport System Plan assesses how the objectives set for the transport system are met. An environmental assessment will be made of the National Transport System Plan according to the Act on the Assessment of the Effects of Certain Plans and Programmes on the

Environment (200/2005). This impact assessment programme will describe the starting points and the objectives of the National Transport System Plan and the assessment of its impacts, the progress of the preparations, the impacts assessed and the interaction related to the preparations. The materials and methods used for the assessment will be specified in the course of the planning stage.

The first National Transport System Plan for a 12-year period will be drawn up under the guidance of the parliament. The draft plan will be submitted to the Parliament in the form of a government report for processing and then to the Government for a decision. The plan will be prepared with the aim of making a final decision on it in spring 2021. As the public will be consulted, the authorities and the larger public will be able to present their views. The results of the consultation will be used for the planning and for the impact assessment. The assessment programme will be available for viewing in autumn 2019, at which time citizens, the authorities and stakeholders will be able to express their opinions.

1 Introduction

From the point of view of the functionality, safety and sustainability of the national transport system, it is important that the transport system is planned as a whole, taking all forms of transportation into account. The National Transport System Plan will result in a joint willingness to develop the transport system, which will increase cooperation between political decision-makers, government operators, regions, the business sector and other operators. The joint goals and objectives of the work carried out on the transport system, a commitment to the agreed funding level and a long-term point of view for the development of the transportation system will lay the foundations for the welfare and the movement of the public, the functionality and vitality of the regions and for the development of the national economy.

Climate change, digitisation, technological developments, the challenges of globalisation, the structural changes occurring in Finland and restricted resources have increased the need for long-term planning in terms of the transport system. The changes in the operating environment will have an impact on the needs for movement and transportation in Finland and elsewhere in the world. The changes in the operating environment and the need to develop the transport system have been examined and will be used as the starting point for the work carried out on the National Transport System. In terms of achieving the objectives of the plan, the National Transport System Plan will determine the most functional and effective methods for maintaining and developing the transport system in the long term, taking into account the challenges and the potential of the operating environment.

National transport system planning will become a continuous process, which makes the development of the Finnish transport system more predictable and effective. The extensive and diverse interaction with the stakeholders will, in part, render the planning process more effective, and it will promote compatibility between various levels of planning. In Finland, urban areas and other regions have established processes for transport system planning. Using existing processes, plans and impact assessments will be particularly important when preparing for the first National Transport System Plan.

In the future, the twelve-year National Transport System Plan will be drafted in the middle of the parliamentary term so that a decision on it may be reached a year before the parliamentary election. Where necessary, the plan will be reviewed and updated, and the contents of the plan will be implemented for the four following years. In addition, the Plan will undergo the necessary reviews due to the General Government Fiscal Plan at the beginning of each government term.

The impact assessment is a crucial part of the preparations for the National Transport System Plan. It is an advance assessment which produces information on the probable impacts of the Plan and its alternatives. The impact assessment will highlight the potential direct and indirect impacts of the Plan in Finland and outside of its borders. The assessment will ensure that the environmental impacts will be assessed and considered in the preparations for the Plan and during its approval as required by the law. The work carried out on the National Transport System Plan will also assess other impacts significant for the planning process. An increase in the transparency of planning and decision-making is a key objective in the impact assessment. The assessment will also assist citizens and various operators in acquiring information and offer them the opportunity to become involved.

2 National Transport System Plan

2.1 Legislative starting points

The creation of the National Transport System Plan is based on the Highways Act (503/2005). The Act provides for transport system planning and its objectives, the creation of the National Transport System Plan and the contents of the Plan. According to the law, a transport system refers to an entity consisting of passenger and freight traffic which covers all forms of transportation, the transportation networks serving these forms of transportation, the related communication connections and data as well as the services, means of transport and traffic control systems referred to in the Act on Transport Services (320/2017).

According to the Highways Act, the objective of transport system planning is to promote a functional, safe and sustainable transport system by taking particular account of the following:

1) the interaction between transport, land use service structures and business activities, and the current and future need for transportation created by these operations;

2) the mobility needs of various groups of people, and the functionality of trip chains;

3) the need for business sector transportations and the functionality of the transportation chains;

4) traffic safety;

5) the prevention and reduction of the adverse environmental effects of transportation;

6) the energy efficiency of the transport system;

7) the possibilities of using data and digitisation;

8) private and market-based transportation services as well as traffic and freight services;

9) the need for developing and funding public and publicly funded transportation services as well as traffic and freight services; and

10) the need for developing and funding transport networks and their hubs.

Transport system planning is based on existing legislation. In terms of transport networks, the starting points for the National Transport System Plan include the trans-European transport networks (TEN-T), provided for in the Guidelines regulation (EU) No 1315/2013 of the European Parliament and of the Council on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU and in the Ministry of Transport and Communications Decree on the Main Routes of Highways and Railways and their Service Levels (933/2018, Main Route Decree). On the national and international level, the main routes connect the largest centres and hubs. The Main Route Decree determines in more detail the service level of the main routes on highways and railways. The Highways Act provides for the service level and maintenance of all highways as well as the general requirements for road maintenance. The Railways Act (110/2007) provides for railway maintenance and the related general requirements as well as the maintenance of railways and the development of the railway network.

In terms of transport services, features such as the Act on Transport Services (320/2017) apply to the Plan. The Act includes regulation applicable to the services of all forms of transportation. In addition to requirements for permits and qualifications, the provisions on service procurement procedures, traffic control and management and the role of the authorities are crucial for the National Transport System Plan. The Act also includes regulations on transport services related to traffic services, such as mediation, parking and data services.

In terms of land use, the starting points for creating the National Transport System Plan are determined by the Government Decision on the National Objectives for Land Use (14 December 2017). National objectives for land use are intended to promote the development of functional communities and to support sustainable transportation. An attempt is made to promote an efficient transport system by developing the functionality and cost-effectiveness of the national transport system. In addition, one of the national objectives for land use is to ensure the continuity of nationally and internationally significant transportation and communication connections and the possibilities to develop them, and the possibilities to develop nationally and internationally significant harbours, airports and border crossings.

2.2 Transport Plan in relation to national objectives and policies

The National Transport System Plan is a strategic plan. It combines the long-term objectives, measures and funding for the development of a national transport system. The objective of the Plan is to compile the strategic focal points of developing a transport system into a common view and willingness to act which will continue from one government term to another. The national plan is intended to be used by parties developing the transport system, the business sector, various operators and citizens in Finland and elsewhere in the world. The plan will help various operators to develop their activities in a long-lasting and convergent manner.

The National Transport System Plan will become a part of a larger entity. Other national decisions and plans include features such as the national land use objectives under the Land Use and Building Act (132/1999), the Act on Regional Development, and the decision on regional development for the focal points of national regional development according to the structural fund.

The climate policy planning system under the Climate Change Act will provide starting points for the development of the transport system. It includes a long-term climate policy plan which is drafted once every 10 years, a medium-term climate policy plan which is drafted each government term, and the national adaptation plan for climate change.

The Ministry of Transport and Communications is in charge of ensuring the compatibility of the National Transport System Plan with other national plans. The Government Decision on the national land use objectives is the most permanent of the decisions mentioned above. The other decisions and plans mentioned above will be updated during the current government term.

The modernisation of the land use and construction act which is essential to the development of the transport system is currently underway. In connection with the preparation for modernised legislation, it is likely that a stand will be taken on land use guidance on a national level and on how national decisions and plans are taken into account in land use. This may also have an effect on the position of the National Transport System Plan in land use guidance.

The preparation of the decision for regional development has been launched under the guidance of the Ministry of Economic Affairs and Employment, and the objective is to reach a new decision at the beginning of the government term. In terms of regional development, it is essential to develop the transport system. It is important to match

the National Transport System Plan and the decision on regional development. It is likely that this will particularly highlight ensuring the prerequisites for the business sector operations which are essential to the vitality of the regions, as well as the issues related to accessibility on a national and international level.

A long-term climate plan is being prepared for the European Union. It also includes the first national long-term plan for climate policy, which will be prepared at the beginning of the government term. The new medium-term climate policy plan will be prepared later during the government term. The starting point for preparing the National Transport System Plan is the valid medium-term climate policy plan (Government report on the medium-term climate policy plan until 2030 – Toward a climate-smart everyday life 21/2017), and the measures implementing the climate policy included in the Transport System Plan will be taken into account in other aspects of national climate policy.

The National Transport System Plan also provides starting points for the more detailed planning work and work carried out on the transport system in the regions, urban areas and municipalities. Interaction and cooperation between various levels of planning will ensure that different levels of plans have been matched when necessary (Figure 1).

The issues related to the transport system in terms of the contractual cooperation between urban areas and the Government will be matched with the National Transport System Plan. The objective is that the goals of the National Transport System Plan are visible in the contracts between urban areas and the Government and that the measures included in the contract also promote the implementation of the objectives of the National Transport System Plan in urban areas.

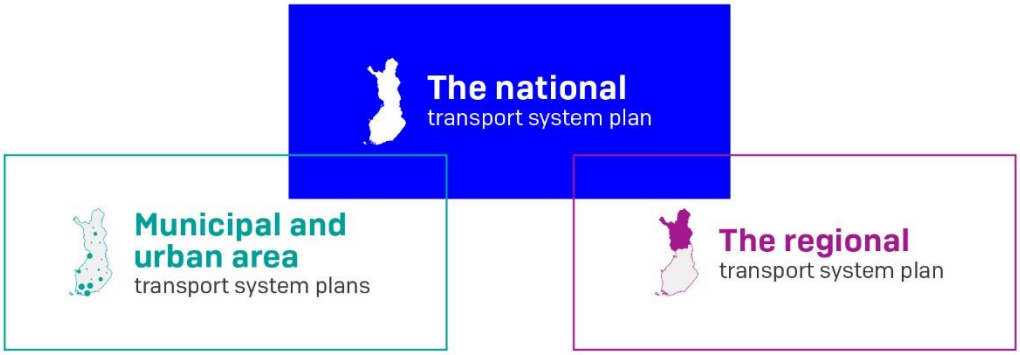


Figure 1. New strategic planning platform for the long-term development of the national transport system.

Planning area

The National Transport System Plan covers the entire area of Finland. The preparations for the Plan take into account the distinctive features of the various parts and regions of Finland.

According to the Act on the Autonomy of Åland (1144/1991), the Åland Islands have legislative competence on roads and channels, road traffic, railway traffic, boat traffic and local maritime routes. Regulation on the National Transport System Plan and thus the Plan itself cannot apply to these matters for the Åland Islands. In contrast, the Åland Islands will also be taken into account in aviation, maritime trade and maritime trade routes to the extent necessary for processing these matters.

2.3 Social goals and objectives

According to the Highways Act, the objective of transport system planning is to promote a **functional, safe and sustainable** transport system: In the justifications for the Act, the objectives have been specified so that the goals of the transport system include **the functionality of movement and transportation, safe trip and transportation chains, and ecological, social and economic sustainability.**

The objectives and the preparations guiding the National Transport System Plan were specified in the Government report (VNS 8/2018 vp). It is based on the final report of the parliamentary working group steering the preparation of the National Transport System Plan, submitted on (13 December 2018). The parliamentary working group determined that the general social objectives for the development of the transport system include the **promotion of Finnish competitiveness, the fight against climate change and the vitality and accessibility of the regions (Figure 2).**

According to the Government Programme, the global development of the route network will be determined as part of the National Transport System Plan. In addition, the functionality and the need for change in terms of the decree on the main roads and their service level will be processed in connection with the work carried out on the transport system. According to the Government Programme, solutions for separate funding will be added alongside the direct budget funding on a project-by-project basis. The project will not be separated from the development of the entire route network and the transport system plan, in order to use the most cost-effective and functional solutions. In addition, a cooperation network will be launched according to the Government Programme. The duty of the Corporation network will consist of developing emission indicators to be used as a basis for taxation. The results of the

work on emission indicators will be taken into account in the work carried out on the National Transport System Plan.

According to the Government Programme, the objectives for reducing transport emissions should correspond to the Finnish carbon neutrality objective. By 2030, Finland will halve its transport emissions compared to the 2005 level. This is a step towards carbon-free transportation.

The objectives and the social goals of the legal acts will be specified and targeted so that they steer the preparation of the Transport System Plan as well as the selection the measures. Features such as the analysis of the current state of the transport system and the changes in the operating environment will lay the foundations for preparing the objectives and the contents of the National Transport System Plan. The analysis was prepared by the Finnish Transport and Communications Agency.

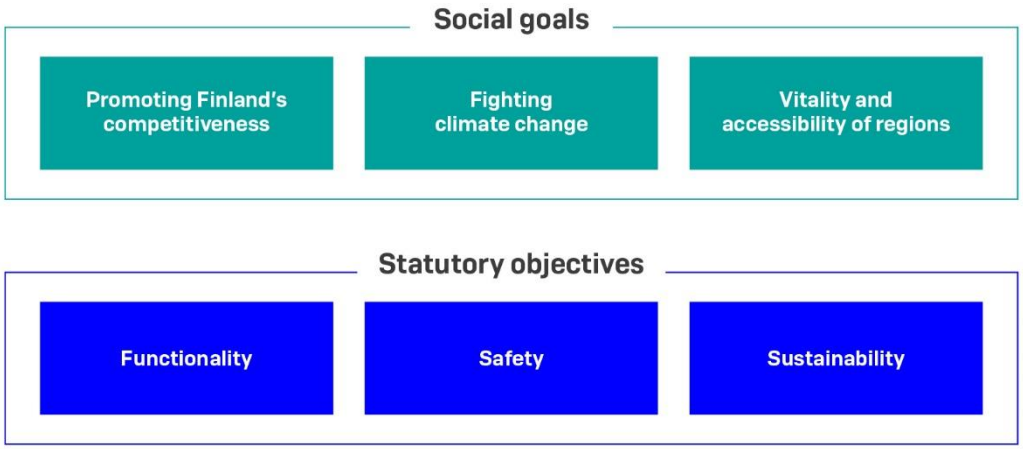


Figure 2. The planning process is guided by social goals and objectives.

2.4 Description of the Plan

Initial contents

The National Transport System Plan presents an analysis of the current state and the operating environment of the transport system, the social goals of the plan and the objectives for the transport system. The Plan includes a twelve-year action plan which contains measures by the government and municipalities as well as a state funding programme for the transport system. The Plan describes in detail an assessment of

its impact. In addition, the Plan contains follow-up measures for the action plan and the related indicators. The objective is to also highlight recommendations and observations on the implementation of the Plan, for better planning, and for the following planning round. Thus, the experiences acquired when creating the first Plan may be used in continuous work carried out on the transport system.

Action plan

The objective of the action plan for the Transport System Plan is the long-term maintenance and development of the transport system. The objectives for the plan serve as the starting point for the programme. The measures shall support the achievement of the goals, which is why an attempt is made to assess the impacts of individual measures and the global impact of the transport system during the planning process. The measures are programmed for a twelve-year period once every four years. The action plan may consist of national policies and measures on transport networks (maintenance and development), the infrastructure supporting the transport system, services and data as well as transport and freight services (Figure 3).

One of the measures included in the Plan is targeting funding from the state budget to transport networks and services. In addition to funding, the measures may include needs for legislative amendments, the creation of various strategies or, for instance, research and development measures. The starting point is that the plan is not only restricted to the selection of methods available to transport administration. Instead, all possibilities for the development of the transport system are used.

The action plan deals with the maintenance of the state transport network and its development in terms of all forms of transport routes. In terms of the transport network, features such as policies on the service level of the various parts of the network and the measures required by them will be included in the action plan. Such measures may be used to affect the TEN-T guideline regulation which will be prepared in the near future by the European Commission. According to the Government Programme, the need for amendments to the Ministry of Transport and Communications Decree on the Main Routes of Highways and Railways and their Service Levels will be examined.

In addition, policies on the timing of the plans for the transport network development projects will be included in the plan. The aim of the plan is the long-term development of the transport network and, in particular, a more effective use of the potential of the funding received from the European Union. The action plan will likely also include a statement on possible ways in which to respond to acute needs for maintaining and developing the transport network.

In terms of the passenger transport and freight services, the plan is intended to deal with public transport, new transport services and logistics in particular. In terms of the measures for reducing transport emissions, cooperation with other aspects of national preparations for a climate policy is ensured in preparing the plan.

The action plan will be prepared in cooperation with municipalities, urban areas, regions, actors that use the transport system and other relevant parties. Topics to discuss include, for instance, reducing transport emissions, public transport, the promotion of transport services and automation, distribution logistics and the development of harbours.

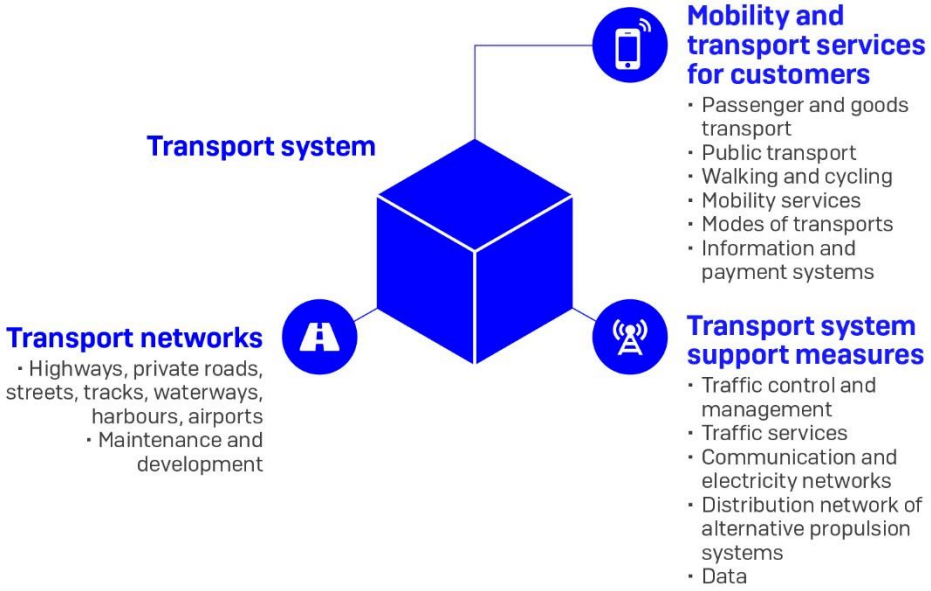


Figure 3. Overview of the transport system.

State financing programme

The state financing programme may consist of budgetary financing and other potential financing, and it is prepared in connection with the action plan. The state financing programme will be adapted to the General Government Fiscal Plans or so-called frameworks. In spring 2020, Finland's Government will decide on the General Government Fiscal Plan 2021–2024. The objective is for the National Transport System Plan to impact future decisions on general government finance plans and budgets.

3 Preparation of the plan

3.1 Organisation and advancement

Organisation of the preparations

The Ministry of Transport and Communications will be in charge of preparing for the National Transport System Plan. The Ministry of Transport and Communications, the Finnish Transport and Communications Agency and the Finnish Transport Infrastructure Agency will prepare the plan in close cooperation. The plan will be approved by the Government.

The Ministry of Transport and Communications will appoint a parliamentary steering group to steer the preparations for the plan. The steering group will include one or several members from each of the nine parliamentary groups. The Minister of Transport and Communications will chair the parliamentary steering group.

In addition, the Ministry of Transport and Communications will appoint a cooperation group which will coordinate the interaction and cooperation related to transport system planning. Key ministries, agencies, regions, the largest urban areas and other municipalities will be represented in the group. In addition to interaction and cooperation, the cooperation group will support the preparation of the contents for the National Transport System Plan. The Director General for the Ministry of Transport and Communications will chair the cooperation group.

The interaction between the authorities, the stakeholders and the inhabitants, which is closely related to the preparations for the plan, has been described in Chapter 3.2.

Timetable

The plan will be prepared with the aim of making a final decision on it in spring 2021. In addition to the preparation of the plan, the planning process will involve broad-scoped interaction and the assessment of impacts. Figure 4 depicts the link between these different areas and their timetables in relation to one another.

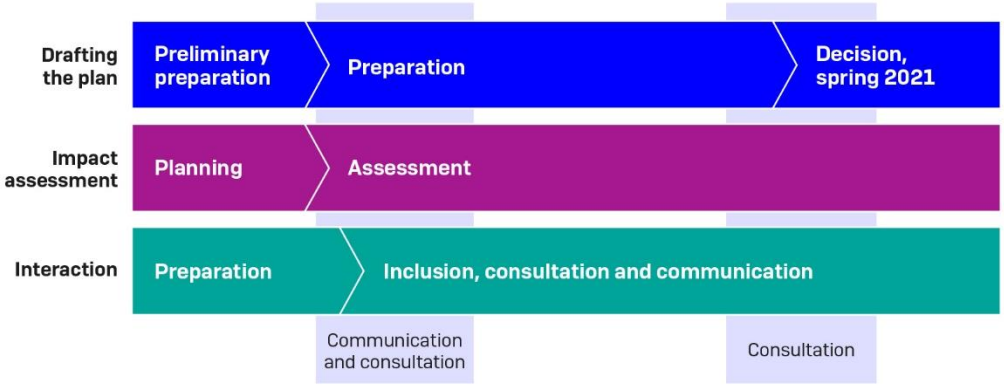


Figure 4. The preparation stages for the National Transport System Plan.

In spring 2019, the Ministry of Transport and Communications, the Finnish Transport and Communications Agency and the Finnish Transport Infrastructure Agency have prepared and compiled background material for drafting the plan. Reports have been made on features such as the current state of the transport system and the changes to the operating environment, transport and communication networks, passenger transport services, freight logistics and financing.

The plan will be prepared under the guidance of the newly established parliamentary steering group and with the support of the cooperation group. Results of the report made in the preliminary preparation stage, the transport system plans and transport strategies for urban areas and regions as well as other topical reports serving the preparations for the contents of the plan will be used at the planning stage. In addition, planning and assessment will take into account Prime Minister Antti Rinne's Government Programme (6 June 2019).

The draft plan and a description of the impact assessment, including an environmental assessment, will be made available and submitted for statements. The statements received will be taken into account when finalising the plan and the explanation of the impact assessment. After the review in the parliamentary steering group, the draft plan will be submitted to the Parliament for processing in the form of a Government report. After the processing stage at the Parliament, the Government will make a decision on Finland's first National Transport System Plan. At the beginning of each government term, the National Transport System Plan will be reviewed and adapted to the General Government Fiscal Plan.

Alternative plans to be used for preparations

When preparing for the National Transport System Plan, alternative plans will be drafted. This will promote high-quality planning and impact assessment. This means that the impacts of the draft plan (Ve1) will be assessed and compared to the alternative reference plan (Ve0).

The alternative reference plan Ve0 contains the projects which are ongoing and completed at the time of the decision on the plan, the existing framework and budgetary decisions and the policies steering the use of the budgetary financing as well as the existing legislation. The initial data for plan version Ve0 are identical to those in the Finnish Transport Agency report National Transport Forecasts (Finnish Transport Agency studies and reports 57/2018).

The draft plan (Ve1) contains the selected measures, taking into account the budgetary financing as well as the potential financing means external to the budget. When selecting measures for the plan, the key starting points include the objectives steering the planning process, the impact assessment and the guidance received from the parliamentary working group.

The planning process also involves a comparison between various financing scenarios. The starting point for the financing scenarios is to maintain financing levels according to the General Government Fiscal Plan for the first four years of the plan. This includes a distribution agreed on in the Fiscal Plan in terms of investments, maintenance and services. For the last eight years of the plan, the distribution of financing may be assessed in various ways, however, departing from the existing policies concerning the global transport financing level in the budget. In preparing for the National Transport System Plan, various alternative scenarios on the distribution of financing the transport network will be examined, and when determining the objectives and resource restrictions for the transport system, the use of new financing means will be assessed. The financing scenarios will support the decision-making process on the resource restrictions and provide background information for creating the action plan.

3.2 Interaction and communication

Objectives for interaction and communication

According to the Highways Act, national transport system planning is continuous and interactive planning based on impact assessment and the cooperation between the authorities and other operators. According to the Act on the Assessment of the Effects of Certain Plans and Programmes on the Environment, the public shall be informed and it must be given the opportunity to present its views on the plan and the assessment during the preparation work.

In preparing for the first National Transport System Plan, the purpose of interaction and communication is to be inclusive, open and timely. The Transport System Plan will be created so that cooperation and dialogue between various operators support the preparations, and the expertise of various parties will be used. The purpose is to create a more effective, open and trust-based dialogue between the state and various operators. Planning which is based on data and impact assessment is intended to openly highlight the impact of solutions and to increase understanding, discussion and joint learning.

Organisation of interaction

The Ministry of Transport and Communications is in charge of the interaction and communication related to the plan. The cooperation group will ensure that the interaction with the stakeholders crucial to the plan is purposeful and sufficient. The Ministry will be in charge of organising statutory statement rounds and events related to the preparations for the plan in conjunction with agencies in the administrative sector concerned.

The Finnish Transport Infrastructure Agency and the Finnish Transport and Communications Agency will be involved in regional transport system working groups within their own sectors. Regional transport system working groups will meet at events where regional plans and national plans may be matched together. The objective is that the everyday activities and data collection in these administered two branches serve the preparations for the National Transport System Plan.

Various methods will be used for interacting with the authorities, stakeholders, business sector representatives, citizens and organisations representing them, as well as decision-makers, for instance by means of digital communication channels. All those interested in the planning process will receive up-to-date and clear information on the stages of preparing for the plan in the Government project register. In addition,

an attempt is made to live-stream the events to all interested parties. It is also possible to participate in preparing for the plan by submitting a view on the impact assessment plan, the draft transport system plan and the explanation of the assessment (including the environmental explanation) during the statutory statement rounds.

Interaction timetable

The starting points for preparing for the National Transport System Plan have been presented and they have been discussed by the Ministry of Transport and Communications, the Finnish Transport and Communications Agency and the Finnish Transport Infrastructure Agency at various events during spring 2019. In March 2019 (13 – 14 March 2019), the national transport system event Valtakunnalliset liikennejärjestelmäpäivät in Tampere brought together state, municipal, urban and regional authorities to discuss the objectives of the National Transport System Plan, and the current state and the changes to the operating environment.

In June (17 June 2019), the Ministry of Transport and Communications organised an event on the starting points for the Transport System Plan for national authorities. An online survey open to the public will be organised in autumn 2019. The aim is to consult with those using the transport system and other operators. They will be asked about their views on the description of the current state of the transport system and the change of the operating environment. The description will be reworked based on the feedback received. This autumn, opinions may be presented for the preparation of the plan and the impact assessment.

During the preparation of the National Transport System Plan, the existing networks will serve as interaction channels. The Ministry of Transport and Communications, the Finnish Transport and Communications Agency and the Finnish Transport Infrastructure Agency are involved in these networks. In addition, the cooperation group will also coordinate the interaction and cooperation related to transport system planning. During the preparations for the plan, national events related to the preparations will also be organised. The aim is to live-stream the events. An attempt will also be made to enable remote attendance, taking into account the nature of the various events. Electronic communication channels will be used for both spreading and collecting information.

Providing information and consultation

The preparation process for the National Transport System Plan includes two statutory statement rounds. The starting points for the National Transport System

Plan, the objectives, starting points and programming of the impact assessment (including the environmental assessment) will be communicated and those that wish to do so will have an opportunity to present their views. The insight gained during the statement round will be taken into account when drafting the plan and when assessing its impacts.

A draft of the National Transport System Plan and the description of its impact assessment (including an environmental assessment) can be viewed and statements may be given on them. The results of the statement rounds will be taken into account when finalising the plan and the explanation of the impact assessment. The environmental explanation and feedback on consultations will be taken into account when approving the plan or programme. The Ministry of Transport and Communications will communicate on a decision on the plan and make the decision and plan or programme available.

International consultation

If the implementation of a plan or programme has environmental effects across national borders, the states affected shall be given the opportunity to participate in the environmental assessment. The assessment of the cross-border environmental impacts in plans or programmes are regulated by the Protocol on Strategic Environmental Assessment (SopS 69/2010) in the so-called Espoo Convention (Convention on Environmental Impact Assessment in a Transboundary Context; SopS 67/1997 and SopS 81/2017). The Ministry of the Environment is the competent authority in international consultations and it ensures the communication and negotiation tasks related to the environmental assessment of plans or programmes in conjunction with other states.

In the preparation for planning and assessment, it has been noted that the development of transport systems may also have cross-border environmental impacts. Cross-border environmental impacts may occur when the Finnish transport network, the infrastructure supporting the transport system, services and data as well as the services included in the transport system are developed.

The development of a national transport system may have cross-border environmental impacts if the measures in the plan apply to some of the following aspects of the transport system:

- Trans-European transport networks (TEN-T) and their development
- The development of road transport, such as highway transport, freight transport and heavy transport truck stops

- The development of railway transport, such as passenger and freight transport
- The development of border crossings
- The development of harbours, such as the road transport connections in harbours, and the development of maritime routes
- Ice-breaking and the development of the airport network.

4 Impact assessment objectives and regulatory basis

Assessment objectives

Impact assessment is an essential part of the preparations for the National Transport System Plan. The assessment supports planning and decision-making and renders the planning process and the selections made during planning more transparent. The National Transport System Plan will be an extensive, strategic long-term plan which will also have an impact on the contents and accuracy level of the impact assessment. A key feature of the assessment is to focus on the most significant impacts in order for the essential impacts in the plan to be clearly highlighted, and in order to be able to assess the global impacts.

The preparation of the National Transport System Plan assesses how the objectives set for the transport system are met. An environmental assessment will be made of the Transport System Plan according to the Act on the Assessment of the Effects of Certain Plans and Programmes on the Environment (200/2005). The assessment highlights direct or indirect impacts as well as positive and negative and neutral impacts.

The objective of the assessment is to support public participation and cooperation. The effectiveness of the transport system plan increases when the planning is carried out interactively and when the dialogue is open. In Finland, urban areas and other regions have established processes for transport system planning. Using existing processes, plans and impact assessments will be particularly important when preparing for the first National Transport System Plan.

The assessment process and methods will be planned so that they also lay the foundation for a long-term development of the assessment. The long-term objective is to make considerable, consistent and nationwide assessment data available throughout the planning process and that the impact assessment is used systematically to support planning and decision-making.

Regulatory basis for the assessment

The impact assessment for the National Transport System Plan is regulated by the Act on the Assessment of the Effects of Certain Plans and Programmes on the Environment. The objective of the law is to promote the assessment of the

environmental impacts and the attention paid to them in the preparation and approval of the plans and programmes by the authorities, to improve access to information to the public and the public's opportunities to become involved, and promote sustainable development.

For the purposes of this Act, environmental impact refers to the direct and indirect impact of a plan or programme, in Finland and outside its borders, on the following:

a) human health, living conditions and comfort;

b) the soil, waters, air, climate, vegetation, animals and natural diversity;

c) community structure, the built environment, landscapes, cityscapes and cultural heritage;

d) the use of natural resources;

e) the mutual interactive relationships between the factors mentioned in points a–d.

Key international decisions on the environment

Finland has committed to international agreements which are taken into account in the preparations for the National Transport System Plan. The most important international decisions and agreements on the environment, which the National Transport System Plan should promote, have been presented below. The list will be reviewed and completed as the preparations progress.

- The UN Sustainable Development Goals – Agenda 2030
- The Paris Climate Agreement (SopS 75/2016)
- UN Habitat III – A new urban development programme
- Convention on Biological Diversity (SopS 78/1994) and the EU biodiversity strategy to 2020 for its implementation, which is binding on the member states
- Convention Concerning the Protection of the World Cultural and Natural Heritage (SopS 19/1987)
- Pan-European water management and water strategy (Blueprint) objectives

5 Description of the impact assessment

This chapter describes the content of the impact assessment for the National Transport System Plan and the assessment possibilities. Chapter 5.1 describes the impact to be assessed, the method of implementing the assessment and its relationship with the planning process. Chapters 5.2–5.6 discuss links to the national transport system impact by impact (impact mechanisms) and describe the method of drafting the assessment, the materials to be used and the targets of the assessment.

During the first planning rounds, the assessment largely consists of expert assessments, and it is based on the use of existing impact assessments. An attempt is made to produce quantitative assessments where possible. The materials and methods used for the assessment will be specified during planning.

5.1 Global view of the impacts to be assessed

The impacts of the National Transport System Plan to include in the assessment have been determined so that they include the impacts under the Act on the Assessment of the Effects of Certain Plans and Programmes on the Environment as well as impacts which the National Transport System Plan may have on the functionality, safety and sustainability of the transport system (Figure 5).

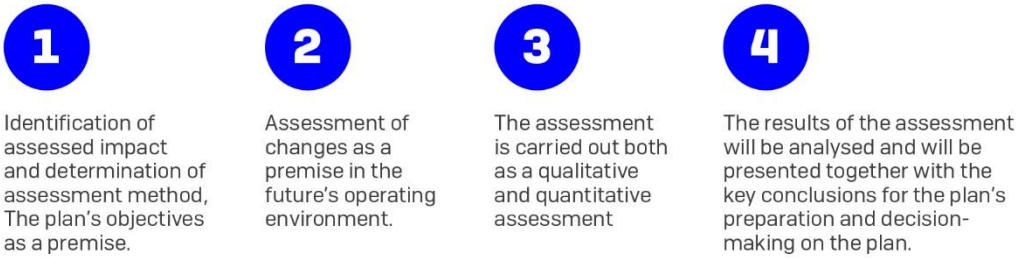
In the Act, environmental impacts have been presented extensively as impacts affecting not only the environment but also the population and land use. The impacts to assess as required by the Act on the Assessment of the Effects of Certain Plans and Programmes on the Environment have been structured into the following sectors: ecological sustainability, social sustainability and the safety of the transport system. In the preparations for the plan, all impacts required by the law will be assessed, but the assessment will also emphasise the impacts which are significant for the plan.

Progress of the assessment

The impacts will be assessed quantitatively and qualitatively. The drafting of the assessment depends on the tools and data materials available. Impacts will primarily be assessed from the national point of view, but for each impact, key regional and international impacts may be identified. The areas of impact may be assessed, for example, from the point of view of the business sector, inhabitants, municipalities,

urban areas and the State. The impacts of the draft plan (Ve1) will be assessed and compared to the alternative reference plan (Ve0).

The assessment will progress simultaneously with the plan, so that the impact assessment is used to produce information to support planning and decision-making. In terms of using assessment data, it is crucial that the information produced is efficiently available to everyone during and after the planning process.



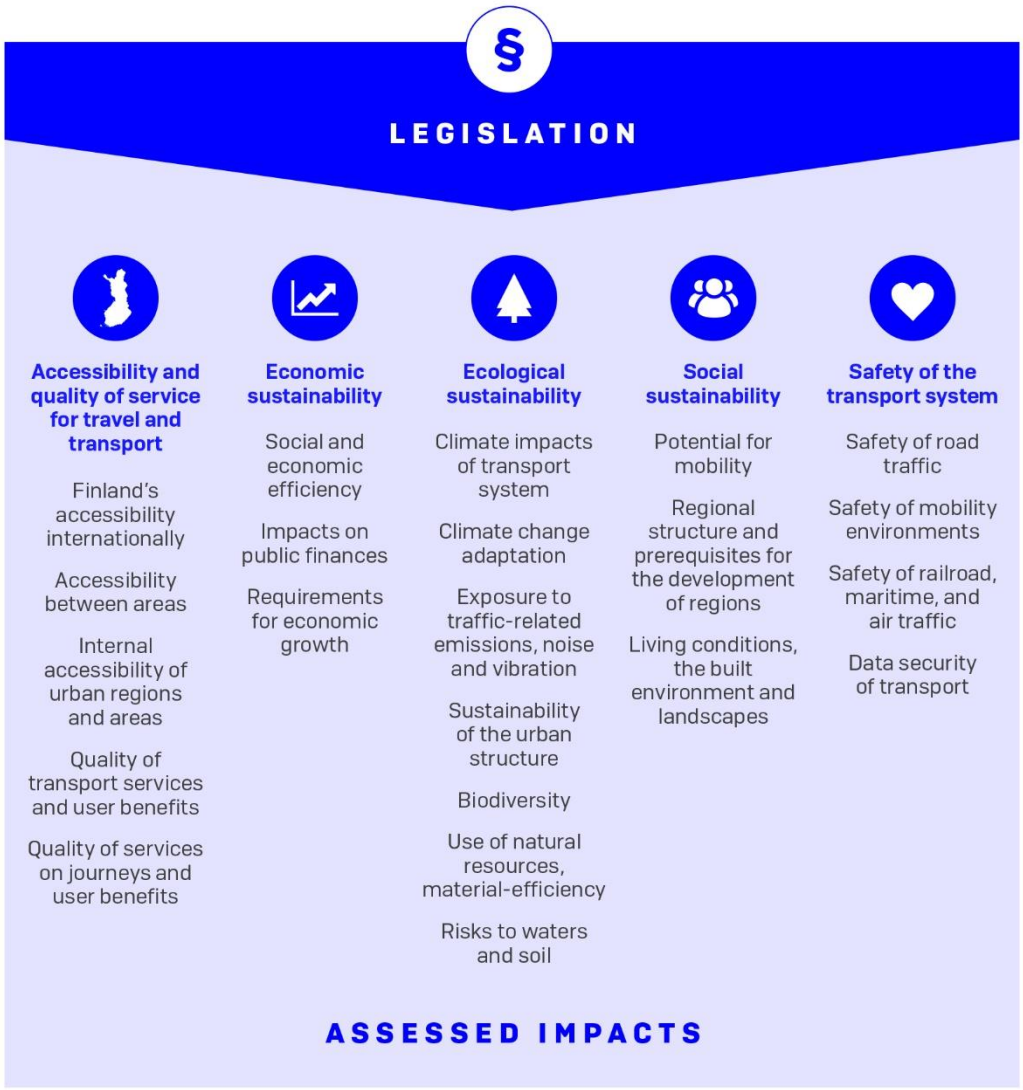


Figure 5.The impacts of the National Transport System Plan to assess.

The impacts of the National Transport System Plan to assess – briefly

In the assessment of **accessibility and the service level of travel and transportation**, impacts on transport will be examined. The transport system will be examined from regional points of view in terms of Finland's international accessibility, the accessibility between various parts of the country, and the accessibility within urban areas. The assessment of user benefits will be made through the changes in the time spent by passengers in the transport system, the lack of disturbances, comfort and other service-level factors. (Chapter 5.2)

The **economic sustainability of the transport system** will be assessed in the form of entities in terms of socio-economic efficiency, government finance and the requirements for economic growth Socio-economic efficiency will be assessed based on the extent of the total user, safety and environmental benefits of the plan in relation to the costs or resources used by the plan, or, how cost-effectively the plan meets the set goals. Impacts on government finances will result in changes in the state and municipal income and expenses. The prerequisites for economic growth deal with the more extensive economic impacts of the National Transport System Plan.

The impact of the plan on the mitigation of climate change, on the adaptation to climate change, the diversity of nature, transport emissions and noise exposure, the sustainability of community structure, the use of natural resources and material efficiency and the risks to waterways and the soil will be assessed from the point of view of **ecological sustainability**.

The possibilities for mobility for the inhabitants and users, the regional structure and the prerequisites for developing the regions will be assessed in terms of **social sustainability**. In addition, the focus of the benefits and adverse effects due to the development of the transport system will be assessed, as well as its effect on the living conditions, the built environment and the landscape.

The **safety of the transport system** will be assessed as a whole for each form of transport, and from the point of view of the users, in terms of the safety of the transport environment. The assessment of road transport safety is focused on reducing the number of deaths and serious injuries in road transport. In terms of the safety of other forms of transport, the focus is particularly on maintaining a high level of safety.

Use of project assessment data

The direct economic impacts of the infrastructure investments potentially included in the National Transport System Plan will be examined with the aid of impact data

received from project assessments and environmental assessments. Project assessments present the socio-economic profitability calculation of investments as well as a complementary impact assessment In addition to socio-economic profitability, project assessment data may be used to illustrate how effectively the qualitative objectives of the transport system plan are implemented in investment projects. Thanks to joint guidelines, the impact data produced in project assessments for various projects are largely comparable.

Alongside a general plan or a more detailed plan, a project assessment according to the instructions of the authorities have been made for all significant road, railway and waterway investments. For all transport route investment project assessments, at least the following impacts are generally examined:

- impacts on the users (costs in terms of time and money)
- impacts on the producers (transport operation costs as well as freight and ticket revenue)
- impacts on general government finances (road maintenance costs as well as tax and fee revenue)
- impacts on transport safety (changes to the risk of accidents and accident costs)
- environmental impacts (impact on the amount of emissions, noise and vibration exposure as well as emission costs and noise-related costs)

In addition, quantitative impact data other than that mentioned above may be available on projects.

5.2 Impacts on accessibility and the service level of travel and transportation

Finland's international accessibility

Finland's international connections and their functionality are important prerequisites for business activities. Transport connections are significant particularly for sectors engaging in foreign trade. International passenger transport connections are important for services and tourism.

Finland's international accessibility may change, for instance as a result of increasing maritime trade routes and modifications to air transport connections. Potential changes to maritime transport control, ice-breaking and piloting all play a role. The service level

of road and railway connections to harbours, airports and border crossings is part of international passenger and freight transport, and changes to these connections have an impact on Finland's international accessibility. Route investment project assessment and their methods, statistics and research data may be used for the impact assessment. The suitability of the methods depends on the measures assessed.

The impact of the plan on Finland's international accessibility may be assessed, for instance, through changes to the following factors:

- vessel costs for international maritime transportation
- service level for ice-breaking and piloting
- service level for highways and railways connected to harbours, airports and significant border crossings.

Accessibility between regions

Accessibility between regions refers to the accessibility between regional and urban centres. It is an important factor in the national regional structure. The transportation-related factors of accessibility between regions include the main roads and their service level as well as the coach transport connections, the railway network and train connections, airports and national air transport connections. Changes to national road network and transport connections will have an impact on mobility and transport between the regions, and they may have an effect on the extent of the labour market areas as well as the extent of the corporate procurement and market areas.

The measures in the transport system plan will have an impact on the accessibility between regions if they alter the travel time between cities and other service-level factors, such as the predictability of travel time. Route investment project assessment and their methods, statistics and research data may be used for the impact assessment. The suitability of the methods depends on the measures assessed.

The impacts of the plan on accessibility between regions may be assessed, for instance, through some of the following factors:

- travel times and connection offering between cities
- maintenance level and condition of the main routes
- reach and capacity of the railway network.

Internal accessibility within urban areas and regions

The impacts of the passenger and freight transport service levels on the daily mobility of people and the distribution of goods are emphasised in urban areas; which include 19 regional centres and other urban areas of a considerable size. The transport systems in urban areas are of great national importance, particularly in terms of how transport modes are realised and how the objectives for transport emissions reductions are met. From a broader point of view, the urban area transport system is a factor increasing the competitiveness and attractiveness of the region, which has an impact on the location of housing, jobs and services as well as their mutual accessibility, and further, an impact on the labour, production, service and real estate markets.

The internal accessibility within regions also covers the accessibility of the countryside and remote areas. In this case, the accessibility covers features such as road connections to farms and forest estates as well as timber cutting areas, insular ferries forming connections between roads and ferry connection services as well as public transportation connections in sparsely populated areas.

The internal accessibility within urban areas and regions varies with the number of settlers, jobs and services. In these terms, land use is of particular importance. As for the changes to the transport system, they have an impact on accessibility if they change features such as travel times or the price of transport. The impact of the transport system plan on accessibility will be assessed based on the measures suggested and the data on the current situation. The transport model examinations and impact assessments made for regional plans may potentially be used for the assessment.

The impact of the plan on the internal accessibility within urban areas and regions may be assessed, for instance, through changes to the following factors:

- congestion in entry routes to urban areas and the street network
- urban area public transport services
- urban area cycling conditions
- condition of small roads
- public transport basic service level
- insular transport service level
- size of the commuting areas.

Transport service level and user benefits

The direct impacts of the National Transport System Plan on companies are created through changes to the transport service level. Service-level factors important for transport include connections, travel time, predictability, manageability and safety, all of which have an impact on transport costs. Connections refer to the existing possibilities for transportation in domestic and international transport. The transport travel times are affected by the technical properties of the connections, the total amount of traffic and its make-up, the properties of transport services as well as transport information. As for the travel time, it has an effect on the possibilities to organise logistics, as well as the costs. Predictability refers to the accuracy of the time of arrival within the time frame indicated by the client. Transport safety is particularly important for the transportation of hazardous substances, but it is also an important occupational safety factor for all transportations.

The measures of the transport system plan may have an impact on the service-level factors of all transportations and thus, on the user benefits. Most generally, these impacts may be assessed in terms of the changes to the speed of the transportation, the predictability of the travel times, the transportation capacity and the transportation distance. The project assessments for route investments and their assessment methods may be applied extensively to the assessment of various measures. In addition, statistics and research data available on the impact of various types of measures may be used for the assessment.

The impacts of the plan on the service level of transportations and on user benefits may be assessed, for instance, through changes to some of the following factors:

- heavy transport costs in terms of time and vehicles
- railway transportation operating costs
- vessel costs for waterborne transportation
- taxes and fees on transportation.

Passenger transport service level and user benefits

The impacts on the users of transport system routes and transport services are created through changes to service levels. The most important service-level factors for passenger transports include travel time, predictability, manageability, safety and comfort. Travel times are affected by the rapidity of the routes and speed limitations as well as other traffic. The importance of travel times and their predictability are emphasised for business travel and work-related travel and when connecting to international transport networks and connections. The manageability of travel is an

experience-based factor which may be impacted through information and guidance as well as the clarity of the transport system both when planning the trip and when travelling. The importance of manageability is emphasised for random travelling and, during trips, for all schedule-dependent travelling. Comfort is used to describe the pleasant experience of driving a personal vehicle, and in public transport, the possibility of using travel time for resting, entertainment or working. From the point of view of the user, safety primarily refers to the feeling of safety in transport and mobility. For the transport service provider, safety is also an occupational safety issue, as in freight transportation.

For those using mobility services, connections, accessibility and the price of travel are also important service-level factors. The availability and number of connections depend on the offering in the mobility service market, or the offering organised by the authorities. Accessibility depends on technical solutions of the infrastructure and fleet. Regulation planning standards and the requirements for service procurement all have an effect on accessibility.

The impacts of transport system plan measures on the travelling service level may be due to changes to routes and route maintenance, traffic control and information and the organisation of transport services. Route investment project assessment and their methods, statistics and research data may be used for the impact assessment. The suitability of the methods depends on the measures assessed.

The impacts of the plan on travelling service level and on user benefits may be assessed, for instance, through changes to some of the following factors:

- passenger car transport time and vehicle costs and other changes to the service level
- train transport time costs and other changes to the service level
- quality and price for the urban area mobility service offering
- cycling conditions
- interoperability and interusability of various mobility services.

5.3 Impacts on economic sustainability

Framework for the economic impact assessment

In the preparation for the National Transport System Plan and in the impact assessment, economic sustainability refers to the efficient use of the resources of

society and the national economy, or capital, work and natural resources. This means that an attempt is made to achieve the goals by using as few resources as possible, and at the planning stage, it is ensured that no resources are wasted. Economic sustainability takes into account the citizens, companies and the natural environment

The measures in the National Transport System Plan may have direct and more broad-scoped economic impacts (Figure 6). Direct economic impacts are the costs of investments and other measures, and the changes to costs incurred by the users of the transport system and the rest of society. The changes to the socio-economic efficiency of the transport system and the general government finances are assessed based on the direct economic impacts.

The more extensive economic impacts describe the changes to the economic system due to the direct impacts. These changes may promote the accumulation, the operation of the labour market and more effective competition, which promotes productivity. Thus, the transport system plan may modify the prerequisites for economic growth. These impact chains may increase the welfare of regions and improve the national economy to a greater extent than determined in terms of direct benefits created in the transport market.

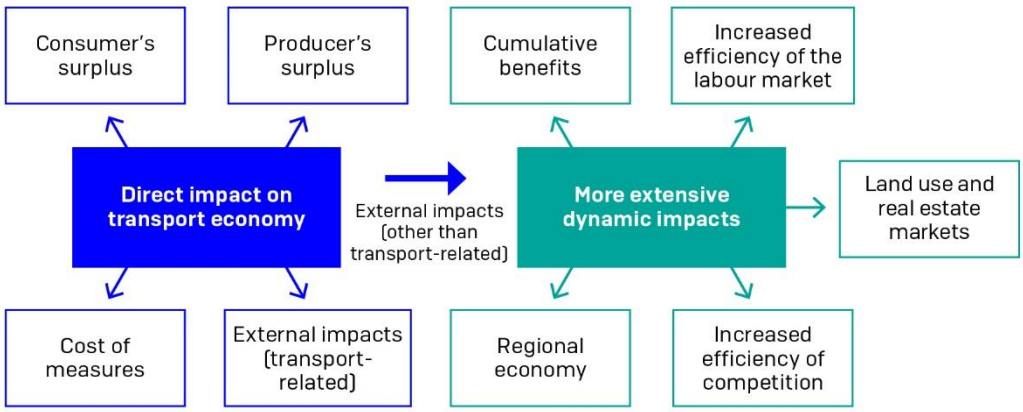


Figure 6. Economic impact assessment for the transport system plan.

Socio-economic efficiency

In this framework, the socio-economic efficiency of the transport system refers to the profitability of transport system measures and, more extensively, their cost-effectiveness. The amendments to the transport system are socio-economically profitable if the benefits to society which are achieved by carrying out the measures are greater than the additional costs resulting from them. The socio-economic cost-

effectiveness of the measures is assessed according to the costs of implementing the objectives for the development of the transport system by means of various measures.

The socio-economic benefits of the measures include a reduction in the travel costs, time-related costs and transportation costs for households and companies, as well as a reduction in transport-related accident costs, emission costs and noise-related costs. The socio-economic profitability of the measures included in the National Transport System Plan will be examined through these direct economic impacts.

The assessment of socio-economic cost-effectiveness examines all impacts in relation to the objectives of the plan, which are compared to the costs incurred by implementing the plan.

The impacts of the plan on the socio-economic effectiveness of the transport system may be assessed, for instance, from the following points of view:

- the socio-economic profitability of the transport system measures, considering the budget restrictions
- the cost-effectiveness of the plan, i.e. meeting the transport system plan objectives in relation to the funding available.

Impacts on general government finances

In terms of the general government finances, the transport system operators include the states and municipalities along with their agencies, enterprises, joint municipal authorities and companies. In terms of the general government finances, the impacts presented include the proposals contained in the plan for using appropriations from general government finances on basic route operation as well as on transport service procurement and subsidies. The impact is indicated as a change in relation to the level based on statistics, which corresponds to the current level. The effects of expected changes to performance and transport modes on transports tax and fee revenue will also be taken into account in the impacts on general government finances.

The impacts of the plan on general government finances may be examined, for instance, through some of the following changes:

- The state budget, the main title revenue and expenditure of the Ministry of Transport and Communications
- Finnish Transport Infrastructure Agency revenue and expenditure
- Finnish Transport and Communications Agency revenue and expenditure
- state tax revenue for transport

- municipal revenue and expenditure for transport, including street maintenance, public transport expenditure, regional construction expenditure and real estate revenue.

Prerequisites for economic growth

The prerequisites for economic growth examine the more extensive economic impacts of changes to the transport system. The examination of the impacts is based on a qualitative assessment which in turn is based on statistical data and theoretical and empirical research results.

The changes to be assessed as the more extensive economic impacts of the transport system plan may be some of the following:

- accumulative benefits or an increase in productivity due to an improvement in accessibility between companies
- labour market impacts or changes to the extent of the commuting area, the availability of labour and commuting costs
- impacts on the real estate market or changes to the value of properties and community structure
- impacts on regional economy or changes to the regional enterprise structure and production as well as more effective competition.

5.4 Impacts on ecological sustainability

Environmental impacts of the transport system

According to the Government Programme, the objectives for reducing transport emissions should correspond to the Finnish carbon neutrality objective. By 2030, Finland will at least halve its transport emissions compared to the 2005 level. This is a step towards carbon-free transportation.

The reduction of greenhouse gas emissions from the transport system plays a significant role in fighting climate change. The energy consumption of the transport system and the resulting greenhouse gas emissions may be impacted by changing the use or performance of various forms of transport (road transport, railway transport, maritime transport and aviation transport) and transport modes (passenger cars, public transport, walking, cycling). The use of alternative propulsion systems and the energy-efficiency of vehicles also have an impact on the amount of emissions.

Greenhouse gas emissions from transport are part of the burden-sharing sector outside of the emissions trading system. In terms of transport, road traffic emissions, waterborne transport emissions in the Finnish economic area and railway transport emissions, except for electricity production emissions, are part of the burden sharing sector. Greenhouse gas emissions from air traffic and international sea transport are not within the scope of the burden sharing sector. The greenhouse gas emissions of domestic transport will be examined in connection with the National Transport System Plan.

The impact assessment of transport system plan measures is based on assessments on grounds of performance as well as assumptions on changes to features such as the vehicle fleet and fuel consumption.

The assessment of the impacts on the climate has been widely identified as an important target for development. The transport system impacts on the climate may be examined for instance in terms of changes to the following factors:

- transport energy consumption
- amount of transport greenhouse gas emissions (CO_2-equiv).

Adaptation to climate change

The impact of the National Transport System Plan on the adaptation to climate change will be assessed. It has been anticipated that global warming will cause, for example, significant risks to the operational reliability of the transport system.

Climate change may increase variation in the weather and more commonly occurring extreme phenomena, which is reflected in the transport system as features such as structural damages to infrastructure and breakage risks as well as demanding maintenance conditions. Climate change will also affect operational reliability during incidents and exceptional situations. The measures in the transport system plan may impact the detection and control of incidents and exceptional situations as well as the requirement level for maintenance and infrastructure. These measures may include features such as improvement of the structural resistance of routes or early warning and incident communication systems. The impacts of the National Transport System Plan may be estimated in the form of an expert assessment.

The impacts on the ability to adapt to climate change may be examined in terms of changes to the following factors:

- coverage of the systems for incidents and exceptional situations
- the risks to operational reliability arising from the assessment of measures.

Exposure to vibration, noise and emissions impairing air quality in connection with transport

The impacts of the National Transport System Plan on noise, vibration and emissions impairing air quality will be assessed, since they have significant effects on human health and the quality of the environment.

People living and circulating in the proximity of routes are particularly exposed to noise, vibration and emissions. The development of the transport network may take into account the location of routes in relation to settlements and other sensitive operations or areas. Sets of measures intended to reduce exposure may be included in the transport system plan.

The adverse effects of noise and vibration from transport have been assessed in noise reports and project planning using calculation models. The assessment of the impacts of conditions impairing air quality is based on the follow-up data on air quality and dispersion modelling. The emission impacts are mainly assessed on the project level. The importance of transport varies for different types of air pollution. Transport is a significant source of nitrogen oxides and small particles.

The noise, vibration and air quality impacts of the National Transport System Plan will be expertly assessed based on changes to the amount of traffic in vehicle transport, changes to performances and emission coefficients. In addition, data derived from project assessments can be utilised.

Impacts on the noise, vibration and admissions impairing air quality may be examined as changes to the following factors:

- noise level
- number of inhabitants exposed to noise (also reflects the number of inhabitants exposed to emissions impairing air quality)
- amount of emissions impairing air quality (nitrogen oxides, carbon monoxide, small particles)
- adverse effects of vibration

- costs of the impaired quality of life due to the adverse effects of noise and the health impacts of emissions

Sustainability of the community structure

The community structure refers to the internal structure of the commuting area, the urban area, the city, district or other agglomeration. It covers the location of the population and housing, jobs and production activities, services and leisure areas, transport routes and technical servicing networks connecting them, as well as the relationship between these features. A sustainable community structure refers to a structure enabling walking, cycling and the use of public transport for daily trips. Mobility causes as few carbon dioxide emissions and other environmental nuisances as possible. Land use planning has a significant impact on keeping daily trips short and allowing them by sustainable means of mobility.

Transport system planning can have a significant effect on creating a sustainable community structure. Planning may serve to support and promote the prerequisites for public transport, cycling and walking, and to improve the connections between regions and urban areas so that mobility is sustainable and emission-free. The transport system and land use should be examined as a whole, since the measures in the transport system are strongly linked to land use planning. Land use planning is regulated by land use and construction legislation.

The impacts of the National Transport System Plan on community structure will, for instance, be expertly assessed using the available geospatial information materials and studies, and theoretical land use models for urban economics.

The impact on community structure and land use may be assessed in terms of changes to some of the following factors:

- density and sprawl of community structure
- percentage of inhabitants residing in urban structural zones enabling sustainable mobility

Biodiversity

Impacts on biodiversity will be assessed since the development of the transport system may cause a risk of environmental pollution which, according to Sections 5 and 7 of the Environmental Protection Act (527/2014), should be prevented or restricted. The transport system will have an impact on biodiversity through the surface area used up

by the infrastructure, the fragmentation of habitats, the breakdown of animal routes and the impairment of water, soil and air quality.

The impact on biodiversity will be assessed in connection with project planning and in the form of regional examinations, for instance in terms of ecological networks and connections. The impact assessment for the National Transport System Plan will be completed, for example, in the form of expert assessments.

The impacts on biodiversity may be examined, for instance, in terms of changes to the following factors:

- surface area used up by transport infrastructure
- risks to diversity as highlighted by the project-level assessment.

The use of natural resources and resource efficiency

Impacts on the use of natural resources and resource efficiency will be assessed as the transport system may cause a risk of environmental pollution, which should be prevented or restricted according to Sections 5 and 7 of the Environmental Protection Act (527/2014).

The measures contained in the Transport System Plan can influence the use of natural resources and material efficiency. For example, soil and stone material and oil products are predominantly used during the construction of infrastructure. In the operation of the transport system, the use of natural resources mainly targets the raw materials for various types of propulsion systems, i.e. oil, natural gas and the raw material for biofuels. Plenty of different natural resources are used for manufacturing vehicles.

The transport system plan made include policies affecting the transport system dependency on oil and the demand for alternative propulsion systems, as well as the material efficiency and circulation of materials during construction. The impacts of the National Transport System Plan will be expertly assessed. They are based on features such as project-level assessments, reports made by the climate policy working group for transport and the medium-term plan for a climate policy.

The impacts on the use of natural resources and material efficiency may be examined in the form of changes to the following factors:

- extraction of soil and stone material
- risks arising from the project-level assessment

- dependency of the transport system on oil in the propulsion system
- the sufficiency of alternative propulsion systems and sustainable production.

Impacts on water and soil

Impacts of the National Transport System Plan on water and soil will be assessed, since the transport system may cause a risk of environmental pollution which, according to Sections 5 and 7 of the Environmental Protection Act, should be prevented or restricted. The transport system will have an impact on the quality of surface water and groundwater and on soil, mainly via salting roads and the emissions and leakages of harmful chemicals. The impacts are local in nature, but they may have a significant effect on community water extraction. Maritime transport and accidents may cause significant environmental damage, such as oil spills.

The impacts on water and soil will be assessed in connection with project planning. At the same time, measures for fighting and alleviating adverse effects would also be drafted. The impacts of the National Transport System Plan will be expertly assessed based on project-level plans, maintenance policies and, for example, on the identification of maritime transport-related environmental risks.

The impacts on water and soil may be examined, for instance, in terms of changes to the following factors:

- risks of the contamination of surface or ground water or soil arising from the project-level assessment
- environmental damage caused by maritime transport and the risks related to the transport of hazardous substances.

5.5 Impacts on social sustainability

Potential for mobility

The impacts of the National Transport System Plan on the potential for mobility will be assessed, since the main role of transport is to serve society. The need for mobility is mainly indirect. People move from one place to another for the purpose of other activities, such as accommodation, work, studies, hobbies or grocery shopping. The transport system creates the framework for mobility. The transport infrastructure connections and mobility services will create the potential for mobility available to

residents and the business sector. Impacts related to the offer of the potential for mobility are discussed in Chapter 5.2.

In addition to the potential, various restrictions forming obstacles to mobility are related to the transport system. From the point of view of social sustainability, it is essential to identify and remove or reduce obstacles to mobility. Obstacles to mobility include features such as the lack of connections, the lack of services, deficiencies in maintenance, the lack of interusability of travel and transport chains, operating costs for transport modes and services, and deficiency in the physical and electronic usability of the transport system.

The impacts of the National Transport System Plan on the obstacles to mobility will be expertly assessed based on statistical materials, accessibility reports and national and international studies. The assessment will focus on the impacts on residents. Impact on the business sector will be discussed as part of an assessment of economic impacts and impacts on the transport system.

The impacts on the obstacles to mobility may be examined, for instance, in terms of changes to the following factors:

- poor accessibility (e.g. the accessibility of centres when travelling from border areas using a personal vehicle and public transportation)
- restrictions due to the community structure, particularly in terms of the independent mobility of children and the elderly
- mobility costs using various modes of transport (in relation to the level of income)
- percentage of mobility in terms of consumption for various income classes
- the coverage of an accessible infrastructure
- the availability of accessible services (including electronic services).

Regional structure and prerequisites for the development of regions

Transport connections play a significant role in terms of the regional structure and the prerequisites for the development of regions. The importance of cities as places of settlement for the population, jobs and production has increased since industrialisation. The change reinforces itself: companies attempt to settle close to the market, and at the same time, they create links to the demand and offer of end products and labour force, which attracts new companies into the area. The development of regions is closely linked to the development of cities and city networks. The establishment, the growth and differences in the size of cities are based on the benefits of the locations of

various regions for the production sectors, and the benefits of regional accumulation and concentration for production activities.

The transport system will also have an impact on regional development, for example, through the transport of hazardous substances and the costs of transporting raw materials and end products. Transport costs can be reduced by developing the transport system. Investments into the transport system may be regarded as an intervention of the official authorities in an attempt to restrain the polarisation of regional development and to increase the benefits due to the location of the regions. In the long term, the development of the transport system has lowered transportation costs and reduced the importance of geographical distances as a factor impacting the location of companies.

The impacts of the transport system plan on regional service levels and accessibility are partly discussed in Chapter 5.2. From the point of view of the regional structure and the prerequisites for the development of regions, the effects on the service level and accessibility will be examined from the point of view of the regions in terms of absolute accessibility. The impacts of the National Transport System Plan on the regional structure and on the prerequisites for the development of regions will be expertly assessed based on materials describing the regional structure, reports and accessibility analyses.

The impacts on the regional structure and on the prerequisites for the development of regions may be examined in the form of changes to the following factors:

- the regional targeting of the transport system offering (e.g. the coverage and functionality of transport networks, service offering)
- regional accessibility (e.g. connections to the metropolitan area or key freight transport terminals and harbours)
- commuting areas for regional centres.

Living conditions, the built environment, landscapes and public utility networks

The impacts of the National Transport System Plan on the living environment, the living conditions of the population and the amenity will be assessed, since they are closely linked to the quality of life, and in particular, to the prerequisites for independent mobility and activities. The transport system will have an impact on the living environment, the living conditions, the amenity and the prerequisites for active mobility mainly through the potential for mobility, transport safety, the community structure and the amenity of the transport environments. The impacts on the living environment and

living conditions will be expertly assessed based on the impacts mentioned above so that an attempt is made to examine cumulative impacts, particularly on various regions and population groups. The question of the amenity of transport environments is generally resolved on a detailed level of planning, which is why the impacts at the transport system level on amenity will likely be minor.

The impacts of the National Transport System Plan on the built environment, nature and cultural landscapes, cityscapes and cultural heritage will be assessed, since the objective of protected sites is to preserve cultural and natural values. The impacts of the National Transport System Plan on the built environment, nature and cultural landscapes, cityscapes and cultural heritage are usually related to local sites classified as sites of local or national importance in protection programmes. These sites include, for instance, landscape areas of national value and built cultural environments of national importance. According to national objectives for the use of regions, cultural environments of national value and values of our natural heritage, the regional diversity of the sites and their chronologically layered nature shall be safeguarded in regional planning and municipal zoning and in the operation of state authorities.

Impacts on the built environment, natural and cultural landscapes, cityscapes and cultural heritage will be assessed in connection with project planning. At this time, the measures for fighting and alleviating adverse effects will also be drafted. The impacts of the National Transport System Plan will be expertly assessed based, for example, on project-level plans and maintenance policies.

Public utility networks include energy and communication networks as well as the networks for public utility management, or waste and water management. The impacts of the transport system on energy and communication networks are related to the prerequisites for automation, the prerequisites for monitoring disturbance management, the transport situation, and the electrification of the railway network. The impacts of the National Transport System Plan on the energy and communication networks will be expertly assessed based on existing technical assessments and cost estimates.

The impacts on energy and communication networks may be examined, for instance, in terms of changes to the following factors:

- network coverage requirements
- technical network requirements (standard, reliability)
- cost effects of network implementation.

Route investments into the National Transport System Plan or other measures will have no significant impact on public utility management, since decisions essential to such management are made in the framework of regional and detailed planning.

5.6 Impacts on the safety of the transport system

Road safety

Measures in the transport system plan may have significant impacts on the safety of road transport. The measures carried out within the transport system always modify the exposure to risk (amount of mobility, selection of forms and modes of transport), the likelihood of risk (community structure and transport environment arrangements) or the consequences of actual events corresponding to the risks (transport environment organisations, vehicle technology, the operational reliability of the rescue service).

The impacts of measures on transport safety will be assessed mainly by using impact coefficients created based on transport performances, route types and measures. These coefficients are also based on research data and statistical data.

The impacts on road transport safety may also be assessed based on the types of impacts the measures in question have been associated with in studies carried out in Finland and internationally. The assessment of measures at the level of transport system planning is most reliable in terms of infrastructure measures, such as the median barrier implementation plan or measures related to the management of speed levels, such as the speed limit system and surveillance.

The impacts of the transport system plan on transport safety will be expertly assessed based on an assessment of the impacts of the measures described above.

The impacts on road transport safety may be examined in terms of changes to the following factors:

- number of accidents resulting in injuries and deaths
- number of people injured and deceased in traffic
- accident costs.

The targeting of safety impacts may be examined regionally, in terms of the type of region or transport environment (agglomeration – sparsely populated area, highway – street network), modes of transport (e.g. passenger vehicles, public transport, cycling, walking) or different population groups (age, gender).

Safety of mobility environments

The safety of mobility environments is particularly impacted by the location of operations, the use of space by various modes of transport and connections, and the physical structures of the transport environments. The location of accommodation, jobs and services will impact the modes of transport selected by the inhabitants and the risks they encounter when going to school, shopping centres and service centres.

The use of space and the quality of the connections would have an impact on the use and safety of the modes of transport. The possibility of walking and cycling, for instance, will be improved by allocating a sufficient amount of space for pedestrians and cyclists, by ensuring direct and safe connections and hubs and by developing compatibility with public transport. The physical structures of the transport environment will have an impact on traffic situations and the realisation of risks on the grassroots level. For instance, the clarity and consistency of transport environments will provide the user with guidance to operate safely.

The impacts of the traffic system plan on the safety of mobility environments will be expertly assessed by using research data on the inhabitants' experiences in the mobility environments, such as inhabitant barometers.

The impacts on the safety of mobility environments to mobility may be examined, for instance, in terms of changes to the following factors:

- number of accidents resulting in injuries by types of regions and groups of people
- extent of environments considered deficient in terms of safety levels

Safety of railway and maritime transport and aviation

The measures in the transport system plan may have an impact on the safety of railway and maritime transport and aviation. The safety management for these forms of transport is largely based on international conventions and the regulation by the European Union, international action plans and technical requirements as well as safety management systems. They are not within the scope of the National Transport System Plan.

However, the measures in the transport system plan may have significant impacts on transport system safety. These measures include, for instance, the level crossing safety programme, route safeguard investments and the maintenance of the operating capability of ice-breaking, oil skimming or vessel traffic service. The safety impacts of the measures are, among other things, expertly assessed.

The impacts on railway and maritime transport and aviation may be examined, for instance, in terms of changes to the following factors:

- number of accidents and hazardous situations by form of transport
- number of injured and deceased persons by form of transport
- number of accidents resulting in environmental damage and environmental risks of accidents

Transport system data security

The electrification, digitalisation and automation of transport will increase the transport system's dependency on communication and electricity networks. This will require an increasingly undisturbed functionality of communication and electricity networks and the safety of data communication. Similarly, protection from threats to data communication and data systems, and the identification of such risks, are emphasised. The impacts on data security are expertly assessed.

The impacts on transport system data security may be examined, for instance, in terms of changes to the following factors:

- risks arising from the assessment of the measures in the transport system plan
- dependency of the transport system on undisturbed electricity and communication networks and digital services
- number and severity of data security incidents reported by operators.

Concepts

Time cost. Product of time spent and time value. One of the driving cost components. The unit values for time costs (hourly prices) depend on the purpose of the trip. The time value is the unit price determined for the time spent (on transport), for instance euros/hour. This value is used when calculating time costs.
Vehicle cost. Capital costs, administration costs and the cost of use for vehicles. Changing vehicle costs include fuel costs, repair costs, servicing costs, lubricant costs and tyre costs, and they are taken into account for all types of vehicles. Fixed vehicle costs include the capital depreciation and interest costs as well as maintenance and administration costs, which are only taken into account for lorries and buses and vehicle combinations.
Project assessment. Assessment of the impact of individual transport route projects which includes a description of the project, a description of the impacts, impact assessment, and the plan for follow-up and retrospective evaluation.
Profitability calculation. Calculation of the benefits and costs transformed into a monetary value and their relationship to the investment costs.
Transport (transport chain). Transport of goods (and sometimes passengers) from one place to another.
Mode of transport. Form of transport used to transport passengers or goods (for instance walking, cycling, public transport, personal vehicle etc.).
Mode of transport distribution. Percentages of various forms of transport in terms of the distances for the transport of passengers or goods (number of trips) or travel/transport performance (kilometres).
Transport. Transport of passengers, goods and data from one place to another.
Transport system. An entity consisting of all forms of transport used for the transport of passengers and goods, as well as the transport networks, data and services that serve them, the means of transport and systems used for controlling transport, and regulations.
Transportation services. According to the definition in the Act on Transport Services, transportation services are any public or private services or combinations of services related to transport and offered to the public or for private use. In addition to transport services, transportation services may involve renting out means of transport, reservations of jointly used vehicles and car pooling (for instance vehicle or city bicycle rentals) or renting out a driver for the vehicle used.
Transport services. In the Act on Transport Services definitions, transport services cover *mobility services* and *integrated mobility services*.
Mobility services. According to the definition in the Act on Transport Services, mobility services are transport services and closely related support services, such as brokering services, data services and parking services.
Qualitative assessment. Qualitative assessment dealing with quality and properties. *See quantitative assessment.*

Transport model. (Mathematical) model system describing transport behaviour and transport-related changes.
Transport operation costs. Costs for the acquisition and use of means of transport as well as transport administration and control costs.
Transport services on market terms. Services on market terms are planned and priced independently by transport operators without public financing.
Trip (travel chain). Trip of a passenger or vehicle from one place to another, for instance, from home to workplace, from workplace to the grocery store, and home from the grocery store. Minor detours (for instance visits to kiosks) will not end the trip. The mode of transport may change during the trip. The outward journey and the return journey are always separate trips. All trips, even short ones, will count as trips if they reach outside one's own courtyard.
Accident cost. The cost of traffic accidents evaluated in monetary terms. In addition to financial losses, the costs of accidents also include costs describing the loss of well-being which have been determined based on the so-called social willingness to pay.
Service level. From the point of view of the client, the service level refers to the combining nature, fluency, safety, comfort and price of the trip or transports as experienced by the passenger or driver. From the point of view of the service provider, the service level refers to the quality offered, such as travel time, or headway.
Impact. Change in the state of a certain matter caused by a measure. The changeability of the situation may also be an impact.
Reference alternative. Reference alternative for a project or plan assessed. A plan or assessment of the situation in which a project is not implemented. The impact of the project or plan is determined in relation to the reference alternative.
Socio-economy. Examination of the benefits and costs to all parties in society.
Socio-economic efficiency. The production of maximum total benefits to all parties in society with the minimum costs.
Environmental assessment. An environmental assessment refers to 'an assessment of the environmental impact of a plan or programme under Sections 8-11 and the drafting of an environmental explanation included in it, the organisation of consultations, taking the results of the environmental explanation and consultations into account in decision-making and communication off the decision'. (Act on the Environmental Impact Assessment of Public Authorities' Plans and Programmes, Section 2.1 Paragraph 3)
Environmental impact. Environmental impacts refer to 'the direct and indirect impact of a plan or programme in Finland and outside the area of Finland on the following: a) human health, living conditions and amenity; b) soil, water, air, climate, vegetation, organisms and the diversity of nature; c) community structure, the built environment, landscapes, cityscapes and cultural heritage; d) the use of natural resources; e) the mutual interactive relationships between the factors mentioned in points a–d' (Act on the Environmental Impact Assessment of Public Authorities' Plans and Programmes, Section 2.1 Paragraph 2)

Sources

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