

Environmental Guidelines for the Transport Sector until 2010



MINISTRY OF TRANSPORT
AND COMMUNICATIONS FINLAND

Environmental guidelines for the transport sector until 2010
Programmes and strategies 5/2005

Ministry of Transport and Communications

ISSN 1457-747X (printed version)

ISSN 1795-4037 (electronic version)

ISBN 951-723-491-0 (printed version)

ISBN 951-723-492-9 (electronic version)

Graphic design
Workshop Pälviä

Printed in
Vammalan Kirjapaino Oy 2005

Cover photograph
Antero Aaltonen

On-line publication at www.mintc.fi

Environmental Guidelines for the Transport Sector until 2010

	Foreword	5
1	Introduction	6
2	Environmental policy of the transport sector as part of the general transport policy	8
3	Implementation and responsibilities	10
4	Goals, targets and action	12
	4.1 Integrating environmental aspects into transport system planning	14
	4.2 Reduction in greenhouse gas emissions and adaptation to the climate change	16
	4.3 Reduction in emissions that impair air quality	18
	4.4 Noise and vibration abatement	20
	4.5 More efficient use of materials and minimisation of waste	22
	4.6 Prevention of water and soil pollution	24
	4.7 Investigation and processing of previously contaminated soil and sediments	26
	4.8 Protection of marine environment	28
	4.9 Preservation and promotion of biodiversity	30
5	Impacts	32
6	Follow-up and development of environmental work	36

Foreword

“Environmental Guidelines for the Transport Sector until 2010” is the third environmental programme of the Finnish Ministry of Transport and Communications. It covers the years 2005–2010 and defines the key environmental guidelines for all modes of transport. The programme describes the major environmental issues in which additional measures are needed, the long-term goals and targets for 2010 and the key measures and actors as well as the effectiveness indicators. The guidelines are supplemented and specified in the environmental programmes of each organization and in the performance targets and other targets adopted by the Ministry and its subordinate administration. Environmental cooperation networks within the administrative sector play a central role in the implementation of the programme. The implementation of the programme is monitored on an annual basis.

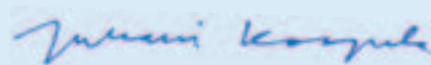
The programme is the product of close collaboration between the administrative sector of the Ministry of Transport and Communications and other actors in the transport and environmental sectors. It was adopted at the meeting of the Directors General of the administrative sector in February and by the ministerial steering group in March 2005.

The earlier environmental programmes of the Ministry of Transport and Communications were adopted in 1994 and 1999, and the nature of environmental work in the transport sector has undergone major changes throughout this decade. In 1994 noise and vehicle exhaust emissions were the most discussed environmental problems, both of which appear on the local level and can more or less be solved by the transport sector itself. In contrast, the environmental problems of the 21st century are often complicated global issues, and in order to solve them we need to integrate environmental issues into the planning and implementation of the transport policy, to adopt measures in several societal sectors and to pursue close collaboration between the various actors. A good example of a current environmental issue is the climate change which requires cooperation on the global, EU, national and local levels. This change in the nature of environmental work has been taken into consideration in the Ministry’s third environmental programme by identifying items where cooperation particularly needs to be strengthened.

Helsinki, 3 March 2005



Leena Luhtanen
Minister of Transport and Communications



Juhani Korpela
Permanent Secretary

1 Introduction

The preparations for the first environmental programme of the Finnish Ministry of Transport and Communications, covering all modes of transport, started at the beginning of the 1990s. The effects of transport on the environment were recognized and their significance was evaluated on the basis of statistics provided by Statistics Finland and with the help of experts in the transport and environmental sectors. The work resulted in the publication *Transport and the Environment in Finland* (1992). Following that, development of measures to be included in the environmental programme continued in cooperation with the environmental and transport administrations and with enterprises and organizations operating in the sector. *The Action Programme for Reducing the Adverse Effects of Transport to the Environment* was adopted in 1994. This was one of the first European environmental programmes for the transport sector, and it turned Finland's international commitments and its national environmental policy into concrete action and actual requirements for cooperation. It also integrated the environmental work started by a number of agencies in the administrative sector – such as the then Finnish National Road Administration – into a larger entity. The implementation of the programme was monitored on an annual basis (follow-up reports 1995, 1996, 1997 and 1998).

Finland joined the European Union in 1995. Changes in the operational framework and the increasing role of environmental issues within all operations gave rise to the need to reform the environmental programme in the autumn of 1999. Cooperation with the environmental administration during the preparation of the second environmental programme was particularly close. At the same time, environmental work in the transport sector was crystallised as an environmental management system (EMS) complying with the ISO 14001 standards (Figure 1). The second environmental programme, entitled *Environmental Guidelines for the Transport Sector*, covered the years 1999–2004. The main features of the Ministry's EMS were specified in the programme, namely: environmental policy, planning principles, means and responsibilities for implementing environmental work and ways of measuring, evaluating and developing operations. The implementation of the programme was also monitored (follow-up reports 2000/2001, 2001/2002 and 2002/2003 on the Internet). The joint guidelines of the administrative sector defined in the Ministry's programme were supplemented by the programmes and environmental management systems of each organization.

The principle of continuous development is essential to environmental management systems. For the purpose of developing the system, an external evaluation of the

functionality of the environmental management work within the administrative sector of the Ministry of Transport and Communications was carried out in the spring of 2004. The twelve organizations within the administrative sector were evaluated both individually and as an entity in relation to the administrative sector's joint environmental management work. The aim of this evaluation was to support preparations for the third environmental programme and the development of practices related to the EMS.

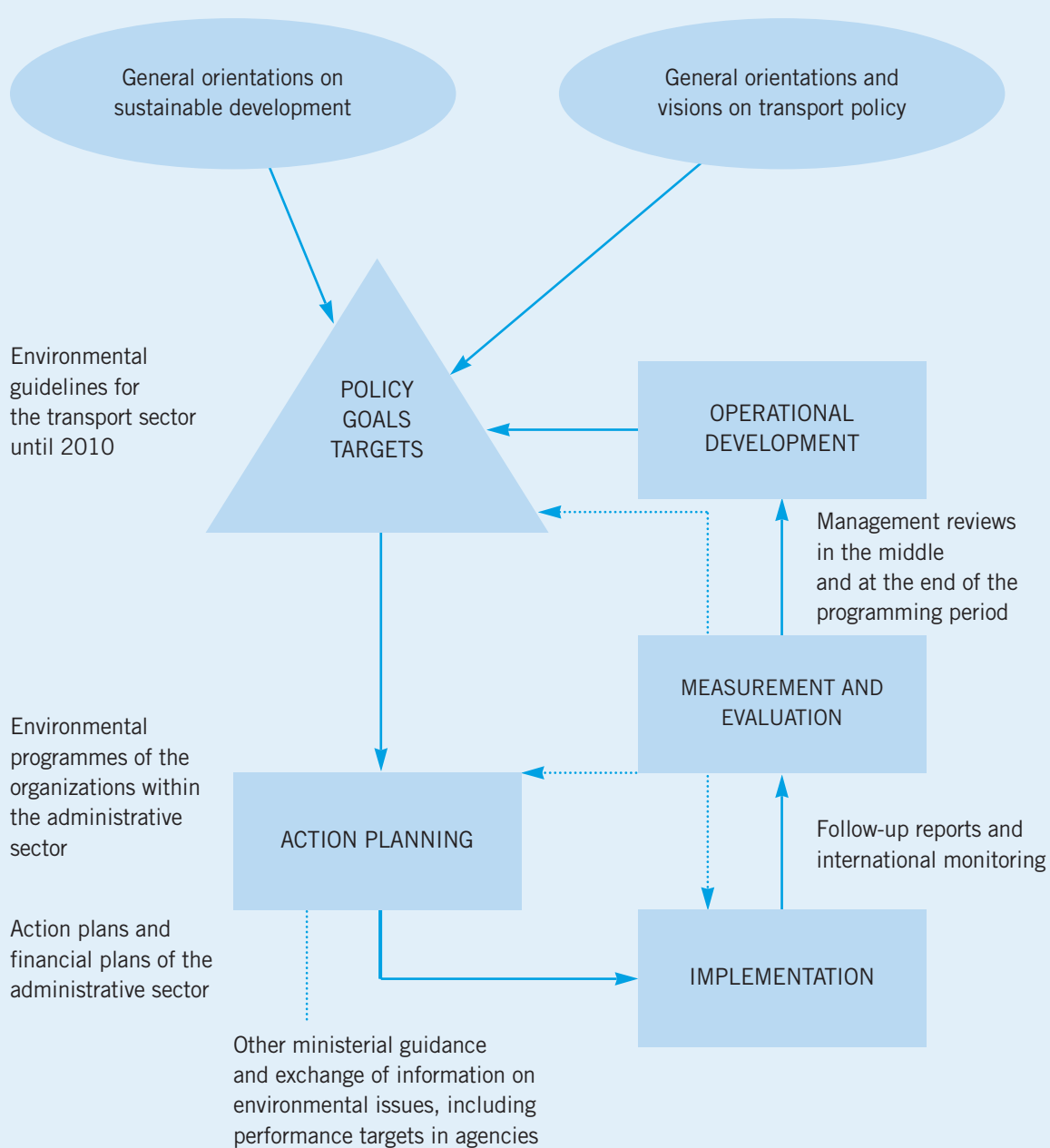
According to the evaluation (Finnish full-length version 57/2004, English summary 23/2005 of the publications of the Ministry of Transport and Communications), the long-term cooperation in environmental issues and the well-functioning exchange of information between organizations are the greatest strengths of the administrative sector's EMS. The monitoring and evaluation systems related to practices and management review were identified as the primary areas to be strengthened. Furthermore, it was concluded that the organizations' different roles should be better taken into account in the joint EMS, and the management of environmental issues should be developed as part of the various steering mechanisms of the organizations.

Proposals for the development of practices made during the evaluation of the environmental management systems and changes to the operational framework of the transport sector have been taken into consideration while preparing the Ministry's third environmental programme. This third programme covers the years 2005–2010. It describes the major environmental issues in which additional measures are needed, the long-term goals and targets for 2010 and the key operations as well as the effectiveness indicators. The roles and responsibilities of the various actors in the management of environmental issues have been clarified.

Targets and measures are specified in the environmental programmes of each organization and in the performance targets and other targets annually adopted by the Ministry and its administrative sector. Environmental issues will be discussed at interorganizational management-level meetings. Furthermore, annual monitoring, the Environmental Handbook for the Transport Sector and the environmental section of the Ministry's website will be developed in order to provide further support to the functionality of the EMS.

The managements of the organizations within the administrative sector have adopted the programme and, in addition to the follow-up reports, will monitor its implementation in the middle and at the end of the programming period.

Figure 1. Environmental management system within the administrative sector of the Finnish Ministry of Transport and Communications



2 Environmental policy of the transport sector as part of the general transport

Environmental policy of the Ministry of Transport and Communications

Vision

According to the vision of the Ministry of Transport and Communications, Finland is one of the international leaders in terms of the quality of transport and communications. Part of this quality consists of recognizing environmental effects, removing adverse effects on the environment and building a healthy environment.

Values

The values of the Ministry of Transport and Communications are skills, integrity and cooperation.

Skills in environmental issues means that the administrative sector has access to high-quality environmental expertise and competence.

Integrity means that the essential effects of transport on the environment have been recognized, targets have been set and measures have been planned in a systematic manner. Environmental issues have been integrated with the operations and management of the organizations. Each agency and body has an environmental management system and programme that supplements and specifies the programme of the administrative sector.

Cooperation in environmental issues means cooperation within the transport sector and between the transport sector and other actors on the local, national and international levels.

Mission

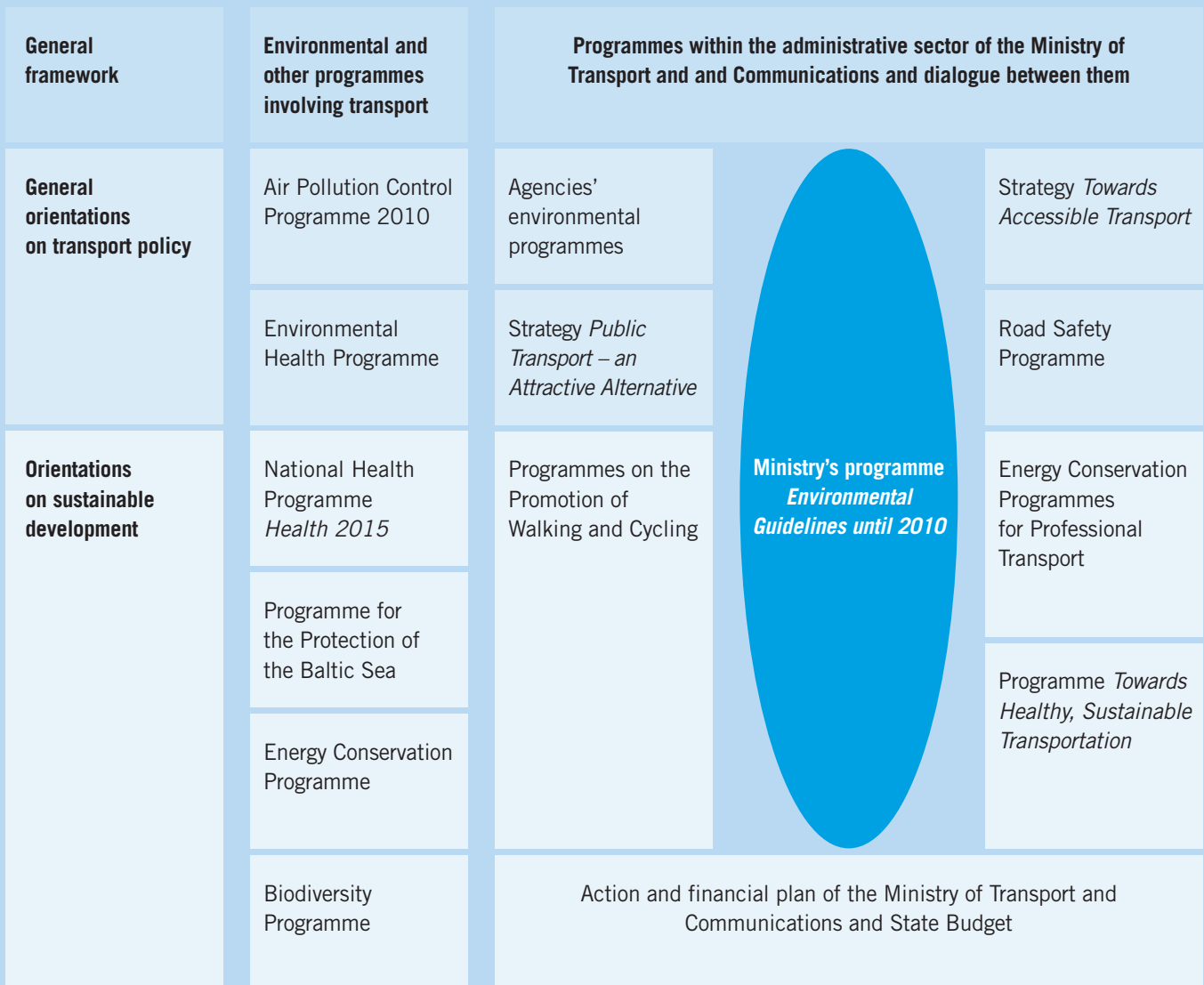
The administrative sector of the Ministry of Transport and Communications prevents adverse effects of transport on the environment and health by utilizing competence meeting the highest standards and repairs earlier damage on a programmed basis. The sector aims at reaching the set goals and targets via active cooperation and through improving its own operations.

The environmental policy of the Ministry of Transport and Communications is part of the Ministry's general transport policy. The transport policy is based on the principle of sustainable development. Major orientations towards international sustainable development have been provided by the UN World Summits on Sustainable Development in Rio de Janeiro in 1992 and Johannesburg in 2002 as well as the European Union's sustainable development programme and environmental programmes. On the national level, major orientations include the Government resolution on the promotion of ecological sustainability and the national programme for sustainable development adopted in 1998. General orientations on sustainable development and the EU's orientations on transport policy provide guidelines for the long-term development of the transport policy in Finland. The shorter-term targets of the national social policy are, in turn, determined in government programmes.

The Ministry's long-term strategy *Towards Intelligent and Sustainable Transport* serves as the basis for its general transport policy. This strategy describes the transport vision and targets until 2025. The targets imply desirable traffic conditions and the direction in which the transport system should be developed in the long term. In addition to the targets, the strategy comprises the major measures and cooperation with other actors in society that are needed to meet the targets.

The general transport policy is also guided by several separate action programmes and strategies. In addition to the environmental programmes of the administrative sector, the action programmes of relevance to environmental work in the transport sector include the policy programme on walking, the policy programme on cycling, the programme for the promotion of public transport, the strategy on accessibility and the plan on road safety (Figure 2). National targets concerning the use of areas also essentially steer the planning of transport systems.

Figure 2: Programmes and strategies for sustainable development in the transport sector



3 Implementation and responsibilities

In order to implement the environmental targets effectively, the environmental work needs to be firmly integrated into other operations of the administrative sector and promoted across the sector. Management, steering of organizations, cooperation with various actors, information services and training as well as research and development play a central role in this respect. The environmental management system will serve as a tool that clarifies the work and helps to get an overall picture.

Role of management in the environmental work

The management of the administrative sector is in charge of steering the development of its organizations in accordance with the effectiveness targets, and ensuring the resources needed to meet the targets. The following societal effectiveness targets have been established for the operational and financial planning period 2006–2009: functionality of transport operations, road safety and reduction in adverse effects of transport on the environment. Successful environmental work requires that the work is related to other work and steering mechanisms within the administrative sector and that adequate resources are guaranteed. Furthermore, exchange of information on environmental issues between senior managers of organizations within the administrative sector is needed in order to reach the desired outcome. Environmental management systems also need to be developed in line with changes in organisational structures and practices.

Monitoring of the administrative sector

In order to manage environmental issues successfully, these issues need to be firmly integrated into the monitoring of the administrative sector. Performance guidance and corporate governance are the most significant steering mechanisms of the sector. Performance guidance is applied in the Ministry itself, the Finnish Road Administration, the Finnish Rail Administration, the Finnish Institute of Marine Research, the Finnish Maritime Administration, the Finnish Meteorological Institute and the Finnish Vehicle Administration. Corporate governance is applied in TeliaSonera AB, Finnair Group, VR Group Ltd (Finnish Railways), Finland Post Corporation, Raskone (State Repair Shop), Suomen Erillisverkot Oy and YLE (Finnish Broadcasting Company Ltd). A combination of performance guidance and corporate governance is applied in the sector's public enterprises: the Finnish Civil Aviation Administration, the Finnish Road Enterprise, the Finnish Shipping Enterprise and the Finnish State Pilotage Enterprise. As regards the Finnish Civil Aviation Administration, the situation will change at the beginning of 2006 as the separate Finnish Civil Aviation Authority will take over the public authority tasks and the Finnish Civil Aviation Administration will continue operating as a service provider and an unincorporated state enterprise.

Cooperation within the transport sector

Cooperation within the transport sector consists of cooperation between the environmental experts of the administrative sector (cooperation between the Ministry and the transport infrastructure agencies) on the one hand, and between the environmental experts and those working in other fields of the administrative sector (cooperation between the Ministry and other organizations) on the other hand.

The environmental cooperation groups (environmental teams, environmental steering groups) and other transport policy working groups are the most notable channels of cooperation. During this programming period, the cooperation between those in charge of environmental issues will become closer. Likewise, the cooperation between environmental experts and those working in other fields of the administrative sector needs to be developed. The research institutes of the administrative sector provide the background information needed for taking decisions on environmental issues. The cooperation aims at integrating environmental considerations into the preparation and implementation of other elements of the transport policy.

Cooperation between the transport sector and other sectors

Cooperation between the transport sector and other sectors is a prerequisite for successful environmental work. The need for cooperation is highlighted in the preparation of legislation and other forms of steering (national level) and in the planning of mobility and transport systems (local level)

National level. The administrative sector participates in the work carried out by governmental working groups for sustainable development and environmental issues as well as other working groups whose work may have an impact on the environment. The tasks of the working groups are mostly related to the preparation of legislation or strategic plans and programmes. Strategic cooperation on the national level has two goals: integration of environmental considerations into the transport policy and conveyance of the transport sector's considerations to other fields of social policy under preparation.

Local level. In regions and urban areas, the administrative sector participates in the planning of transport systems, among other things. These plans are usually prepared in cooperation between the regional council, the municipalities and the transport infrastructure agencies. A transport system plan supports the planning of land use, i.e. the regional plan and master plans. Joint preparation of a transport system plan creates a basis for a letter of intent whereby the parties jointly agree on the measures to be taken and on individual responsibilities for the promotion of the plan. On the municipal level, work within the framework of Local Agenda 21 also provides an opportunity to deal with mobility issues.

In addition to the authorities in charge of land use planning, key local partners include regional environment centres and municipal environmental authorities who are supervisory authorities referred to in the Environmental Protection Act. The cooperation aims at a reasonable level and uniform implementation of environmental measures, among other things.

EU cooperation and other international cooperation

Many of the environmental targets for the transport sector can only be reached via international cooperation. Most of current legislation related to the environment and transport is prepared on the EU level and implemented by national legislation. Preparation of the legislation is preceded by a stage in which the strategic intent is expressed in various policy programmes such as the White Paper on the European Transport Policy or where environmental considerations are integrated into different policy areas (Cardiff process). The Ministry ensures that the organizations of the administrative sector take part in the preparatory processes, through which it is possible to coordinate work on the local, national and EU levels.

Other notable forums for international policy-making are the United Nations (UN), the Organisation for Economic Cooperation and Development (OECD), the European Conference of Ministers of Transport (ECMT), the International Civil Aviation Organization (ICAO), the International Maritime Organisation (IMO) and the Baltic Marine Environment Protection Commission (HELCOM). Owing to the international character of aviation and maritime transport in particular, a significant part of the environmental work in these sectors takes place on international forums beyond the European context.

Information services

The most important target for the environmental information services of the Ministry's administrative sector is to have an impact on the acquisition and use of transport modes by citizens, industry and commerce as well as on their choices concerning mobility and transportation. In particular, environmental information is disseminated in various environmental and health events and within the campaign *Liikkuva Suomi (Finland on the Move)* managed by the Finnish Committee for Sustainable Development. Support for the mobility plans in workplaces and other information services related to mobility management also constitutes a significant form of environmental information services. More attention will be paid to a wider utilization of research results in order to make communication more efficient. Stakeholders are to be informed as early as possible when the preparation of plans and projects starts. The environmental sections of the websites of the Ministry and other organizations within the sector and environmental reporting are to be improved.

Research, training and development

Research, training and development in the transport sector are carried out in cooperation with other administrative sectors, higher education institutions and various research and development institutes. Naturally the research institutes of the administrative sector itself play an important role as producers of information on research that supports the environmental work in the transport sector. These activities aim at recognizing environmental problems, evaluating future risks, supporting solutions compatible with sustainable development and creating a framework for cooperation between the various actors within this sector.

Responsibilities

Organizations within the Ministry's administrative sector differ from each other in many ways. These differences have been taken into consideration in the division of the thematic responsibilities of the environmental programme.

4 Goals, targets and action

The environmental work of the administrative sector will focus on the following key target areas in 2005–2010:

- 1) *integration of environmental considerations into the preparation of transport systems,*
- 2) *reduction in greenhouse gas emissions and adaptation to the climate change,*
- 3) *reduction in emissions that impair air quality,*
- 4) *noise and vibration abatement,*
- 5) *more efficient use of materials and minimisation of waste,*
- 6) *prevention of water and soil pollution,*
- 7) *investigation and processing of previously contaminated soil and sediments,*
- 8) *protection of marine environment,*
- 9) *preservation and promotion of natural biodiversity.*

The following sections are defined below for each target area: analysis of current state, long-term goals, targets for 2010, key measures, indicators used in monitoring and research as well as the roles and responsibilities of the organizations within the administrative sector. The effectiveness of measures on different resource levels is discussed in Chapter 5.

Each analysis of the current state comprises a brief summary of the situation in the respective target area and its relevance in a general context, the key obligations (international agreements, national legislation) and challenges, the key objects for operations and the prospects for the future. The effects of transport on the environment and related regulatory work are described in more detail in the Environmental Handbook for the Transport Sector (Publications of the Ministry of Transport and Communications 5/2004).

The goals describe the direction and general objectives of the environmental work in the long term. They are related to the state of the environment. In many respects, measures also need to be taken in other sectors of society in order to reach the goals. The targets describe the planned situation of the transport sector in 2010 for each thematic area. As far as possible, the targets have been defined as emissions, reductions and other effects of the transport sector that can be measured (or evaluated in some other way). The targets are closely related to the operations of the transport sector itself.

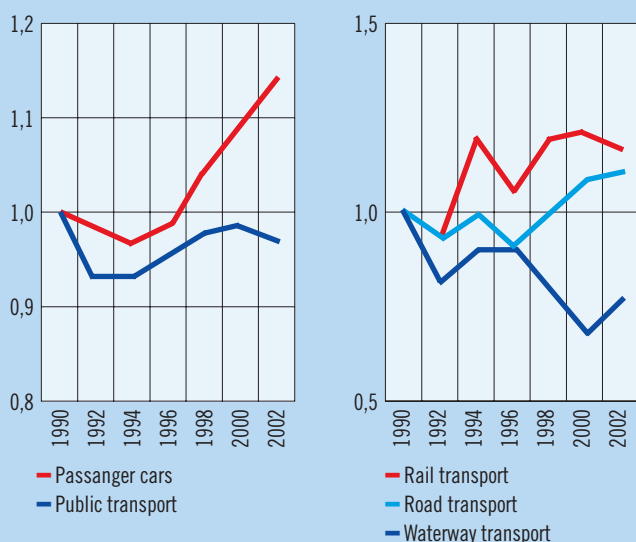
The sections “Key measures” and “Roles and responsibilities of organizations” include operational targets. The former generally describe the measures related to each thematic area, whereas the latter describe the responsibilities and roles of the various organizations in the management of the environmental issue concerned. The responsibilities vary between organizations. The way in which the operational targets are binding on organizations that apply performance guidance is different to the way they are binding on public enterprises, businesses and companies that voluntarily participate in the environmental work at their own discretion.

“Monitoring” comprises indicators to be used as the basis for annual monitoring. The indicators are primarily related to the monitoring of emissions or reductions caused by the operations in the transport sector, not to the state of the environment. The environmental administration and the municipalities are in charge of the general monitoring of the state of the environment. Exceptions to this rule are certain tasks related to traffic noise and to the protection of groundwaters as well as obligatory monitoring connected with projects. These exceptions are specified separately for each thematic area.

The transport sector’s needs for information are evaluated under “Research”. Ongoing research projects are included in the analysis of the current state.



4.1 Integrating environmental aspects into transport system planning



Development of passenger-kilometres in domestic transport (1990=1), 1990–2002.

Development of tonne-kilometres in goods transport (1990=1), 1990–2002.

Key agreements, statutes and strategies:

Land Use and Building Act (132/1999) and Land Use and Building Decree (895/1999)

Act on Environmental Impact Assessment Procedure (468/1994, amendment 267/1999) and Decree on Environmental Impact Assessment Procedure (268/1999)

Act on the Assessment of the Impacts of the Authorities' Plans and Programmes on the Environment (Government proposal of 18 November 2004)

The transport system (the transport infrastructure and its users) constitutes an essential part of the community structure. The development of the transport system meets a number of different targets and expectations set by various actors in society. The planning of the transport system is a continuous process in which different modes of transport become parts of a single entity. Transport system planning together with land use planning is a key tool, which has an impact on the creation of transport needs, on the attractiveness of different modes of transport, on the functionality of the transport sector, on road safety, on the accessibility of the transport sector and other aspects of social equality, on the prevention of several adverse effects on the environment, and on the safeguarding of a good, healthy environment.

From an environmental point of view, the preparation of a transport system aims at a reduction in energy consumption in the transport sector, an improvement in air quality and a reduction in noise pollution, the prevention of fragmentation and the preservation of natural living conditions and quiet areas. In order to reach these goals, measures are needed in both passenger transport and goods transport. In passenger transport it is essential to offer more attractive and competitive alternatives in terms of public transport and to develop pedestrian and cycling facilities. In goods transport attention will be paid to the minimization of transport needs via the development of logistics and telematics and an improvement in the competitiveness of more environment-friendly modes of transport. In this respect, the development of rail transport and short sea shipping is particularly important.

The development of more sustainable transport systems poses many challenges. One challenge is the large variety of targets and actors, and the problems related to linkages between long and short-term interests. Although political decision-makers are in charge of solving conflicts between targets and scheduling measures needed to meet the targets, those in charge of preparing decisions should provide the information needed by the decision-makers and ensure the availability of this information in the right place at the right time. It is essential to take legislation on environmental impact assessment and targets of land use and building legislation into consideration and seek solutions that are sustainable to users and to society in the long-term. We need to develop impact assessments and planning practices in order to consider different social targets in a well-balanced way and to find alternatives to the current development leading to increasing volumes of traffic.

Goal

- Eco-efficient transport system.

Targets for 2010

- Slowing down the growth of traffic volumes in built-up areas.
- Increased or unchanged shares of environment-friendly modes of transport in the passenger transport market in accordance with programmes promoting these modes of transport.
- Decrease in adverse effects on the environment per transport performance.

Key measures (partners indicated in brackets)

Promotion of coordination of land use planning and traffic system planning (municipalities, regions, Ministry of the Environment).

Development of impact assessments both at the level of plans and programmes and in the preparation of transport policy strategies (environmental administration, Ministry of Social Affairs and Health). Availability of information on environmental impact assessments to decision-makers at the right time is ensured.

Limiting the growth of traffic volumes in urban areas by developing transport system planning and promoting competitiveness of public transport as well as pedestrian and cycling facilities (municipalities, regions, Ministry of the Environment, providers and users of transport services).

Attention paid to making traffic quieter in built-up areas (municipalities).

Enhancement of co-efficiency of transportation chains (enterprises, sectoral organizations, Ministry of Trade and Industry).

Improvement of competitiveness of rail transport and preconditions for short sea shipping (enterprises, municipalities, ports).

Enhancement of research and development in order to strengthen environmental considerations in the preparation of transport systems and to understand the needs of different user groups and factors affecting mobility.

Monitoring

- Indicators for assessing the impact of the transport policy.

Research and development of competence

- Development of assessment methods.

Roles and responsibilities of organizations within the administrative sector:

Specified in the organisations' environmental programmes and the Ministry's targets, e.g. annual performance targets.

Ministry

- Further development of transport system planning in cooperation with transport infrastructure agencies.
- Integration of environmental considerations into the definition of a targeted transport system and into long-term planning.
- Development of strategic steering within the transport infrastructure administration so that all performance targets placed on the transport infrastructure administration and related resources are handled simultaneously in a single process.
- Participation in the development of impact assessment methods; development of methods for assessing the impact of transport strategies.
- Promotion of public transport's competitiveness by means of financial steering and by supporting the development of transport operators' up-to-date approaches.
- Programmes on the promotion of walking, cycling and public transport and related projects (such as follow-up to the programme *JALOIN*), promotion of mobility management (work programme *Finland on the Move*, etc.).

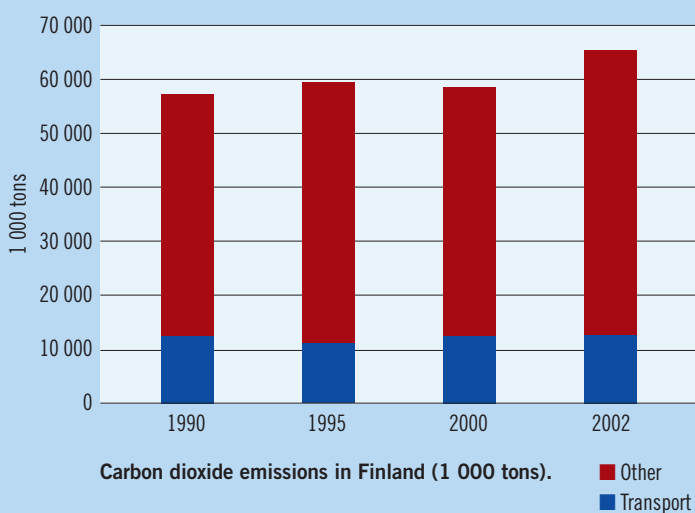
Transport infrastructure agencies

- Development of methods and impact assessment for transport system planning.
- Cooperation with regions and municipalities for the purpose of coordinating land use planning and transport system planning.
- Survey of customer groups' transport needs and factors affecting these needs.
- Cooperation with industry and commerce for the purpose of developing preconditions for energy-efficient logistics.

Above-mentioned organizations and enterprises operating in the sector

- Development of methods and impact assessment for transport system planning.
- Development and implementation of infrastructure solutions that serve public transport as well as pedestrian and cycling facilities.
- Development of transport operations in urban areas.
- Development and introduction of new solutions for making traffic quieter in built-up areas.

4.2 Reduction in greenhouse gas emissions and adaptation to the climate change



Key agreements, statutes and strategies:

Climate Convention/Framework Convention on Climate Change

Kyoto Protocol

Montreal Protocol

National Climate Strategy

Directives on the reduction in oxides of nitrogen

Agreements between the European Commission and the automobile industry on the reduction in carbon dioxide emissions of new passenger cars

Government Decree on the Notifications of Fuel Consumption and Carbon Dioxide Emissions (938/2000)

The transport sector produces great amounts of greenhouse gas emissions that contribute to the climate change. Greenhouse gases include carbon dioxide, nitrous oxide and methane. In 2002 domestic transport produced 16.3% of all greenhouse gas emissions in Finland. The most significant greenhouse gas in the transport sector is carbon dioxide. Most of carbon dioxide emissions from transport occur in road transport. If no measures are adopted, it is foreseen that the increase in emissions from transport will be approximately one million tonne of carbon dioxide by 2020–2025.

In accordance with the Kyoto Protocol and burden-sharing within the Community, Finland is obliged to keep greenhouse gas emissions in the years 2008–2012 at a level not exceeding the level of 1990. Emissions trading within the European Union started at the beginning of 2005, with a view to reducing emissions in areas where it is the most cost-efficient. Emissions trading and utilization of the Kyoto Protocol's project mechanisms will change climate policy as a whole. The emission targets of the transport sector and other sectors outside the scope of emissions trading will be defined as part of the national climate strategy at the beginning of 2005.

Carbon dioxide emissions from transport are most significantly reduced by different ways of influencing the traffic volumes, the shares of different transport modes and the vehicles' fuel consumption. Measures set forth in the climate strategy for the transport sector include development of land use planning and transport system planning, promotion of public transport and pedestrian and cycling facilities, development of the tax policy, implementation of energy saving agreements, and contributions to international regulations and transport operations, as well as consumer information. The measures require close collaboration between the municipalities, the environmental administration, the Ministry of Finance, the European Union and the international transport organizations (IMO and ICAO).

The greatest challenges in the mitigation of the climate change in the transport sector are related to volumes and modes of transport. Increasing vehicle traffic especially in urban areas is a matter for concern, the competitiveness of public transport is threatened and the citizens' choices do not support energy saving. Furthermore, the average fuel consumption of the automobile fleet has not decreased as much as expected. In addition to the above-mentioned issues, more attention must be paid to the development of alternatives to fossil fuels, greenhouse gas emissions trading and adaptation to the climate change in the future. Changes in the climate influence the societal activities and the planning of traffic conditions in a number of ways. In order to anticipate forthcoming changes, and to be prepared for them, we need to increase our research efforts in this field.

Goal

- Mitigation of and adaptation to the climate change.

Targets for 2010

- Action carried out within the Ministry's administrative sector supports the development and implementation of a national and international climate policy. The aggregate greenhouse gas emissions from transport do not exceed the level of 1990.
- The administrative sector is aware of the measures needed for adapting to the climate change and starts to implement these measures.

Key measures

Limiting the growth of traffic volumes in urban areas by developing transport system planning and promoting the competitiveness of public transport as well as pedestrian and cycling facilities.

Promotion of energy saving through courses in eco-driving and energy saving agreements applicable to the transport sector.

Improvement of the energy efficiency of transport operations by developing logistics and telematics. Increased use of combined transport, etc.

Reduction in carbon dioxide emissions from passenger cars by means of modernizing the automobile fleet. Influence on consumers' choices concerning the purchase of cars with financial steering and information services.

Planning of special adaptation measures for the transport sector.

Monitoring

- Development of greenhouse gas emissions (CO₂, N₂O, CH₄) from transport.
- Emissions of substances used in vehicles' air-conditioning equipment.
- Energy consumption in the transport sector.
- Average carbon dioxide emissions of new passenger cars sold.

Research and development of competence

- Preparation of policy measures for reducing emissions and adapting to the climate change; surveys to support international negotiations.
- Preparation of a strategy concerning preparations for the climate change in all modes of transport; assessment of risks, disturbances and structural effects on each mode of transport.
- Review of ways of reducing the vulnerability of the transport sector in changing weather conditions.

Roles and responsibilities of organizations within the administrative sector:

Specified in the organisations' environmental programmes and the Ministry's targets, e.g. annual performance targets.

Ministry

- Participation in programmes developing the energy efficiency of transport operations and cooperation in surveys of financial steering methods improving the energy efficiency of transport operations.
- Active contributions to the development of fuel technologies.
- Development of driver training.
- Participation in international negotiations and in further development of the national climate strategy; provision of information on possibilities of reducing emissions.
- Preparation and implementation of surveys related to adapting to the climate change.

Transport infrastructure agencies

- Limiting the growth of traffic volumes in urban areas and improvement of attractiveness of public transport, as well as pedestrian and cycling facilities, when planning and implementing land use and transport systems in cooperation with municipalities.
- Incorporation of energy efficiency into procurement contracts.
- Preparation of surveys related to adapting to the climate change in cooperation with the administrative sector research institutes.
- Participation in international cooperation.

Finnish Vehicle Administration

- Monitoring of and reporting on the automobile fleet and its renewal.
- Monitoring of and reporting on the energy consumption and emissions of cars to be registered.
- Promotion of economical driving in driver training.

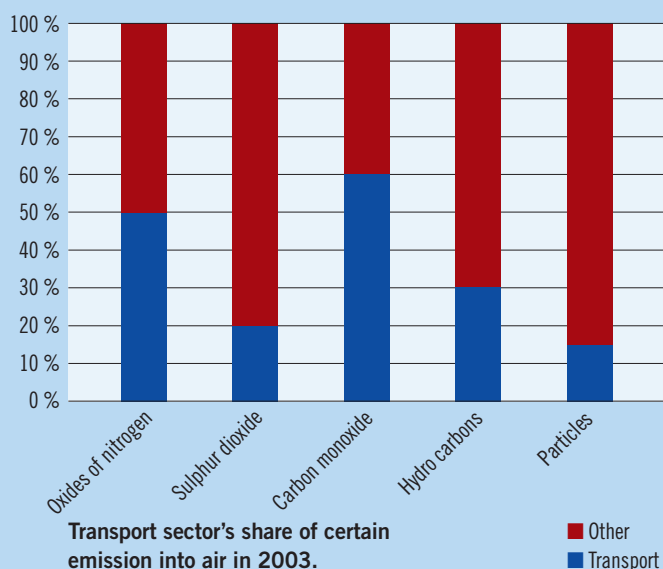
Research institutes

- Participation in the development of international and national research work on the climate change and adaptation measures.
- Utilization of the Finnish Meteorological Institute's measurement infrastructure for the purpose of monitoring concentrations of greenhouse gases.
- Utilization of the Ice Service of the Finnish Institute of Marine Research for the purpose of reducing energy consumption and carbon dioxide emissions in maritime transport.
- Preparation of surveys related to adapting to the climate change in cooperation with the transport infrastructure agencies.
- Conveyance of information on research to the international negotiation process and to citizens.

Above-mentioned organizations and enterprises operating in the sector

- Promotion of energy efficiency in different practices and procurement contracts.
- Logistic solutions for the purpose of reducing transport performances.
- Solutions related to mobility management for the purpose of reducing transport performances.

4.3 Reduction in emissions that impair air quality



Key agreements, statutes and strategies:

Convention on Long-Range Transboundary Air Pollution and related protocols

Directive 2001/81/EC on National Emission Ceilings for Certain Atmospheric Pollutants

Directive 96/62/EC on Ambient Air Quality Assessment and Management and its daughter directives

National Air Pollution Control Programme 2010

Environmental Protection Act (86/2000) and Environmental Protection Decree (169/2000)

Government Decree on the Ground-Level Ozone (783/2003), available in Finnish and Swedish

Government Decree on Air Quality (741/2001, amendment 784/2003), available in Finnish and Swedish

Government Decision on the Air Quality Guide Values and Sulphur Deposition Target Values (480/1996), available in Finnish and Swedish

EURO 1–4 standards for passenger cars and vans (EURO 5 under preparation), EURO 1–5 standards for heavy vehicles (EURO 6 under preparation)

Vehicle Act (1090/2002)

Decree on the Construction and Equipment of Motor Vehicles and Trailers (1248/2002)

The fuel combustion processes in the transport sector produce several chemical compounds that impair air quality. Such compounds include oxides of nitrogen, sulphur dioxide, carbon monoxide, hydrocarbons and particles. Emissions of oxides of nitrogen also have an impact on the volumes of ground-level ozone, which are harmful to the environment and to health. Concentrations of ground-level ozone increase to harmful levels in areas where emissions of nitrogen dioxide are high and solar radiation is sufficiently strong. Such circumstances often prevail in Central Europe in summer. Indeed, the ozone found in Finland is mostly a consequence of transboundary pollution from other parts of Europe.

Impaired air quality is seriously harmful to human health. According to the National Public Health Institute, as many as two million Finns suffer from occasional respiratory symptoms caused by airborne particles. The total particulate concentration in urban air reaches its peak in the spring when sand used for road sanding in the winter and matter coming away from the road surface rise into the atmosphere as dust particles as a consequence of currents of air caused by traffic. Many air pollutants also have carcinogenic effects and are connected to cardiovascular diseases. It is estimated that 200–400 Finns die prematurely every year because of air pollution. It should be noted that traffic affects air quality and human health even more than its share of emission implies because emissions from cars occur low down, i.e. at breathing height, and reach their maximum levels in the centres of built-up areas, which also have the greatest numbers of people.

Tightening of vehicle exhaust emission standards has traditionally been the most effective way of reducing exhaust emissions from transport. Binding limit values for emissions from new passenger cars, vans and heavy vehicles have been agreed upon in accordance with Community legislation. Emission standards for catalytic converters in new passenger cars entered into force in 1993 (the so-called EURO 1 standard). The EURO 3 standard which came into force in 2000 is currently applicable. The more rigorous EURO 4 standard will enter into force in 2005 and the EURO 5 standard concerning heavy vehicles in 2008.

The effects of the EURO standards will only fully manifest themselves after considerable delay – at the beginning of the 2020s at the earliest – due to the slow renewal of the automobile fleet. Another problem is caused by the fact that the volume of particles that are particularly small (PM < 1.0 µm), which cause the most harm to health, has not yet been restricted by the standards. Furthermore, a reduction in emissions of oxides of nitrogen is impeded by several problems related to methods of measurement and definition of standards, and catalytic converter technology. Another challenge to air pollution control lies in the introduction of new fuels with a view to improving energy efficiency. Attention should also be paid to environment and health considerations when introducing these fuels.

Goal

- Good air quality.

Targets for 2010

- Reduction in the aggregate emissions of oxides of nitrogen (NO_x) and aggregate emissions of volatile organic compounds (VOC) from road, air and rail transport by approximately 75% by 2010 in comparison with the level of 1990.
- Reduction in emissions of particulate pollutants from road transport and minimization of adverse effects on health (reduction of at least 40% from current level).

Key measures

Limiting the growth of traffic volumes in urban areas by developing transport system planning and promoting the competitiveness of public transport as well as pedestrian and cycling facilities in accordance with the relevant national action programmes.

Participation in the preparation of EC legislation (especially EURO 5 and EURO 6 standards for passenger cars and vans and EURO 6 standard for heavy vehicles).

Utilization of national and international research results on small particles (especially the programme FINE managed by the National Technology Agency of Finland Tekes and the programmes PARTICLE and ARTEMIS managed by the EU) for the purpose of reducing emissions of small particles from transport.

Survey of opportunities for promoting wider use of particulate filters in vehicles ahead of schedule.

Introduction of cleaner heavy vehicles (such as buses and coaches fuelled with natural gas) is promoted; survey of possibilities of promoting the installation of different after-treatment devices to heavy vehicles if necessary.

Promotion of so-called green procurement policies within the administrative sector, such as work done with low-pollution vehicles. Promotion practices are defined in more detail in the administrative sector's guidelines for procurement procedures.

Monitoring

- Emissions of NO_x, SO₂, HC, CO and particulate pollutants.
- Low-pollution cars' share of the automobile fleet and of the transport performance, breakdown by EURO category.
- Air quality in major cities (number of days with poor or weak air quality).

Research and development of competence

- Research on small particles.
- Research aiming at simultaneous reduction in greenhouse gas emissions and emissions that impair air quality.

Roles and responsibilities of organizations within the administrative sector:

Specified in the organisations' environmental programmes and the Ministry's targets, e.g. annual performance targets.

Ministry

- Participation in work carried out by the EU and other international organizations with a view to developing legislation on the reduction in emissions (emission standards, on-board diagnostic (OBD) systems, particulate filters, after-treatment devices, etc.).
- Participation in research and development projects aiming at reduction in emissions from transport.
- Promotion of cleaner vehicle technologies and alternative fuels by means of financial steering (cooperation with the Ministry of Finance and the Ministry of the Environment).

Finnish Road Administration

- Reduction in emissions of exhaust gases and particulate pollutants from transport by means of solutions related to planning, development and maintenance.
- Limiting the growth of traffic volumes in urban areas and improvement of attractiveness of public transport as well as pedestrian and cycling facilities in cooperation with municipalities when planning and implementing land use and transport systems.

Finnish Rail Administration

- Electrification of rail transport and other development projects related to rail transport.
- Participation in the international work aiming at reduction in emissions from diesel trains.

Finnish Civil Aviation Administration, Finnish Maritime Administration

- Participation in the international work aiming at reduction in emissions from transport.

Finnish Vehicle Administration

- Participation in the development of emission standards for vehicles.
- Ensuring conformity to vehicle exhaust emission standards by means of roadworthiness tests. Provision of workshops with instructions and information for exhaust emission tests on matters such as future requirements for equipment.
- Verification of conformity of imported vehicle models to exhaust emission standards, among other things.
- Monitoring of development of vehicle technology and its suitability for Finnish circumstances; dissemination of information. Participation in research projects promoting the introduction of new, environment-friendly vehicle and fuel technologies that are suitable for Finnish circumstances.

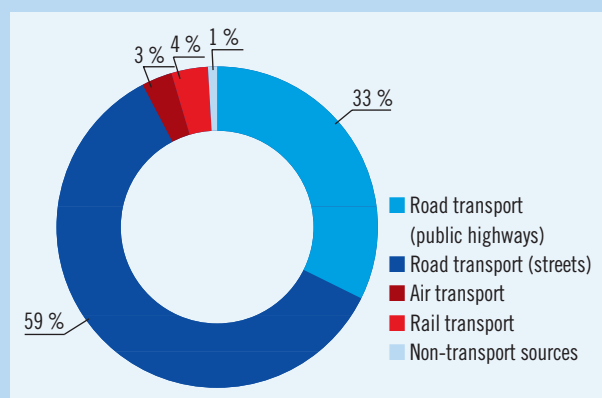
Finnish Meteorological Institute

- Participation in research on air quality; conveyance of information on research to authorities and citizens. Reporting on urban air quality in cooperation with municipalities.

Above-mentioned organizations and enterprises operating in the sector

- Ensuring that attention is paid to emissions issues when acquiring and maintaining vehicles and means of transport.
- Participation in courses in eco-driving.

4.4 Noise and vibration abatement



Exposure to environmental noise, breakdown by noise source (%).

Key agreements, statutes and strategies:

Directive 2002/49/EC relating to the Assessment and Management of Environmental Noise

Environmental Protection Act (86/2000) and Environmental Protection Decree (169/2000)

Government Decree on Noise Mapping and Action Plans for Noise Control Required by the EC (801/2004), available in Finnish and Swedish

Government Decision on the Noise Level Guide Values (993/1992), available in Finnish and Swedish

Vehicle Act (1250/2002)

Decree on the Construction and Equipment of Motor Vehicles and Trailers (1248/2002)

National Guidelines and Action Plan for Noise Control (Ministry of the Environment 696/2004), available in Finnish and Swedish

Clarifying the Notification and Permit Procedure of Airports Used for Both Military and Civil Aviation (Reports and Memoranda of the Ministry of Transport and Communications B 4/2002)

Almost one million Finns live in areas where the average sound level outdoors exceeds the guide value for outdoor noise of 55 dB in the daytime. In almost all of these areas the transport sector is the source of the noise. Noise deteriorates the quality and amenity of the living environment and has a negative impact on the health, well-being and functional capabilities of many people. Noise has certain direct effects on people (physiological effects such as connections with cardiovascular diseases, effects on communication and sleep). It may also result in negative cognitive experiences and feelings. Stress and functional disorders are also possible symptoms caused by noise.

Approximately 880,000 Finns live in areas exposed to noise from road and street traffic ($L_{Aeq7-22} > 55$ dB), 35,000 Finns in areas exposed to noise from rail traffic and 27,000 Finns in areas exposed to noise from civil aviation ($L_{den} > 55$ dB). Problems with the noise from road and street traffic have continuously increased due to the growth of traffic volumes and the construction of residential areas in areas exposed to noise from major transport infrastructure. By contrast, the number of people exposed to noise from rail traffic and civil aviation has decreased and is decreasing further. People living by railways are protected by noise barriers, and new, low-noise rolling stock has been developed. Developments in air transport have been influenced by the wider use of new, low-noise aircraft in particular. Furthermore, runways have been used and air routes planned so that aircraft are directed to less populated areas in the vicinity of airports.

Information on the development of the noise situation has been insufficient for a long time, and a specific noise database has been developed in order to organize monitoring in the administrative sector. Its coverage has been improved by including data from the municipalities. The noise database will be updated regularly in future.

In addition to noise, transport – heavy goods transport in particular – causes harmful vibrations on certain railway sections and roads. Vibration caused by transport is a problem that mainly affects structures, the extent and consequences of which are not sufficiently explored at the moment. The project entitled *LIIKEVÄ* (2002–2005) is focusing on the extent of the vibration caused by transport and its adverse effects, and the measurement of such vibration. New recommendations for the vibration of residential buildings caused by transport were adopted in January 2005.

Cooperation with those in charge of land use planning and with the transportation sector becomes a key factor when solving problems of noise from transport. Cooperation is needed on the local, regional and national levels. A proposal for the National Guidelines and Action Plan for Noise Abatement (including Vibration) was adopted in April 2004. Approximately 35 million euro per year will be needed for the implementation of the programme. The Finnish Road Administration and municipalities have been forced to postpone even urgent control measures related to noise from road and street transport in recent years due to an absence of funding.

Goal

- Comfortable, quiet environment.

Targets for 2010

- Prevention of new noise pollution and reduction in exposure to environmental noise.
- In 2020 the number of people living in areas where daytime noise exceeds 55 dB is at least 20% smaller than in 2003. The interim target is to reach approximately 30% of the target by 2010 – i.e. to reduce the exposure of about 60,000 inhabitants to traffic noise to under 55 dB(L_{Aeq7-22}). Targets for each mode of transport are defined in the National Guidelines and Action Plan for Noise Abatement.
- Reduction in levels of outdoor noise caused by transport in existing residential areas with a view to reaching the maximum average sound level of 55 dB in the daytime.
- Support for the preservation of various types of quiet areas.
- Recognition of adverse effects of vibration that can be measured; agreement on joint guidelines for reducing these adverse effects.

Key measures

Cooperation with municipalities for the purposes of preventing new noise pollution and reducing exposure to environmental noise. Planning a new transport infrastructure must neither cause any further exposure to noise nor any new noise pollution. Various types of quiet areas are to be taken into consideration in the planning phase and their preservation is to be supported.

Limiting the growth of traffic volumes in urban areas by developing transport system planning and promoting the competitiveness of public transport, as well as pedestrian and cycling facilities, in accordance with the relevant national action programmes. Search for ways of making traffic quieter in built-up areas.

Compilation of measures related to noise from transport into thematic entities for which sufficient funding is provided.

Increased use of new, quiet road surface types especially on road sections where their use is appropriate and efficient.

Development of criteria for the acquisition and selection of quiet vehicles, equipment and other products.

Introduction and extension of the noise database.

Development of guidelines for vibration abatement.

Monitoring

- Number of people exposed to noise exceeding 55dB, number of people protected from noise.
- Areas exposed to noise from road, air and rail traffic referred to in the Directive relating to the Assessment and Management of Environmental Noise.

Research and development of competence

- Research on traffic noise; development of quiet vehicles, equipment and other products.

Roles and responsibilities of organizations within the administrative sector:

Specified in the organisations' environmental programmes and the Ministry's targets, e.g. annual performance targets.

Ministry

- Development and monitoring of noise and vibration abatement.
- Preparation of thematic entities for noise control in accordance with the proposals of the Finnish Road Administration and the Finnish Rail Administration.
- Development of a noise database, and direction of research on noise and vibration towards strategically important aspects.
- Participation in the development of international noise emission standards for vehicles.

Finnish Road Administration

- Cooperation with municipalities for the purpose of reducing the adverse effects of noise and vibration caused by road and street traffic (e.g. planning of new transport infrastructure, implementation of noise and vibration control measures). Preparation of proposals for thematic entities for noise control.
- Implementation of noise control measures on public highways and participation in planning and development activities in areas where traffic on public highways causes noise pollution.
- Promotion of development and introduction of quiet road surface types.
- Promotion of development of economical and aesthetic noise barriers.

Finnish Rail Administration

- Cooperation with the Finnish Railways (VR Ltd) and municipalities for the purpose of reducing the adverse effects of noise and vibration caused by rail transport (e.g. planning of new transport infrastructure, implementation of noise and vibration control measures). Preparation of proposals for thematic entities for noise control.
- Implementation of noise control measures in rail transport and participation in planning and development activities in areas where rail transport causes noise pollution.
- Rail grinding and research on the usability and noise-reducing capacity of noise dampeners fixed to the rails.
- Construction of noise barriers in cooperation with municipalities.

Finnish Civil Aviation Administration

- Cooperation with enterprises operating in the air transport sector, municipalities and regional councils, implementation of noise control measures in air transport and participation in planning and development activities in areas where air traffic causes noise pollution.

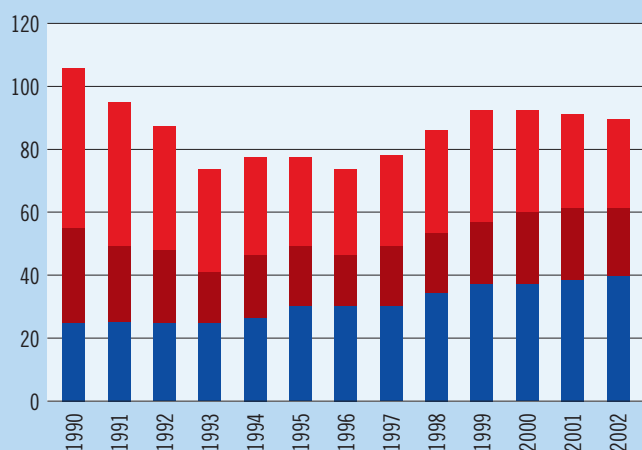
Finnish Vehicle Administration

- Participation in the development of noise emission standards for vehicles and monitoring of conformity to standards by means of roadworthiness tests.
- Influence on the withdrawal of the noisiest vehicles from the fleet by means of roadworthiness tests.

Above-mentioned organizations and enterprises operating in the sector

- Development of services related to solutions and plans for noise control (e.g. anticipation and consideration of noise in project planning).
- Consideration of noise characteristics in the selection of vehicles for road, rail, waterway and air transport.

4.5 More efficient use of materials and minimisation of waste



Aggregate use of gravel, sand and crushed rock in Finland 1990–2002 (million tons).
(Share of transport sector approx. 50%).

■ Raw gravel and sand
■ Processed gravel and sand
■ Crushed rock

Key agreements, statutes and strategies:

Land Extraction Act (555/1981, 463/1997)

Water Act (264/1961, 88/2000) and Decree (282/1962)

Environmental Protection Act (86/2000) and Environmental Protection Decree (169/2000)

Waste Act (1072/1993) and Waste Decree (1390/1993), Waste Tax Act (495/1996)

Government Decree on Landfills (861/1997)

Government Decree on the Utilisation of Certain Waste Products in Land (under preparation)

Directive 2000/53/EC of the European Parliament and of the Council on End-of-Life Vehicles

Government Decree on End-of-Life Vehicles (581/2004, available in Finnish and Swedish), Government Decision on the Recovery and Disposal of Discarded Tyres (1246/1995)

Government Decree on Electric and Electronic Waste (852/2004)

The transport activities that consume the most natural resources and generate the most waste are the construction and maintenance of the transport infrastructure. The most widely used natural resources are soil and stone materials, and materials removed from use – such as surplus soil, anti-skid sand, removed pavement materials (e.g. asphalt) and crushed concrete structures. These activities also generate some wood and stump waste, scrap metal and other types of waste.

Some areas of Finland are even suffering from a shortage of the soil required in transport system construction, particularly of esker material (sand and gravel). Esker materials can be replaced with rock material for the most part, but their use is somewhat limited due to the costs, appropriateness and environmental impacts of their extraction. Therefore, in addition to more efficient use of materials, it will become necessary to find more and more materials that can substitute for natural ones in future construction projects. In road construction such substitute materials include surplus soil with a sufficiently high quality grade, pavement materials removed from use, and crushed concrete. Also, some other waste materials generated as industrial by-products (e.g., furnace slag and forest industry by-products) may be used as substitutes for natural materials in road construction. The use of substitute materials in the transport sector has been studied extensively, but their practical utilisation is currently restricted by administrative difficulties related to the present legislation, in addition to cost-effectiveness.

Transport infrastructure construction and maintenance are not the only activities to consume natural resources and to generate waste; the manufacturing, maintenance and decommissioning of the means of transport also do that. The manufacturing and decommissioning of the means of transport and their parts is the responsibility of their respective producers; the organisations in the Ministry administrative sector are only responsible for the maintenance of their own fleet. In practice, this means environmentally responsible operations in the handling of oils, batteries and other hazardous waste. In addition to the maintenance of the means of transport, the Ministry of Transport and Communications' administrative sector participates in the planning of legislation concerning the recycling of vehicles and their parts, maintains a register of the numbers of vehicles, and monitors and steers M.O.T inspection activities.

Goal

- Ecologically efficient use of materials during their life cycles.

Targets for 2010

- More efficient use of natural resources in land and water engineering. Prevention of waste and surplus soil generation.
- Increasing the share of the most common substitute materials suitable for infrastructure construction (e.g., surplus soil, crushed concrete, furnace slag and removed pavements).

Key measures

Legislation and permission procedures related to waste reclamation, to be clarified in cooperation with environmental administration. Effectiveness and development of means of financial steering to be assessed.

Establishment of guidelines on the use of materials for the administrative sector with procurement bodies, and application of the guidelines in practice.

Promotion of substitute materials in the administrative sector's order procedures.

Ensuring the availability of information concerning where and what kinds of substitute materials and structures have been used. Organising collection of data on the administrative sector's use of materials.

Monitoring

- Soil and rock material used and surplus soil for spoiling in relation to GNP.
- Utilised by-products and recycled materials.
- The share of recycled materials in all materials used.

Research and development of competence

- Participation in the INFRA 2010 Development Programme; emphasising the life-cycle perspective.
- Development of cooperation between bodies that are responsible for the use of materials and procurement, and environmentally responsible bodies.

Roles and responsibilities of organizations within the administrative sector:

Specified in the organisations' environmental programmes and the Ministry's targets, e.g. annual performance targets.

Ministry

- Development of legislation, administrative procedures and guidelines in cooperation with the environmental administration and other actors.
- Participation in research concerning the use of materials.

Transport infrastructure agencies

- Planning and procurement procedures supporting economical use of natural resources and appropriate waste disposal.
- Establishment of guidelines for waste reclamation.
- Participation in research on the subject. Acquiring sufficient data on the life-cycle impacts.

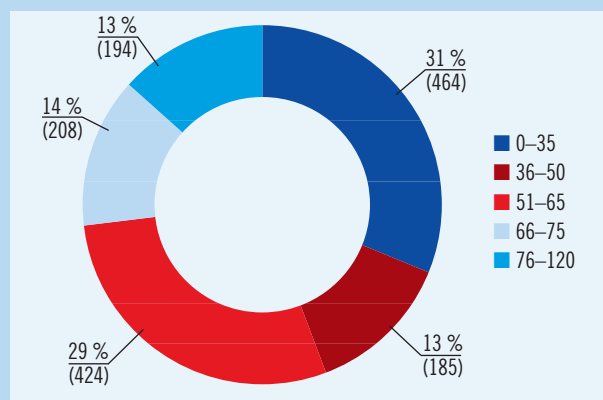
Finnish Vehicle Administration

- Collection of data on the scrapping of end-of-life vehicles and maintenance of a scrapping certificate system.

Enterprises operating in the sector

- An active role in aiming at reducing the use of natural resources and utilisation of by-products.
- Merchandising of reclamation of waste and by-products.
- Development of repair and maintenance operations towards an even more environmentally friendly dimension.
- Development and application of life-cycle assessment-based procurement criteria in fleet development and acquisitions.

4.6 Prevention of water and soil pollution



Number of Finnish water intake plants in risk point category 0–120 (total number of plants studied 1,475).

*) Sites with a risk number higher than 65 should take up further measures. More information on the risk rating system in the publication of Finland's Environmental Administration, Suomen ympäristö 361.

Key agreements, statutes and strategies:

Water Framework Directive with its daughter directives and application guidelines

Water Act (264/1961, 88/2000) and Water Decree (282/1962)

Act on the Organization of Water Management (1299/2004), available in Finnish and Swedish

Environmental Protection Act (86/2000) and Environmental Protection Decree (169/2000)

Chemicals Act (744/1989) and Chemicals Decree (675/1993)

Instruction of the Ministry of Trade and Industry concerning the Storage and Distribution of Liquefied Fuels

Provisions on the transport of dangerous goods

Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS-Convention)

Act on Combating Oil Pollution on Land (378/1974) and Government Decree on the Prevention of Oil Pollution Damage and Damage related to Chemicals Used in Vessels (636/1993, available in Finnish and Swedish)

Many environmentally hazardous substances are used for the maintenance of the transport infrastructure and means of transportation. In vulnerable areas these substances can accumulate in the soil or ground waters in hazardous amounts if they are used in large quantities.

Anti-skid agents are quantitatively used the most, especially salt. In 2003 the Finnish Road Administration's average salt consumption for the previous five years totalled 81,000 tons (in the peak years 1988–1990 the consumption was 130,000–140,000 tons). Salt is also used for springtime corrective maintenance of gravel roads (average for the past four years approximately 19,000 tons) and for dust binding (average for the past four years approximately 7,300 tons). A total of 3,000 tons of anti-skid agents was used in airports over the winter period 2003–2004, as was a total of approximately 3,600 m³ of de-icing agents for aircraft. The quantities of weed killers used in railroad traffic have been 0.4–8.4 tons per annum over the past few years.

The protection of water and soil is mainly a question of reconciling the interests of traffic safety and environmental objectives. Environmentally hazardous substances and materials can often be completely substituted with less hazardous ones or other methods without compromising traffic safety. For example, airports have substituted water eutrophication inducing urea with less hazardous acetates and formiates for skid prevention. Weed killers have been almost completely given up in road traffic – they are currently only used in paved areas if necessary – and sufficient visibility is ensured through mechanical clearing and mowing of roadsides. However, cost reasons are often an obstacle to the use of alternative agents and methods.

In addition to the use of weed killers and anti-skid agents, other environmentally hazardous substances can migrate to the soil and water during warehousing, transportation and the maintenance of vehicles, causing environmental damage. The transport sector also exerts an influence on its part on the eutrophication of water and the soil (nitrogen oxide emissions from traffic, waterway and railroad traffic waste waters). Transport sector water protection must also observe the challenges brought on by climate change in the future (e.g. the need for anti-skid measures will increase as temperatures revolve around zero degrees Celsius).

Goal

- Good condition of surface waters, good quality of ground waters, and clean soil.

Targets for 2010

- Minimisation of entry of agents and substances that are hazardous to the environment and to people's health into the soil and waterways.

Key measures

Avoidance of horizontal alignments in ground water areas when planning new routes.

Reduction in the use of chemical substances, particularly in sensitive areas (Class I and II ground water areas). Establishment of an operational policy for the use of chemicals.

Establishment of the use of a risk register on road salting and GIS systems (e.g. the POVET nationwide groundwater database).

Continuous research on alternative anti-skid agents and weed killers.

Continuing the building of road slope covers in locations classified as urgent. Particular attention must be paid to their quality and maintenance.

Identification of and minimising the risks related to soil and water protection caused by transport, use and warehousing of environmentally hazardous substances.

Reduction in nitrogen oxide traffic emissions in accordance with item 4.3 and vessel traffic lavatory water effluents in accordance with item 4.8.

Monitoring

- Use of anti-skid, de-icing and remover agents.
- Use of weed killers.
- Unprotected ground water areas where salt is used in large quantities, and the level of road slope covers.
- Nationwide chloride monitoring in ground water areas.
- Functionality of road slope covers.
- The total number of hazardous substance transportations and the number of accidents that have caused harm or danger to the environment or public health.

Research and development of competence

- Development of risk analysis.
- Research on alternative anti-skid agents.
- Research on alternative weed killers.

Roles and responsibilities of organizations within the administrative sector:

Specified in the organisations' environmental programmes and the Ministry's targets, e.g. annual performance targets.

Ministry

- Development of legislation and other guidelines in cooperation with the environmental administration and other actors.
- Development and follow-up on administrative sectors' operational policies and procedures.

Transport infrastructure agencies

- Prevention of water and soil pollution in strategies, guidelines and concrete actions (e.g., construction of road slope covers).
- Prevention and after-care of accidents and incidents.
- Guidelines and instructions for the use of chemicals.
- Development of procurement and acquisition practices to favour agents and substances that are less harmful to ground waters.
- Improvement of traffic safety, particularly on routes that are often used for the transportation of hazardous substances (e.g. elimination of railway level crossings).

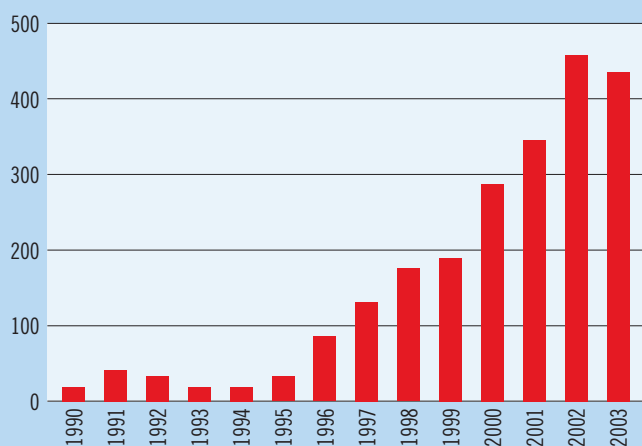
Finnish Meteorological Institute

- Improvement of weather forecasts that can support reductions in the use of chemical agents and prevention of accidents and incidents.

Above-mentioned organizations and enterprises operating in the sector

- Responsible actions for the prevention of water and soil pollution.
- Development of risk-reducing operational policies.

4.7 Investigation and processing of previously contaminated soil and sediments



Number of administrative decisions made for the remediation of polluted land areas in 1990–2003 *).

*) The share of fuel distribution or fuel station sites was 191 (44%) and the share of traffic, scrap yards and depots 44 (10%) in 2003.

Key agreements, statutes and strategies:

(86/2000) and Environmental Protection Decree (169/2000)

Waste Act (1072/1993) and Waste Decree (1390/1993) as amended, and other Decrees based on the Waste Act

Government Decree on the Assessment of Soil Pollution and Remediation Needs (to be issued in the spring of 2005)

Instructions for Dredging and Depositing Dredged Materials (2004)

Soil or sediment is considered contaminated if, as a consequence of human actions, substances that may endanger or harm public health or the environment reduce the amenity or utility value of the environment or otherwise infringe upon private or public interest, have accessed it. Soil can become contaminated if the propagation of harmful substances into the environment has not been specifically prevented. The seriousness of the contamination is influenced by the quantity and characteristics of the substance released into the soil, and the purpose of use and natural conditions of the contaminated area and its surrounding area.

There are sites (depots, bases, etc) that are controlled or owned by the transport sector whose soil has been contaminated as a consequence of the sector's own or another body's actions. The Finnish Road Administration and Finnish Rail Administration have investigated the numbers of such sites during the past years. The Road Administration has carried out environmental surveys on approximately 200 sites, of which 70 have been noted as being in need of soil remediation, and approximately 50 have already been remedied. The Rail Administration investigations have resulted in 100 suspect or actual soil or ground water contamination findings.

In addition to the aforementioned sites, contaminated areas are discovered when implementing new transport infrastructure construction projects and improving the old transport infrastructure. Waterway infrastructure projects often uncover contaminated sediments. Tributyltin (TBT) is used as an antifouling agent in ship and boat bottom paints. Bacteria cause it to degrade quickly in water, but slowly in sediments. In the Baltic Sea conditions, TBT's half-life is several years. Comprehensive data on the impact of TBT in Finnish conditions is not currently available.

Key questions in the mapping and remediation of contaminated sites are related to resources and responsibilities. In order to focus activities as efficiently as possible, the present and future land use of the sites, the sensitivity of the environment and the stated contamination (risk analysis) must be observed. Furthermore, the coherence of the administrative procedures on the regional level should also be observed.

Goal

- Risks caused by contaminated sites are controlled so that they do not inflict danger or harm on people or the environment.

Targets for 2010

- Awareness of contaminated areas or sites owned or controlled by the administrative sector.
- Remediation of sites with considerable risk potential.

Key measures

Continuing investigations within the administrative sector on potentially contaminated sites or areas and draft remediation plans.

Establishment of a general operational model in cooperation with other bodies on the remediation of contaminated sites and areas, based on risk analysis and clarification of responsibility questions.

Observing groundwater condition and remediation when carrying out soil remediation measures.

Monitoring

- Number of investigated and contaminated sites.
- Number of remediated sites.

Research and development of competence

- Development of risk analysis in cooperation with the environmental administration.

Roles and responsibilities of organizations within the administrative sector:

Specified in the organisations' environmental programmes and the Ministry's targets, e.g. annual performance targets.

Ministry

- Establishment of a general operational model for contaminated sites in cooperation with the Ministry of the Environment, the Ministry of Justice, the Ministry of Finance, the Ministry of Defence and other relevant bodies.
- Mapping of resources required for the investigation and remediation of contaminated sites and areas.

Transport infrastructure agencies

- Investigation of contaminated sites, prioritising based on risk analysis, and remediation of the sites.
- Practical implementation of the joint operational model for contaminated sites.
- Promotion of the best available technologies in the remediation of contaminated sites.

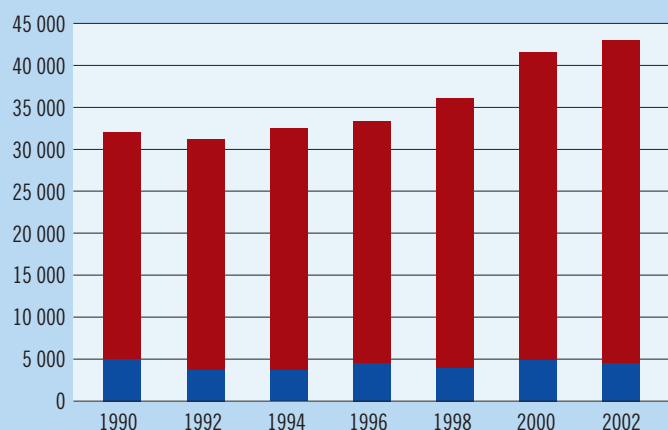
Finnish Institute of Marine Research

- An active role in research on harmful substances in the sediments of the Baltic Sea and dissemination of information to the relevant bodies (Finnish Maritime Administration, Ministry of Transport and Communications, etc.), cooperation and sharing of responsibilities with Finland's Environmental Administration.

Above-mentioned organizations and enterprises operating in the sector

- Responsible actions when handling contaminations.
- Active role in unexpected discoveries of contaminated sites.
- Utilisation of the best available technologies.

4.8 Protection of marine environment



Numbers of vessels arriving in Finnish ports and harbours 1990–2002.

■ Domestic

■ International

Key agreements, statutes and strategies:

Marpol Convention (1973/1978)

Helsinki Convention and HELCOM recommendations

EC regulations and directives

Act on the Prevention of Pollution from Ships (300/1979) and Decree on the Prevention of Pollution from Ships (635/1993) as amended

Government Resolution on the Protection of the Baltic Sea, the Programme for the Protection of the Baltic Sea with its Action Programme

Maritime transport is an important part of Finnish trade: the Finnish economy is heavily dependent on foreign trade, and the share of seafaring in all foreign trade transport is 80%. Seafaring is a favourable mode of transport for the environment, as transport of goods by sea can often provide energy savings compared with transporting the same amount of goods by land. Sea transport does, however, also have negative environmental impacts. The construction and maintenance of sea routes consumes natural resources, and generates waste and emissions. Dredging and other similar measures may influence the internal load of the Baltic Sea. Sea transport also has an influence on both the quality of the water and the species in the Baltic Sea. The sulphur and nitrogen emissions of sea transport are substantial compared with those of other modes of transport. Land transport also has an influence on the Baltic Sea (e.g. greenhouse gases and climate change, nitrogen oxide emissions and eutrophication).

The restrictions and responsibilities concerning maritime transport are mainly global, due to competition. International agreements regulate the contamination of the marine environment caused by, for example, oils and other hazardous substances, lavatory waters, solid waste and air polluting substances. National legislation mainly comprises enforcement of the international regulations. Finland is also implementing an extensive national-level research programme on the Baltic Sea, and has set up the Finnish Inventory Programme for Underwater Marine Environment (VELMU).

From the transport sector's perspective, the main environmental threats to the Baltic Sea region are related to the increase in the number of hazardous substance transportations (particularly oil), and on eutrophication, climate change and alien species. At the beginning of 2000 the International Maritime Organisation (IMO) agreed on various measures for an improvement in the safety of oil transport, such as speeding up the phasing-out of single-hull tankers for the transport of heavy oil grades, the mandatory ship reporting system GOFREP, and a traffic separation scheme. At the end of the 1990s The Helsinki Commission (HELCOM) agreed on regulations and recommendations in accordance with the Baltic Sea Strategy with the aim of reducing illegal oil discharges from vessels. At the beginning of 2000 an agreement on the improvement of winter navigation safety was made. Similar national-level examples include the establishment of the Finnish economic zone. In addition to the safety improvements for oil transport, further actions are required for the reduction of eutrophication and greenhouse gas emissions or discharges, and the combating of alien species in the Baltic Sea.

Goal

- Clean Baltic Sea.

Targets for 2010

- Minimising the environmental risks of hazardous substance transport, particularly oil transport.
- Reduction in vessel traffic emissions and discharges into the air and water.
- Preventing the spreading of alien species in the Baltic Sea through vessel traffic ballast waters via the available technologies.

Key measures

Monitoring the sufficiency of measures agreed within the contexts of IMO and HELCOM in the improvement of safety for oil transport and prevention of oil discharges. Make provisions for accidents through the improvement of oil-combating equipment.

Cooperation with other Baltic Sea States to confirm additional safety measures designated for the status of a particularly sensitive sea area (PSSA) on the level of the IMO.

Aiming to harmonise the no-special-fee-system in the Baltic Sea area according to HELCOM recommendations. Investigation of the possibilities of enforcing a ban on raw lavatory water discharges in the Baltic Sea area.

Cooperation with municipalities, the environmental administration and the marinas and harbours to bring reception systems for vessel waste and other similar mechanisms up to the appropriate level.

Monitoring

- Number of oil accidents and quantities of oil spills.
- Sea transport air emissions (LIPASTO, calculation system for traffic exhaust emissions and energy consumption in Finland).
- Number of alien species settled in the Baltic Sea.

Research and development of competence

- Research on alien species and their elimination.
- Research on wintertime vessel navigation safety.

Roles and responsibilities of organizations within the administrative sector:

Specified in the organisations' environmental programmes and the Ministry's targets, e.g. annual performance targets.

Ministry

- Active participation in international work for the promotion of environmental protection in seafaring on the Baltic Sea (IMO, HELCOM, EU).
- Allocation of resources for research on alien species and wintertime navigation safety.
- Cooperation with the environmental administration for the setting up of vessel waste reception systems, etc.

Finnish Maritime Administration

- Active participation in international work for the promotion of environmental protection in seafaring on the Baltic Sea (IMO, HELCOM, EU).
- Cooperation with municipalities, the environmental administration and harbours and marinas to bring reception systems for vessel waste and other similar mechanisms up to an appropriate level (e.g. systems for receiving and storing lavatory waters in guest harbours, collection equipment for volatile hydrocarbons in oil ports).
- Allocation of resources for research on alien species and wintertime navigation safety.

Finnish Institute of Marine Research

- Maintenance of a monitoring system in accordance with HELCOM guidelines (nutrients, salt and oxygen monitoring, hazardous substances, oil diluted in sea water, monitoring of phyto- and zooplankton and bottom dwellers).
- Research on the biomagnification and sedimentation of blue-green algae toxins.
- Research on the release of nutrients and metals in bottom sediments, and on the significance of released nutrients in the eutrophication of the Baltic Sea.
- Alien species research and monitoring of open sea changes.
- Ice, water level and wave service (improvement of navigation safety and prevention of accidents and oil spills).
- Maintenance of a Baltic Sea modelling system in case of oil accidents or spills (cooperation between FIMR, Finland's Environmental Administration and the Finnish Meteorological Institute). Establishment of a corresponding system for the Gulf of Bothnia, if necessary.

Above-mentioned organisations and enterprises operating in the sector

- Responsible actions in maritime transport-related environmental questions. The use of best possible technologies.

4.9 Preservation and promotion of biodiversity



Impacts of transport sector on biodiversity.

Key agreements, statutes and strategies:

Biodiversity Agreement

The EU's nature and bird directives

The EU's biodiversity strategy

*Government Decision on Biodiversity,
National Action Plan until 2005 and
the new Action Plan under preparation*

*Environmental Impact Assessment Procedure Act
(468/1994, amendment 267/1999) and
Environmental Impact Assessment Procedure Decree
(268/1999)*

*Nature Conservation Act (1096/1996) and
Nature Conservation Decree (160/1997)*

*Land Use and Building Act (132/1999) and
Land Use and Building Decree (895/1999)*

*Act on the Organization of Water Management
(1299/2004), available in Finnish and Swedish*

Transport affects biodiversity, or natural diversity, in many ways. Transport infrastructure construction destroys local habitats and fragments harmonious natural areas. Heavily trafficked routes can disturb sensitive animals and groups of species, and limit their occurrence. The risk of traffic-related deaths of animals increases with the growth of traffic volumes. Further negative biodiversity effects of traffic include the spreading of alien species, animal and plant diseases, and the impacts of air pollutants and climate change.

The traffic infrastructure also has positive impacts on natural diversity. According to the 2000 Red List of Finnish species of the Ministry of the Environment, 28% of species threatened with extinction occur primarily in traditional environments. As traditional agricultural biotopes occur less frequently, the importance of roadsides as an environment for species that require lots of light, and are adapted to mowing, grows. Hard shoulders of traffic routes, airports, etc., provide a sufficiently large replacement habitat for many threatened species of plants and insects.

The transport sector is associated with many shortcomings in the promotion of natural diversity. The administrative sector does not have a clear overall understanding of the matter's general social importance, or its own role in this picture. The administrative sector lacks both biological expertise in the field and information on the consequences of its activities on biodiversity. The objective concerning the promotion of biodiversity is also subject to financial framework conditions: basic scientific research required for the acquisition of information and technical solutions related to the improvement of existing transport infrastructure are often very costly.

Previously defined key measures are assessment of environmental impacts when implementing new projects, creation and maintenance of hard shoulders on traffic routes, and safeguarding animal migration routes through structural solutions. Attention should also be paid to the joint impacts of various measures (e.g. animal crossing bridges to safeguard both traffic safety and biodiversity) and links between biodiversity and climate change.

Goal

- Preservation and promotion of natural diversity.

Targets for 2010

- Awareness of the significance of own actions on natural diversity (threats and opportunities) within transport sector organisations.
- Promotion of preservation of natural diversity in the planning and implementation of transport infrastructure projects, and the maintenance and servicing of transport routes.

Key measures

The administrative sector will continue to acquire information related to natural diversity through co-financed research programmes and own research.

Observation of information on natural diversity in the construction of new transport infrastructure and in the improvements to and maintenance of the infrastructure. The administrative sector will create an operational policy for the preservation and protection of biologically valuable habitats in order to ensure the dissemination of information.

Measures directed to the areas in which it is possible to achieve the most impact (e.g. minimisation of fragmentation in transport infrastructure projects in cooperation with land use planning, establishment of natural diversity-promoting yard / greenery works maintenance and servicing practices).

Development of biodiversity impact monitoring of traffic and transport routes.

Monitoring

- Each transport infrastructure agency's area requirements for transport infrastructure (ha).
- Number of under and overpasses facilitating animal migration.
- Thematic and species-specific monitoring, which will be implemented as obligatory monitoring of projects.
- Priority monitoring (e.g. impact of fragmentation).
- Protected areas or sites near or in transport infrastructure areas.

Research and development of competence

- Transport sector's own biodiversity research needs (fragmentation impact, compensation question, adjustment to climate change).
- Resourcing of biological expertise.

Roles and responsibilities of organizations within the administrative sector:

Specified in the organisations' environmental programmes and the Ministry's targets, e.g. annual performance targets.

Ministry

- Participation in national biodiversity research.
- Development and monitoring of administrative sector's measures and activities.

Transport infrastructure agencies

- Participation in national biodiversity research.
- Development of own research activities.
- Application of information in practice (e.g. in the administrative sector's planning and procurement practices), development of monitoring.
- Investments in structural and functional solutions promoting diversity.

Finnish Institute of Marine Research

- Active role in Baltic Sea biodiversity research and in dissemination of information to relevant parties (Finnish Maritime Administration, the Ministry of Transport and Communications, others).

Above-mentioned organisations and enterprises operating in the sector

- Development of practices promoting natural diversity.

5 Impacts

The following reviews the effectiveness of resources on three levels:

- 1) continuation with present resources and development of practices,*
- 2) development of practices in cooperation with other actors and increased research and human resources in non-covered areas in accordance with the key development priorities of the environmental programme, and*
- 3) increased environmental investments. Of these, the second alternative is the most likely to be achieved through the environmental programme and the present financial framework. Alleviation and reduction of environmental damage requires investments, which must be individually and respectively decided upon as a part of operational and financial planning.*

1) Continuation with present resources and development of practices (0-option)

The present resources enable participation in international development work, development of legislation, and generation of environmental information and its communication to people working in the transport sector. Environmental issues can be better incorporated into the planning, preparation and steering mechanisms through the development of operational practices, which can also prevent environmental damage. Environmental impact assessment generates a wealth of information, particularly in project planning, and this information can be utilised in the prevention of damage.

2) Development practices in cooperation with other actors and increased research and human resources in non-covered areas in accordance with the key development priorities of the environmental programme (0+ -option)

Development of practices can promote the achievement of objectives, although it is not enough to reach the set objectives. A joint operation model for all actors, based on risk analysis and clarification of responsibility questions, is necessary for the remediation of previously contaminated soil and sediments in order to be able to implement further remediation prudently from the environmental and financial perspective. The development of operational practices in cases where environmental damage cannot be avoided at reasonable cost also requires further study and development of operational models (compensation procedures). The achievement of social effectiveness objectives for the administrative sector clearly requires further resources to understand the overall transport system and influence mobility-related questions.

Expertise in different aspects of environmental protection has been and will also in the future be a prerequisite for systematic environmental work. However, a clear shortcoming does exist. The administrative sector's organisations still do not possess sufficient expertise in biodiversity questions. The promotion of biodiversity is nevertheless the type of environmental question for which the dissemination of information to appropriate targets is crucial. It would be in the interests of the administrative sector to acquire such expertise for the joint use of the transport infrastructure agencies for example.

3) Increase environmental investments

Noise abatement, water pollution abatement, soil conservation and remediation of contaminated soil and sediments require targeted investments in order to achieve the objectives, and all of them concern impacts related to public health. As the administrative sector does not have up-to-date and comprehensive evaluations on the abatement costs of these damages, it is not possible to give an accurate estimate of these expenses here. The operational plans, together with their resource estimates, that will be formulated during the programming period are a key tool for the drafting of investment plans.

The need for financial resources required by environmental investments has only been evaluated in detail as concerns noise abatement. In conjunction with the drafting of the national noise abatement programme, the estimated need for further financing of the transport infrastructure agencies is approximately EUR 12–15 million annually (EUR 10 million for noise abatement measures on public roads, EUR 1.5–2 million for railroad noise abatement, and EUR 1–3 million for other noise abatement-related research and development). Additionally, the municipalities' road traffic noise abatement measures require a further EUR 15 million annually.

Table on the pages 34 and 35: Achievement of programme objectives through different options.

Area	Objectives	0-option	0+ -option	Investment option
Reduction of GHG emissions and adaptation to climate change	<p>Activities of the Ministry of Transport and Communications' administrative sector support the implementation and the development of national and international climate policy. Total GHG emissions of traffic not to exceed the level of 1990. Awareness of the administrative sector of the actions required for adaptation to climate change and their implementation.</p>	<p>Awareness of administration and consumers of the development in vehicle fuel consumption. Incorporation of energy efficiency into procurement agreements. Active involvement of the Ministry in the development of steering measures for the reduction of emissions. Curbing of traffic growth in cities' and their sub-regions' traffic system planning. Climate research produces relevant information for users. Critical points in terms of adaptation are identified.</p>	<p>Energy consumption per transported unit can be reduced through efficient energy saving measures and the utilisation of telematics. Financial steering enables the reduction of average fuel consumption of new vehicles to the European average. Market share of public and pedestrian and bicycle traffic will not continue to decrease at its present rate. The growth in car traffic can be kept lower than the growth of GNP with better land use planning in cities and their sub-regions and through financial steering.</p>	<p>Compared with the 0+ -option, the change in energy consumption is more distinct as a result of the municipalities' measures aiming at increased energy efficiency, which is partly due to closer cooperation between the municipalities and the State. Energy consumption per transported unit decreases as a result of the activities of transport users. Market share of public and pedestrian and bicycle transport in Helsinki Metropolitan Area (HMA) is retained. The growth of vehicle traffic is lower than that of GNP.</p>
Reduction of emissions that impair air quality	<p>Total NO_x and VOC emissions from road, air and railroad traffic reduced to approximately 75% of the 1990 level by 2010. Particulate emissions from road traffic reduced to minimise damage to health (reduction at least 40% from present state).</p>	<p>Ability to achieve reduction in NO_x and VOC emissions. NO_x emissions of heavy vehicles can, however, become larger than anticipated. Increased awareness of traffic particulate emissions. Number of premature deaths caused by particulate emissions and level of traffic-related respiratory diseases remains more or less at present level.</p>	<p>No difference to 0-option.</p>	<p>Financial steering speeds up the utilisation of low-emission vehicles and other advanced technologies. Investments in public, pedestrian and bicycle transport higher than at present. This opens the window for greater emission reductions than in the other option.</p>
Noise and vibration abatement	<p>Prevent creation of new noise problems and reduce exposure to environment noise. Achievement of approx. 30% of the quantitative objectives set for 2020 by 2010, i.e., approx. 60,000 less people are exposed to traffic noise exceeding 55dB than in 2003. Outdoor noise levels caused by traffic are reduced in residential areas with the aim of a maximum of 55dB average noise level in the daytime. Support the preservation of different kinds of silent areas. Awareness of vibration damage and ability to measure them. Agree on joint operational policies for the reduction of vibration damage.</p>	<p>Noise and vibration abatement of administrative sector continued with present resources, approx. EUR 5 million annual input. New street and road traffic noise areas are created, especially in the vicinity of large built-up areas. The number of people living in such areas will increase (presently approx. 0.9 million people, approx. 1.0 million people in 2010). The interim objective set for 2010 will not be met. Outdoor noise levels can only be slightly reduced in existing noise areas to less than 55dB. Mapping of silent areas progresses slowly. Identification of harm and damage caused by vibration. Prerequisites for establishing a limit or base value exist.</p>	<p>Creation of new noise damage is prevented through more efficient matching of land use planning and transport infrastructure planning. Financing for the Helsinki Metropolitan Area (HMA) railroad traffic noise abatement programme will be secured after 2006 and noise abatement measures in accordance with HMA traffic system planning are implemented. The number of people exposed to traffic noise is only slightly reduced compared with 0-option.</p>	<p>National noise abatement programme is implemented. The number of people presently living in noisy areas will be reduced by 30% by 2010. Steps for the better will also be taken in other objective areas. Planning and traffic system development will help prevent the creation of new noise areas. Noise abatement measures will be used to protect areas suffering the most. Mapping of silent areas will progress in cooperation with other partners in order to enable the areas' protection. Comprehensive noise abatement data system will be created under the direction of the environmental administration.</p>

Area	Objectives	0-option	0+ -option	Investment option
More efficient use of materials and minimisation of waste	<p>Transport sector's use of natural resources in land and water construction made more efficient.</p> <p>Prevention of surplus soil and waste generation.</p> <p>Increase the share of the most common substitute materials suitable for infrastructure construction.</p>	<p>Increased awareness of environmental impacts of the use of materials.</p> <p>Increased ecological efficiency of the use of materials.</p>	<p>Administrative questions related to the use of materials are no longer an obstacle to the use of environmentally safe solutions.</p> <p>Increased use of substitute materials.</p>	<p>Substitute materials are utilised efficiently.</p> <p>Quantities of generated surplus soil and waste minimised.</p>
Preventing water and soil pollution	<p>Minimising the access of substances hazardous to the environment and public health to the soil and waters.</p>	<p>Transport infrastructure agencies will start deploying a safe utilisation policy for harmful substances.</p>	<p>Awareness of risk areas and individual action plans drafted for the risk areas.</p>	<p>Contamination risk has been significantly reduced as a result of the development of operational policies and the protection or elimination of areas at risk.</p>
Investigation and processing of previously contaminated soil and sediments	<p>Awareness of contaminated sites under the ownership or management of the administrative sector.</p> <p>Remediation of sites that cause considerable risks.</p>	<p>Overall risks caused by contaminated sites in the administrative sector are recognised. Only the sites in the direct need will be remediated.</p>	<p>Awareness of risks caused by contaminated sites of the administrative sector; health risks are under control. Joint operational model developed with other administrative sectors.</p> <p>Comprehensive plan for the remediation of risk areas drafted.</p>	<p>Systematic remediation of contaminated soil and sediments is underway. People's health or nature is not risked.</p>
Protection of marine environment	<p>Minimising environmental risks caused by the transportation of hazardous substances, especially oil.</p> <p>Reducing vessel traffic emissions and discharges into the air and water.</p> <p>Preventing the spreading of alien species to the Baltic Sea in vessel traffic ballast waters according to technical possibilities.</p>	<p>Traffic monitoring reduces environmental risks and improves combating measures in accidents.</p> <p>Air emissions of vessels have reduced.</p>	<p>International cooperation has significantly reduced the environmental risks, developed new joint operational policies, and enforced monitoring. Reduced discharges into water through enforced monitoring.</p>	<p>Vessels are required to have equipment that promotes safety and reduces emissions and discharges.</p>
Preservation and promotion of natural diversity	<p>Awareness of the impacts of transport sector organisations' activities on natural biodiversity.</p> <p>Promotion of biodiversity preservation in transport infrastructure project planning, and maintenance and services of traffic routes.</p>	<p>Planning and implementation of new projects will observe natural diversity. Available scientific information will be utilised, but it will not necessarily be possible to apply the information in practice.</p>	<p>Necessary biological expertise is available to the administrative sector. Information on the impacts of all modes of transport is available and the information can be applied in the right phase of the planning process and maintenance and servicing of the infrastructure.</p>	<p>Natural diversity integrated into some of the administrative sector's activities. Resources for the promotion of diversity are safeguarded. Joint compensation policy agreed upon.</p>

6 Follow-up and development of environmental work

The principle of continuous development is an inherent part of environmental systems. It is necessary to develop activities to meet changes in the operational environment, the organisation structure, and the operational practices and policies in line with this principle. It is equally important to continuously gather information on the effects and impacts of the activities, to utilise the experiences gained through monitoring and follow-up, and to strengthen the system in order to eliminate observed shortcomings. The work is very closely linked with strategic management and the development of administrative sector monitoring.

The impacts of activities are monitored annually, both on the behalf of the Ministry of Transport and Communications and other organisations in the administrative sector. Information on the impacts of the activities on the environment, the opportunities to reduce harmful or damaging effects, and the effectiveness of the implemented activities is gathered. The accumulated information is used, in addition to the administrative sector's own needs, for environmental reporting on the initiative of other bodies (e.g. EEA's TERM reports and other international environmental monitoring, reports of Finland's Environmental Administration and Statistics Finland).

Collection of environmental information will receive better-defined instructions for the programming period, and information suppliers will be given more background on the information collected (what the information is needed for, by whom, etc). Collection of the information will be organised into the administrative sector's joint steering and monitoring procedures. Evaluation of the social effectiveness and environmental work will be implemented annually through reporting (data collection forms, databases, etc.) and indicators.

In accordance with the principle of continuous development, it is important to monitor and develop the functionality of the system. The strengths and weaknesses of the environmental work procedures can be identified through system monitoring, and the operations can be developed to become more effective. Management of the administrative sector will carry out mid-term and ex-post evaluations of the programme implementation and the developments. An external auditor evaluated the effectiveness of the administrative sector's environmental systems in the spring of 2004. Assessments and evaluations supporting the development of environmental systems will be implemented in the future as necessary.

The operational practices of the administrative sector organisations can also be developed through the deployment of environmental systems developed for offices and laboratories. Such systems can reduce the use of energy and materials, and the amount of generated waste. The systems would seem to be particularly useful for administrative sector research institutes with a significant number of laboratory or other similar operations.



Ministry of Transport and Communications

PO Box 31

FI-00023 Government

Finland

Tel. +358 9 16002

www.mintc.fi