FINNISH ROAD ADMINISTRATION

Finnish Road Administration Environmental Policy and Action Plan 2001-2005

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INTRODUCTION

An efficient and flexible transport system is essential for the economy and quality of life, but at the same time traffic constitutes a significant and growing threat to the environment and people's health. Integrating environmental policy and transport sector policies is an essential step towards a sustainable development. Reaching national and international environmental targets also presupposes a shift to transport modes better adapted to the environment.

The environmental policy is a management statement on environmental aspects. The 1996 policy has been revised to take account of our new organisation and process-based activity. The main policy aims are, however, unchanged.

The Road Administration Environmental Action Plan is based on the Ministry of Transport and Communications environmental policy and on the Guidelines for Road Management and Development 2015. The plan is a basis for programming. It will be further defined and implemented in the Road Administration product guidelines – for maintenance, investments and traffic management. The Road Administration Management group adopted the environmental policy and action plan on April 23, 2001.

During the past years, the Road Administration has been developing co-operation, dialogue and impact assessment and these will have an increasing role for the whole of the Administration's activities in the future. Objectivity, openness and transparency also serve developing sustainable road management.

Director General Eero Karjaluoto

1 ROAD ADMINISTRATION ENVIRONMENTAL POLICY

The Road Administration acts and develops its activities in accordance with the principles of sustainable development. The Administration is responsible for road management and its environmental impacts and for its share of the environmental impacts of road transport.

1
The Road Administration trains, guides and motivates its personnel to responsible action with regard to the environment, health, safety and economy. As employees we bear responsibility for implementing the environmental obligations and objectives in our own activity.

2
The Road Administration participates in transport system planning, in extensive co-operation with all those involved. We aim at a transport system which supports functional travel and transport chains and the development of a sustainable regional and community structure. In co-operation with regional and local authorities and inhabitants, we reduce the environmental damage caused by the present road network, road traffic and road keeping.

3
New and reconstructed roads are adapted to their surroundings and environment. The aim is a safe, functional and beautiful entity. A precondition for sustainable results is that the whole life cycle of the project or action is taken into account. In procurement of construction and maintenance we require that our suppliers provide reliable information on the environmental quality of their products and services.

4
The Road Administration supports transport intermodality. We manage road network use to reduce road traffic energy consumption and environmental damage.

5
We monitor and evaluate the implementation of our goals, our performance and its environmental impact. We report on the results to the public and the authorities. We ensure the participation of all those concerned in discussing our activities and projects. On the basis of the evaluation, we develop our activity continuously.

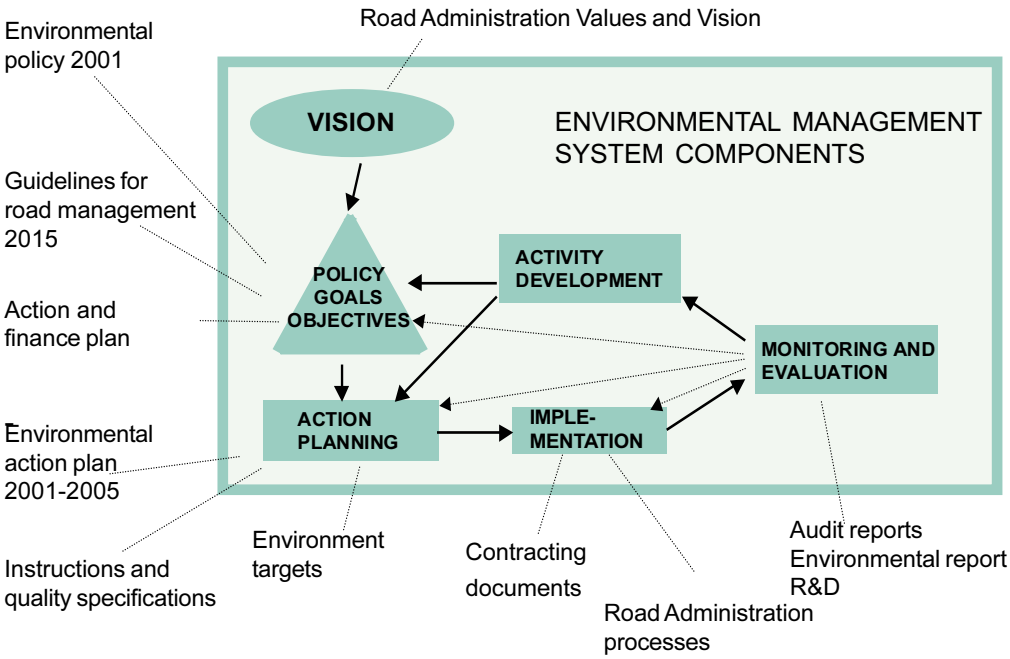
2 ENVIRONMENTAL ACTION PLAN 2001-2005

The Road Administration acts and develops its activities in accordance with the principles of sustainable development. The Administration is responsible for road management and its environmental impacts and for its share of the environmental impacts of road transport.

The Road Administration takes account of the environmental aspects in its activity and plans, policies and procurement. The Road Administration develops its environmental management system in co-operation with the other transport sector administrations.

Implementation of the environmental action plan is monitored systematically. At the end of the plan period, the environmental management system will be evaluated and the plan updated.

The Road Administration's Environmental Management System



ROAD ADMINISTRATION ENVIRONMENTAL DOCUMENTATION

The Road Administration's environmental system supports management. It serves implementing management environmental policy decisions, road management policies, the environmental action plan and targets. The system provides information in support of decision-making. It ensures systematic, long-range handling of the environmental aspects as well as continuous improvement. The environmental management system integrates environmental action in the Road Administration's activity.

2.1 Principles of Action

The Road Administration trains, guides and motivates its personnel to responsible action with regard to the environment, health, safety and economy. As employees we bear responsibility for implementing the environmental obligations and objectives in our own activity.

Road Administration senior management is responsible for implementing the environmental action plan and taking it into account in programming, target setting and resource use.

Road Administration process managers are responsible for implementing the plan in the processes. Input data, work directives, result indicators and reference documentation are developed further. Environmental and safety aspects are included in process audits, management reviews and operational unit self-evaluations.

Road Administration environmental co-ordinators provide environmental expertise and prepare environmental action.

The essential know-how of the Road Administration is supported by a wide range of employee professional skills and co-operation between the central administration and the regional administrations. Environmental skill development needs concern road management applications of landscaping, cultural heritage, aesthetics, biology, social and health impacts, environmental law and land use planning.

The Road Administration supports its employees in environmental skills development, arranges special regionally tailored environmental training and supports developing professional further education.

In Road Administration workplaces and buildings, attention is directed at
- telework and work travel planning development to reduce the risks, traffic mileage and energy use of trips to work and business travel,
- facility energy use and building energy saving agreements,
- computer and office machinery energy use, materials, recycling and paper use reduction,
- waste reduction, waste sorting and recycling.



2.2 Strategic Planning

The Road Administration participates in transport system planning, in extensive co-operation with all those involved. We aim at a transport system which supports functional travel and transport chains and the development of a sustainable regional and community structure. In co-operation with regional and local authorities and inhabitants, we reduce the environmental damage caused by the present road network, road traffic and road keeping.

The Road Administration researches means to limit road traffic greenhouse gas emissions and implements them in road management. The Road Administration participates in land use planning co-operation and negotiations and links its own planning to land use planning, within the framework set by national transport network goals. In co-operation with the regional environment centres, the Road Administration monitors local authority land use plan and permit decisions.

Transport system planning is primarily a regional council and local authority planning tool and is linked to the regional plans and local master plans. Collaboration will be further developed with transport operators, large employers and service institutions, as well as the users of different traffic modes, civic and community organisations.

One aim of municipality traffic safety and road network planning is a functional land use structure and an efficient use of the existing road network. Development focuses on pedestrian and bicycle traffic needs as well as an accessible travel environment.

The Road Administration, in co-operation with the towns and cities, studies urban region main road development needs and opportunities, especially in regard of walking, bicycling and public transport. The development aim is to create a high quality, safe urban environment and to reduce the nuisances caused by barrier effects, noise and exhaust emissions.

The Road Administration participates in regional scheme planning, regional development plans, environmental programs and environmental health programs. For projects and actions with a significant impact on urban and regional structure, the aim is to improve communication between the actors, especially at an early stage of planning.



The Road Administration evaluates the economic, ecological and social impacts of its long range plans, road management programs and policies as a part of the planning process. The impacts on regional and urban structure and land use are also assessed.

Environmental adaptation of existing roads

The Road Administration systematically improves the environment of existing roads, repairs environmental damage and prevents environmental risks. The state of the public roads' environment surveys are updated to support environmental improvement action programming.

The Road Administration reduces the risks of deicing salt use and traffic to groundwater quality by developing winter maintenance, regulating speeds, improving road safety and groundwater protection structures.

The Road Administration reviews its noise abatement strategy, especially to develop housing area noise abatement. Road traffic noise nuisance is reduced by technical means, speed regulation and noise barriers.

The Road Administration aim is to protect groundwater priority objects in the main by the year 2010 and also to remove the main noise disturbances caused by over 65 decibel noise levels by the year 2010 along existing roads. Separate programs or development projects will be introduced for some of the groundwater protection and noise abatement. Groundwater protection is, however, given priority.

- A priority groundwater protection object is on the part of the road network where salt is used for deicing (maintenance classes I and Is) and
    - the waterworks in the groundwater area show a contamination risk level exceeding 75 points in the risk survey and
        - groundwater salinity at the waterworks exceeds 25 mg/l or
        - salinity is obviously rising.
- A priority noise abatement project is a project which was placed in the priority class 1 in the regional road administration's survey. This is the case, if
    - there are some twenty inhabitants in a zone where the noise level from the public road exceeds 65 decibel (daytime outdoors equivalent level) or
    - there are noise sensitive activities in the over 65 decibel zone (for instance a school or day-care centre) and dozens of inhabitants in the 55-65 decibel zone.

The Road Administration implements projects improving environmental quality, traffic safety and quality of life in urban areas and road environment improvement projects in nature, heritage and landscape areas. Large urban area improvement projects are made together with the local authorities. In 2002-2005 an average of 9 urban area projects and 9 road environment improvement projects are implemented annually.

- Urban area improvement projects concern areas designated as most urgent in the urban area road survey, i.e. with both traffic safety and townscape problems.

- A precondition for nature, heritage and landscape projects is that they have been designed and are implemented together with other stakeholders. The project concerns also action outside the road reserve or brings a significant improvement to the environment bordering the road reserve.

The Road Administration builds over and under passages restoring nature area integrity and animal routes. The need for such passages is assessed especially on road stretches bordered by long, continuous elk fencing, but also at other locations important for biological diversity.

2.3 Procurement

New and reconstructed roads are adapted to their surroundings and environment. The aim is a safe, functional and beautiful entity. A precondition for sustainable results is that the whole life cycle of the project or action is taken into account. In procurement of construction and maintenance we require that our suppliers provide reliable information on the environmental quality of their products and services.

The Road Administration expects contractors to apply environmental management systems or include the environmental aspects in quality management systems or project quality plans. Project designers shall have appropriate environmental qualifications and those responsible for landscaping and greenery shall be sufficiently experienced in the field. The Road Administration participates in contractor audits, taking the environmental aspects into account.

The Road Administration supports the use of materials with lower environmental loads on its construction sites. In contractor selection based on overall economy, factors affecting point scores are if the company has verifiably joined the transport sector's energy saving scheme, the use of sulphur free diesel fuel and possibly the use of biodegradable hydraulic oils.

The Road Administration develops and updates contracting documents setting out the environmental recommendations, demands and specifications for the information and compliance of the contractors:

- the purchaser's demands in tendering,
- the quality plan adjustments at the contract stage,
- quality assurance and reporting.

The Road Administration maintains documentation on its directives, general and contract specific quality requirements and other essential sources on environmental information and objectives. It maintains a register of its environmental permits and gravel extraction permits, implements the monitoring specified in the permits and uses the result to develop the activity.

The Road Administration assesses the state and soil contamination of its properties and gravel pits. It restores gravel pits and implements cleaning operations at its facilities. The objects are surveyed in 2001-2002.

On its properties, the Road Administration takes action to reduce the present activities' risks to soil and water. Contractors renting properties are expected to act with care and to report any disturbances as well as respond to them.

The Road Administration follows development of better environmentally adapted fuels, chemicals and other materials and their suitability to road keeping. It requires the use of pavement and road marking materials that do not contain hydrocarbon based solvents.

The Road Administration adopts uniform compensation methodology for environmental disturbance and damage.

Planning and design

The Road Administration includes the essential environmental basic data, objectives and requirements and the scope and contents of preliminary impact assessment in tendering documents, based on the programs and procurement mandates defined in strategic planning. If project contents, costs or objectives change significantly, this is taken up with all stakeholders (strategic planning, regional environmental co-ordinator, design procurement, project management group).

A Road Administration environmental expert participates in the design or project management group of environmentally significant projects.

For the planning and design of new road projects, as well as improvement of the existing road network, the Road Administration sets the following targets:

- to ensure people's health, quality of life and well-being
  - by developing participation and interaction to support the community especially in urban projects,
  - by taking equal account of different population and road user groups' mobility needs and safety,
  - by improving the conditions for walking, cycling and public transport,
  - by including the action needed to mitigate damage caused by traffic noise and other traffic emissions in the solutions,

- to protect landscape and cultural heritage
  - by avoiding new road alignments near or in archeological remains, cultural heritage landscapes or valuable landscape areas,
  - by protecting area integrity and respecting the characteristics of local communities and valuable objects,
  - by protecting existing buildings and repairing damage caused by road-keeping,
  - by applying sustainable design principles in the design of the road environment and road structures,

- to take into account the diversity of nature and other nature values
  - by complying with the boundaries and recommendations of protection programs,
  - by avoiding road construction in unfragmented nature areas and by-passing or protecting biotopes with vulnerable or endangered species,



- by safeguarding wildlife corridors and areas important for animals and by designing appropriate over- and under-passages,
- by taking into account the impacts of road embankments and bridges on water body quality and by repairing objects that disturb water quality, water flora or fauna, or fish migration,
- by using natural materials and methods in road environment design and landscaping,

- to promote an economical use of natural resources
  - by saving non-renewable resources and using substitute materials,
  - by avoiding road construction in important groundwater areas.

Before decision-making, the Road Administration ensures that the solutions applied in a project are based on sufficient impact assessment, also taking account of sustainable use and life cycle aspects, and include environmental damage mitigation measures as appropriate.

The Road Administration develops methods to improve communication between design stages and to monitor the inclusion of environmental aspects in decisions.

Construction and maintenance

The Road Administration develops environmental requirements in construction and maintenance contracting. The requirements concern waste sorting, action to prevent soil contamination and water pollution, reducing disturbance caused by construction site transports and by-passes, work scheduling in nature areas and the immediate vicinity of housing, landscaping of spoil deposits and other areas, environmental permits and informing inhabitants and authorities of environmental disturbance.

If a need to deviate from the design or its requirements arises in project implementation, it is taken up with the design stakeholders.

The Road Administration increases the use of life cycle assessment in construction and maintenance materials and work methods selection. The assessment includes the environmental impacts and energy consumption of the materials and their transportation.

The Road Administration supports product and work method development by enlarging the producers' scope for offering alternative solutions improving natural resource saving and utilisation of recycled road materials and industry by-products.

The Road Administration strengthens the recovery of surplus materials, in cooperation with regional councils, local authorities, companies and land owners.

The Road Administration develops construction and maintenance environmental reporting. The contractors report on use of natural resources, by-product utilisation, asphalt recovery and waste amounts.

Day-to-day maintenance

The Road Administration develops day-to-day maintenance policies and quality requirements to reduce the groundwater damage caused by deicing and dust binding. Methods to be used are reducing salt use especially in groundwater areas, introducing alternative deicing technologies, speed limits, information and groundwater protection structures. The target is to reduce salt use for deicing in normal winter conditions to 80 000 tons per year.

The Road Administration develops summer maintenance contract requirements for waste management, greenery maintenance chemicals use and maintenance schedules. The Road Administration increases the opportunities for land owners, inhabitants and organisations to participate in greenery maintenance.

The Road Administration surveys greenery areas and defines their maintenance class. The survey also concerns biologically valuable road stretches, tree-lined avenues and individual trees. Maintenance plans are made for the road stretches. The use of natural maintenance methods is emphasised.

Gravel road dust binding and pavement spring cleaning is used to reduce dust loads on habitation and nature.

The Road Administration develops roadside waste management in co-operation with local authorities, waste operators and organisations. For rest areas, an appropriate waste service level for the road users is developed.

The Road Administration requires that ferry operation minimises the emissions and risks to the environment from fuels, lubricants, paints and servicing. The ferry quays' environmental standard and the state of furnishings is especially emphasised.

The Road Administration monitors groundwater quality and salt use in groundwater areas and maintains its part of the groundwater risk register data. Together with the regional environment centres, the Road Administration regularly reviews groundwater area risk classification and action recommendations.

The Road Administration develops day-to-day maintenance environmental reporting. Contractors report on chemicals used for deicing and dust binding, roadside waste amounts collected, road marking paints and bridge painting.



2.4 Road Network Management

The Road Administration supports transport intermodality. We manage road network use to reduce road traffic energy consumption and environmental damage.

The Road Administration collects road users' and others' opinions on road management and traffic. It participates in projects offering road users information about environmentally compatible and safe modes of action. The Road Administration develops public transport service in co-operation with local authorities and operators.

The Road Administration collects data on and informs about traffic flow, disturbances, road works, weather and road conditions, to support efficient and safe use of the road network and to influence road user route choice, traffic flow and thus also energy use, emissions and noise.

The Road Administration co-operates with the local authorities in action concerning air quality information and management of heavy transports and hazardous transports.

The Road Administration follows and participates in national and international projects developing measures to increase existing road network use efficiency and control traffic demand. Telematic technology is developed as an alternative to road improvement.

In its permit conditions, the Road Administration includes also environmental aspects, such as restoration after trench excavation, safeguarding groundwater protective structures and the environmental suitability of roadside furniture and appurtenances.

2.5 Development

We monitor and evaluate the implementation of our goals, our performance and its environmental impact. We report on the results to the public and the authorities. We ensure the participation of all those concerned in discussing our activities and projects. On the basis of the evaluation, we develop our activity continuously.

The Road Administration develops expert services for the whole road traffic system.

The aim of research and development is to anticipate the environmental challenges to the activity and the impacts of changes in the operating environment. The evaluation looks at alternative future development paths, using broad public discussion to assess their desirability.

The Road Administration monitors the environmental impacts of road management and road transport and participates in the monitoring of land use and the state and development of the environment.

The Road Administration develops geographical data analysis methodology and takes care of data quality control and database updating. It also procures data needed from outside sources.

The Road Administration develops quality requirements and planning and design guidelines and acquires the studies needed to assess the environmental impacts of quality levels and measures. It ensures the broad applicability of environmental guidelines and quality requirements. The main emphasis will, however, move from guidelines and normative designs towards development of major projects and performance criteria.

The Road Administration participates in national and international collaborative programs to improve the environmental impact of the transport system and the civil construction industry. It includes its own projects in the pilot cases of these programs.

The Road Administration supports product development with explicit quality and performance criteria and through experimentation.

The environmental focus of the Road Administration initiative system will be improved.

Research and development communication and utilisation of its results will be further developed at all Road Administration levels.

The Road Administration publishes its environmental reports and evaluations. It reviews the environmental aspects of its values, visions, policies and programs regularly together with its partners. The Road Administration ensures broad participation in discussing road management performance, programs and projects. Co-operation with civic organisations is improved.

3 TERMINOLOGY

Sustainable development means satisfying the basic needs of humanity in a manner that allows future generations to satisfy their needs. Ecologically sustainable development is compatible with nature, its functions and diversity, and with the supply of natural resources. Socially sustainable development allows people an increasing and stronger role in managing their own lives and is compatible with their culture and values. Economically sustainable development implies using less resources for production, improving the quality and durability of products and services.

An *environmental management system* is the part of the organisation's overall management system needed to implement environmental policy. It includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources.

An *environmental aspect* is an element of an organisation's activities, products or services that can interact with the environment and that can be influenced by the organisation.

Integration of environmental aspects implies taking account of the environmental aspects as part of operational goal setting, planning and decision-making. At policy level, an essential means to promote sustainable development is integration of environmental and sectoral policies.

Environmental impacts are direct and indirect effects on human health, well-being and quality of life, soil, water, air, climate, flora, fauna and natural diversity, urban structure, buildings, the landscape, townscape and the cultural heritage, natural resource use and the interaction between these factors.

The *Road Administration processes* are strategic planning, procurement, road network management, development and administration.

Contractors and suppliers are external companies providing consultation, construction and services.

4 MAKING THE ACTION PLAN

The Road Administration environmental policy and action plan is based on the 1996 Finnish Road Administration Environmental policy. This policy was implemented through the 1997-2000 action plan. The new action plan continues implementation. Meanwhile, many other policies and programs have been adopted and organisational reform has changed the basis for the policy. Process-based action has changed the character of goal setting. It was thus necessary to review also the environmental policy.

On January 1, 2001, the Finnish Road Administration and the Finnish Road Enterprise started as separate entities. The Road Administration is responsible for managing the public roads. It manages, keeps and develops the public roads and their traffic conditions, and road transport services as part of the transport system, in the whole country. Within road management it acts to support balanced regional development. In addition to the main road network, also lower class roads shall be maintained at an appropriate level to a sufficient extent. The Road Administration is responsible for its part of road transport system research, development and expertise. It acquires road keeping products and services from external contractors.

The Road Enterprise is a state owned corporation operating in the civil construction field. It primarily plans and designs transport routes and the traffic environment, builds and maintains them, and produces allied products and services. It is responsible for offering and developing services within its scope, in accordance with business requirements.

During the year 2000, road administration units and partners assessed implementation and impacts of the previous action plan and the expectations concerning the new plan. In March, the regional road administrations' and central administration units' views on how the 1997-2000 plan had been implemented were collected as a basis for plan preparation. In August and September, an evaluation of the impacts of the action plan was made together with our partners. During autumn, action plan drafts were discussed in the regional and central administration and a proposal for the 2001-2005 action plan was completed in December.

5 CONSULTATION AND REVISION

Statements on the proposal were called for in January 2001. In all, 26 statements were received. The regional road administrations included comments by the regional environment centres, regional councils, museums, nature protection districts and province administrations in their statements. In addition, the Ministry of Transport and Communications, the Ministry of the Environment, the Finnish Road Association, the Association of Finnish Local and Regional Authorities, the National Research and Development Centre for Welfare and Health, the Finnish Environment Institute, the Finnish Nature Protection Association, the Finnish Council for Natural Resources, the Confederation of Finnish Industry and Employers, the Sami Delegation, the Finnish Trucking Association, the Finnish Marine Administration and the Finnish Road Enterprise gave their statements.

The statements were generally positive. The action plan was held to be a many-sided, broad scope, transparent and well organised document covering the essential environmental aspects of road management. The environmental aspects have gained significantly in importance. The process focus was considered successful, as also co-operation in program preparation and impact assessment. It was hoped that the Road Administration would take active responsibility for providing and updating road transport system environmental data and also as a mediator in transport system planning.

But there was also criticism. The action plan was incomprehensible and diffuse, goals and means were sometimes confused. The links between the processes were not always clear. It was difficult to assess the actual role of the plan, how priorities were to be set and what resources there really are for implementation. A more active response to traffic development and to road users, better expertise especially in transport system planning and in relation to land use planning were called for. The statements took up the need for groundwater protection and noise abatement along existing roads. The Ministry of the Environment held that the most urgent environmental projects on the existing road network should be given first priority and other investment projects should not affect their implementation.

This action plan is one source for Road Administration activity programming and its concrete elaboration will be done by the central and regional administrations. It is a part of the Road Administration's environmental management system. Further specification and implementation takes place, for instance, in the Road Administration product guidelines – for maintenance, construction and traffic management. Other specification is included in Road Administration directives and performance criteria.

A number of environmental measures are included in the Transport and Communications Ministry action and finance plan for the period 2002-2005: noise abatement and groundwater protection program updating, environmental management system evaluation and contractors' environmental management system requirements. These are taken up in the Road Administration action plan. Environmental co-operation between transport administrations has been added.

The statements also led to some revisions and additions. These concern, for instance

- transport mode user participation in transport system planning,
- people's need for an accessible traffic environment,
- animal routes,
- cultural heritage aspects and archeological protection.

6 ACTION PLAN IMPACTS

The impacts of the 2001-2002 action plan have been assessed by Finnra experts, based on the results of the seminars and surveys and with reference to the impact assessment of the guidelines for road management and development 2015. A general assessment has been made by comparing the situation in 2005 with the present. Likely urban and regional structure changes and traffic development trends have been taken into account, as well as the impacts of this plan on them. Many programs and plans focus on the same goals, and the interaction of these plans must also be taken into account. The assessment of the 2015 guidelines concludes that groundwater damage and noise nuisance will be reduced. Impacts on greenhouse gas and other emissions will be minor. Vehicle fuel consumption reduction is a significant factor, but traffic increase will to a large extent obviate the savings achieved.

A shrinking road budget sets a boundary condition for public road environment improvement, limiting and delaying improvement action. At present, the aim has been to ensure groundwater protection measures, but at the same time noise abatement has been reduced. The Capital City Region noise abatement program has not been implemented as agreed with the Council. More economical solutions are sought for urban road improvement, but there are obviously no cheap techniques for comprehensive urban environment enhancement. The number of landscape, nature and heritage projects is also decreasing. It may prove difficult to find resources for animal passages and routes.

The smaller number of large road network improvement projects also means that the risks linked to such projects will be less. During the action plan period, some 4-5 large projects will be started. When such a project is delayed, there is time for additional studies and assessment as appropriate. But the speed and efficiency of actual implementation has increased, demanding better studies especially in the preliminary engineering stage. This improvement has been a goal of planning and design development, which we seem to have attained.

Maintenance savings have in part been directed at landscaping and greenery maintenance, turning major landscaping investments into indefinite shrubbery in a few years. It is to be hoped that this kind of waste can be avoided as greenery inventories and maintenance guidelines come into more extensive use.

The following table illustrates the action plan impacts:

SIGNIFICANT ASPECTS	CAPITAL CITY REGION	OTHER LARGE CITIES	URBAN AREAS	MAIN ROADS	OTHER ROADS
Environmental quality • people's well-being	Noise zone population keeps growing.	Some increase in noise zone population.	Safer and more comfortable urban areas.	More comfortable roads for users and neighbours.	Road alignments adapted to the landscape increase comfort and safety.
• nature and natural resources	More efficient transport land use; land area increase is slowed. Not clear if energy use increase can be limited.	A possible limitation of energy use increase.	Better focussed and possibly improved greenery maintenance.	Almost no increase of natu-ral resource and land use. Better animal connections. Still deficiencies in groundwater protection.	Important nature objects emphasised.
•· landscape and heritage • beauty	Still problems, but better design solutions.	Main roads better adapted to the landscape and more beautiful.	Better adapted urban road projects.	More beautiful main roads.	Better adaptation.
Traffic modes • pedestrian and bicycle traffic •· goods transport • passenger travel	Transport system planning supports pedestrian and bicycle traffic and public transport. This improves travel safety as a whole. Goods transport is served by new terminals. Deliveries can be improved through a more comprehensive approach and co-operation.		Pedestrian and bicycle traffic standards improve. Possibly better public transport.	Improvements in pedestrian and bicycle safety. No change in long distance transport. Better public transport.	Improvements in pedestrian and bicycle safety. Road network quality problems for goods transport continue.
Traffic safety	Traffic safety levels stay high.	Transport system planning can improve traffic safety.	Lower speed limits improves pedestrian and bicycle safety.	A safer road environment improves safety but increases land use and landscape impacts.	No significant change.
Socio-economic aspects	Investments in better quality may increase project cost levels. Comprehensive transport system development may reduce transport costs.		Better project economy.	Possible additional costs due to animal passages.	

The regional road administrations have assessed the need for and implementation of priority noise abatement and groundwater protection action. There are some 40 priority groundwater objects and some 50 noise abatement objects, at a total cost of 600 Million FIM (approx. 100 M euro). The Transport Ministry goal, to implement these measures by 2005, cannot be reached.

For this action plan, four alternatives for noise abatement and groundwater protection to the year 2010 were evaluated. In all alternatives, lower priority projects are also implemented, as part of other projects. The major part of the priority projects are separate projects. Separate projects are the ones that have noise abatement or groundwater protection as their main objective. Based on the statements and management consideration, it was decided to formulate a separate theme program for some of the priority groundwater protection objects, ensuring implementation of 10-15 projects, and an investment program proposal for part of the capital city region noise abatement objects can also be made.

Priority action and implementation

MEASURES	PRIORITY ACTION NEEDS	MEASURES 2001-2005
Noise abatement	42000 inhabitants, of these 30000 in the capital city region	possible investment program
Groundwater protection	145 km, of which 88 in Uusimaa and 34 in Vaasa region	20-30 km (theme program)

Investments in environmental damage prevention and mitigation is one indicator of Road Administration environmental action. Environmental investments cannot, however, be precisely delimited. For instance use of more durable materials and better work methods is an environmental investment, because it reduces service and repair needs – quality action and environmental action complement each other. The environmental action plan measures may to some extent increase road management costs. The main changes are due to improved groundwater protection, cleaning up polluted soil and landscaping gravel pits.

Average annual environmental investment 1997-2000 and an estimate of actions and costs per year for the action plan period 2001-2005

	Investment, Million FIM/year 1997-2000	2001-2005	Actions, coverage/year 2001-2005
Noise abatement	40	40	4-5000 inhabitants
Groundwater protection	30	40-50	15-20 km protected
Urban area roads, nature and heritage projects	10	10	20 projects
Property cleaning and gravel pit landscaping	1	3-5	5-10 projects
Planning and design	10	10-15	
Research and development	2.5	3	
TOTAL	93.5 *	106-123 **	

* approximately 15.7 M euro ** approximately 18 – 21 M euro

7 SENSITIVITY ANALYSIS

Strategic planning
Overall regional and community structure determines the sustainability criteria for the transport system. Road Administration action is closely linked to the plan system of the land use and building act, local authority and regional council action. The impacts of the new act on land use decisions cannot yet be defined. The aim is to develop better methods to manage traffic demand and traffic mode choice within the framework of the act.

During the past years, the Road Administration has been developing co-operation, dialogue and impact assessment and these will have an increasing role for the whole of the Administration's activities in the future. Objectivity, openness and transparency – these also serve developing sustainable road management. A risk factor, which should be kept in mind, is whether there will be sufficient personnel and sufficient skills for this development.

Procurement
The coming years will show how procurement develops in the interaction of the Road Administration and the contractors and suppliers. Better organised, more transparent and more efficient road management also implies that the process and impacts are better managed. On the other hand, personnel availability and knowhow for procurement and monitoring can be a risk factor. The Administration can loose contact with practice and there may be problems with the information exchange essential for development. At least in the beginning, there may be some surprises in contractor management system and quality plan implementation. Producer skills and environmental awareness is also at an early stage of development.

Road budget
A shrinking road budget is a serious threat to enhancing the public roads' environment, delaying and reducing improvement action. There is a risk that priority noise abatement and groundwater protection measures will not be implemented by the year 2010.

New challenges
If an effective international convention on implementing greenhouse gas emission reduction is adopted, the boundary conditions for the environmental action plan may change significantly. Another factor which may gain significantly greater emphasis is the protection of biological diversity.

The development of communication, transport and traffic modes can create new possibilities, but may also lead to new environmental problems. As yet, there is a wide variety of predictions for the impacts of teleworking or telematic management of road network use. The Road Administration, responsible for the infrastructure, will have to take careful account of the needs and impacts of these and other new activities.

8 MONITORING

The environmental action plan monitoring will build on existing procedures:

- annual result reports and discussions,
- Road Administration annual landscape and environment seminar review and discussion,
- annual environmental reports or an environmental segment of the annual report,
- action and finance plan preparation and monitoring and
- a broad discussion and revision in a couple of years.

In construction and maintenance, natural resource use, recycling and waste are monitored. Large investment projects are followed separately, based on contract stipulations, while other projects and activities are monitored on a statistical basis. Maintenance monitoring concerns sand and salt use and waste collection along roads. There is a need to develop planning and design monitoring and environmental impact monitoring further. Developing monitoring and reporting of the environmental impacts is included in this action plan.

The results of the monitoring are included in Road Administration activity indicators, environmental reports and the Ministry of Transport and Communication's environmental action plan indicators and transport sector administration monitoring. The Road Administration also provides data to Statistics Finland and to the environment administration. These, in their turn, include the data in their reports on the Finnish environment. Part of the data is based on environment surveys and updating, part on continuous registers. For groundwater, 50 quality surveillance points have been agreed nationwide and noise disturbance monitoring along public roads will be assisted by a national transport noise data base.

PUBLICATIONS

Finnish Road Administration (Finnra) publications are mainly in Finnish. Annually, an environmental report is published. The first was the report for 1995, published as Finnra report 43/1996. The report for the year 2000 focuses on the environmental action plan. An overview of the 1996 environmental policy and 1997-2000 action plan was published in English in 1996 ("Moving towards sustainability", TIEL 8000122E) and the brochure "Roads and the environment" (TIEL 8000123E) in 1997.

The environmental action plan publications are

- the assessment of the 1997-2000 plan implementation, "What has been done" (Finnra internal publications 13/2000),
- an evaluation of its impacts, "What happened" (internal publications 30/2000),
- the proposal for a new plan and its background studies, "What more should be done" (internal publications 39/2000) and
- the plan proposal review documentation, "Plan proposal statements and comments" (internal publications 13/2001).

Finnra's environmental publications are listed on www.tiehallinto.fi/ymparisto/y_julk.htm. Finnra publications in English are listed on www.tiehallinto.fi/kirjasto/ejulk.htm.

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