



Liikenne- ja  
viestintäministeriö

# Environmental Strategy for Transport 2013–2020

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## Preface

The Ministry of Transport and Communications has been working systematically on environmental issues for close on 20 years. The Ministry's first environmental programme was produced in 1994, the second in 1999 and the third in 2005. This *Environmental Strategy for Transport 2013–2020* is the Ministry of Transport and Communications' first environmental strategy at a broader level. It covers the years 2013–2020 and specifies the principal goals and policies of the work on environmental matters for all modes of transport.

Moving from 'conventional' environmental programmes to a broader environmental strategy is a consequence of the 2010 reorganisation of government agencies within the Ministry's administrative sector. In this reorganisation, the division of responsibilities between the Ministry and the agencies was altered. This made the transport system perspective no longer the sole concern of the Ministry but broadened it to become a key element of the work of the new agencies. Given these changes, the guidance provided by the Ministry also had to be raised to a more strategic level.

The Environmental Strategy for Transport has been prepared in close cooperation with the government agencies and public bodies within the Ministry's administrative sector and with other players in the transport and environment sectors. The first drafts were prepared by the environmental strategy working group set up by the Ministry of Transport and Communications. The working group included representatives from the different units of the Ministry's Transport Policy Department and from the Finnish Transport Agency, the Finnish Transport Safety Agency, Finavia Corporation and the Finnish Meteorological Institute. The working group convened a total of nine times in the period from autumn 2012 to spring 2013. The results of the working group's endeavours were discussed in January–February 2013 by the management boards within the Ministry's administrative sector. The draft strategy was considered by the Advisory Board on Environmental Issues in Transport in December 2012 and April 2013. The consultation round on the draft strategy was conducted in summer 2013.

The Environmental Strategy for Transport highlights four environmental problems in which transport plays a part and which are considered especially challenging. The selection of these was based on two criteria: the role of transport in the particular environmental problem, and the extent to which the environmental problem is worsening or improving. The issues selected are matters in which the role of transport is especially significant and in which the problem is becoming more serious.

Aviation has been included in the EU's CO<sub>2</sub> Emissions Trading Scheme since the start of 2012. As an exception to other modes of transport, the local environmental effects of airports and air traffic are dealt with on a case by case basis within the environmental permit process under the Environmental Protection Act. This therefore affects the way aviation is covered in the Environmental Strategy for Transport.

The Ministry of Transport and Communications' environmental policy is to be implemented as part of its long-term transport policy. The Environmental Strategy for Transport and the environmental programmes/systems of the organisations within the Ministry's administrative sector provide clarification of the details of the work and also act as an aid to understanding the bigger picture.

Helsinki, 5 December 2013

Merja Kyllönen  
Minister of Transport

Harri Pursiainen  
Permanent Secretary

# Environmental Strategy for Transport 2013–2020

The Environmental Strategy for Transport sets out the environmental policy and the principal environmental goals for Finland's transport sector for the years 2013–2020. The strategy also outlines at a general level the principal means by which it is possible to achieve the goals. The strategy will guide the planning of environmental work by the Ministry of Transport and Communications and the government agencies and public bodies within its administrative sector. It will also act as a basis for the environmental programmes of these organisations and consequently for planning the guidance concerning the Centres for Economic Development, Transport and the Environment. For other players in the transport and environment sectors (e.g. municipalities and companies), the Environmental Strategy for Transport represents a proposal for cooperation in environmental matters. Such cooperation will enable further improvements in the work of the Ministry and its administrative sector in environmental matters.

The key challenges concerning Finland's environmental policy for transport in the period 2013–2020 are: 1) mitigating climate change; 2) improving the living environment and reducing the detrimental health effects associated with transport (air quality, noise and groundwater issues); and 3) protecting the Baltic Sea. The work on environmental matters in transport will also support opportunities for green growth (4). If the goals and policies of the Environmental Strategy for Transport are to be successfully implemented, they will need to become an integral part of other areas of transport policy and urban planning.

## 1. Mitigating climate change

The goal is to reduce greenhouse gas emissions from domestic transport by 15% by 2020 from their 2005 level, in accordance with Finland's national and international commitments. In 2020, greenhouse gas emissions from domestic transport must be no more than about 11.2 million tonnes (currently approx. 13 million tonnes).

The emissions reduction measures will focus especially on road traffic, which offers the greatest potential for reducing emissions. The reduction goals for greenhouse gas emissions from international aviation and shipping will be outlined in the negotiations on a new global climate treaty, and the mechanisms for reducing emissions will be developed by the ICAO and the IMO. The EU's current emissions reduction systems (incl. aviation emissions trading) will be re-evaluated at the same time.

The goal for energy consumption in transport is to halt the growth in this consumption and to shift transport energy consumption onto a declining track before 2020. In 2020, final energy consumption by domestic transport must be no more than 48 TWh (currently approx. 50 TWh).

Halting the growth in energy consumption in the transport sector will require changes in modal splits, passenger car use, propulsion systems for transport, and vehicle technologies. Achievement of this goal will require support from

new economic tools such as road user charges or incentives to purchase low emissions technology.

Energy consumption and greenhouse gas emissions in road traffic will be reduced through influencing the need to travel, the choice of transport mode and the distance travelled. The measures to achieve this will include advances in transport and land use planning, and managing the demand for transport. The potential for influencing people's need to travel exists in larger urban areas in particular, as distances are often moderate even for walking and cycling, and public transport can be operated on a financially sound basis.

Greenhouse gas emissions from transport will also be reduced by renewing the stock of vehicles and other transport equipment, by increasing the use of sustainably produced biofuels and other alternative propulsion systems, by favouring lower emission vehicle technologies and by improving the energy efficiency of heavy goods vehicles. The measures for reducing greenhouse gas emissions and energy consumption in transport and the associated costs of these are specified in more detail in the updated Climate Policy Programme for the Ministry of Transport and Communications and its administrative sector (see next section).

## 2. Reducing transport-related health risks and improving the living environment: air quality, noise and groundwater issues

The goal is to reduce nitrogen oxide emissions from road traffic by 25% and particulate emissions by 20% by 2020 in comparison with 2011.

The goal is to achieve a significant improvement in air quality in urban areas as a result of decreased emissions, and a reduction in cases of premature death and illness arising from poor air quality.

Exhaust gas emissions from road traffic will be reduced mainly through the same measures used for reducing energy consumption and greenhouse gas emissions in transport. The principal measures include steps to influence the total amount of vehicle-kilometres driven and people's choice of transport mode, especially in larger urban areas, and renewal of the vehicle stock and promotion of the use of new propulsion systems and lower emission vehicle technologies.

The goal is to reduce the extent of exposure to traffic noise of over 55 dBA by approximately 20% by 2020 from the 2003 level. On the main road network this means that approximately 50,000 fewer residents would be exposed to such noise, and on the railways the figure would be approximately 10,000 fewer residents.

Exposure to noise from aviation and shipping will be reduced in cooperation with the affected areas as part of the environmental permit practices and land use planning projects for ports and airports.

A reduction in road traffic noise and noise exposure will be achieved through a wide range of measures. These include transport and land use planning, influencing modal splits, total

vehicle-kilometres driven and driving speeds in larger urban areas, and through various technical measures connected with vehicles and their components, low noise road surfaces and noise abatement. Where new routes are built, noise abatement will be part of the overall project implementation.

Noise exposure on existing main roads and railways will be reduced in accordance with the Finnish Transport Agency's Noise Abatement Action Plan. Within the budget spending limits for the Ministry and its administrative sector, the aim is to reserve for noise abatement at least EUR 1–3 million per year in 2013–2015, and at least EUR 3–6 million per year in 2016–2020; this means a total of at least EUR 18–39 million per year in the period 2013–2020. With these resources, the number of residents exposed to noise can be reduced by approximately 10,000 by 2020.

There will also be a change in emphasis in noise exposure reduction on existing routes, from noise abatement to reduction of noise emissions. Noise emissions can be reduced by, for instance, reducing speed limits on the inbound routes in built-up areas. The success of speed limits in cutting noise emissions will be tested in pilot projects in different areas. Speed limits on main roads through built-up areas will be reduced by 10–20 km/h at separately agreed locations where the current speed limit is more than 50 km/h. Provided that the experiences from the pilot projects are positive, this could be expanded at an appropriate level throughout the country.

By reducing speed limits it is possible to achieve a reduction in noise exposure of up to 30% at the affected locations at very low cost. In the Helsinki metropolitan area, for example, it is estimated that reducing speed limits on the inbound routes to the built-up area would cut the number of residents exposed to noise above 55 dBA by more than 77,000. A reduction in speed limits (120->100, 100->80, 80->60, 60->50) would also reduce greenhouse gas emissions from transport and exhaust gas emissions that are harmful to health, and would also improve road safety. Decisions about speed limits should, however, also take into consideration their impact on the costs of goods transport and other relevant social and economic issues.

The impact of cutting speed limits can be enhanced by increasing the use of low noise asphalt. The potential for such asphalt applies especially to roads where the speed limit is reduced from 60 km/h to 50 km/h. In addition, drivers will be encouraged to choose all weather tyres instead of studded tyres in order to reduce noise and particulate emissions whenever this is possible with regard to the operating conditions and road safety.

Rail traffic noise and noise exposure can be reduced not only by building noise barriers but also through other measures. These include rail grinding and ensuring the good condition of rolling stock. It should be noted that decisions regarding rolling stock are the concern of the rail operator. The Ministry and its administrative sector have only limited scope for influencing such decisions.

Air traffic noise at airports can be reduced through measures such as management of runway use, planning of take-off routes and landing procedures and setting restrictions on aircraft noise on particular routes. Noise can also be reduced through the fleet renewals of the airlines, though consideration of noise issues in these renewals is at the discretion of the companies concerned. In addition to noise levels, issues of airport noise must also take into consideration the operating conditions for air traffic, particularly at Helsinki airport.

Exposure to noise at ports can be reduced through noise dispersion modelling and the range of measures and licensing practices designed on the basis of this. Ships in port overnight could, for noise reasons, be relocated to moorings that are furthest from residential buildings. Vessel noise at ports can also be reduced by connecting the vessels to the power grid. As with rail and air traffic, in maritime traffic too it is the individual companies who make the investment decisions concerning their own vessels and equipment.

The goal is to ensure that by 2020 the quality of groundwater is good in areas where traffic routes traverse groundwater areas (see also aims of EU Water Framework Directive).

Groundwater protection takes into account the groundwater risks associated with transport infrastructure construction and management, and with the transport of hazardous substances.

Good quality groundwater will be ensured through good infrastructure design, groundwater risk management (e.g. groundwater quality monitoring, use of by-products and recycled materials, rail consignments, development of transport infrastructure management methods), use of alternative anti-skid substances, construction of groundwater protection and directing hazardous substance consignments to safer routes wherever possible. Achieving the goal will also require financial input of a similar magnitude to that for reducing noise exposure (within the budget spending limits for the Ministry and its administrative sector, at least EUR 1–3 million per year in 2013–2015 and at least EUR 3–6 million per year in 2016–2020, which means a total of at least EUR 18–39 million per year in the period 2013–2020). The measures are aimed at ensuring that the objective in the EU's Groundwater Directive is met by 2020.

### 3. Protecting the Baltic Sea

The goal is to minimise the environmental risks associated with transporting hazardous substances, especially oil.

Emissions to air and water from shipping will be reduced.

The spread of non-indigenous species in the Baltic Sea via vessel ballast water will be prevented through use of the available technical means.

More detailed measures concerning protection of the Baltic Sea will be presented in the Maritime Transport Strategy for Finland, which will be completed in spring 2014.

### 4. Environmental work to facilitate green growth

The goal is to ensure that the environmental policy for transport supports green growth opportunities in Finland and globally. The use of alternative fuels in transport will be promoted, and support will be provided for new innovations in procurement and services.

Green growth opportunities identified in the transport sector will be offered by low emission vehicle and fuel technologies, intelligent transport and new service innovations, among other things. With alternative propulsion systems and sustainably produced renewable fuels in transport, a new foundation can be created for sustainable growth and prosperity in Finland. In intelligent transport, the use, combination and processing of digital information will give rise to new service models, and this will, in turn, create new business. Examples of new service

innovations include various online route planners, car pool and car sharing services, and intercompatible public transport ticket products. The promotion of such services is a key element in Finland's Second Generation Intelligent Strategy for Transport.

New propulsion systems and vehicle technologies feature strongly in the Government Resolution on public sector cleantech procurement (6/2013). One of the objectives set out in the Government Resolution is that in 2015 the employer-provided vehicles, shared official vehicles and leased vehicles acquired by government organisations for ordinary use will have to be vehicles that produce an average of no more than 100 g/km carbon dioxide (CO<sub>2</sub>) emissions, or at least 30% of these vehicles will have to be vehicles with new propulsion systems (e.g. electricity, ethanol, gas or hybrid solutions).

According to the working group on future propulsion systems for transport set up by Minister of Transport Merja Kyllönen, alternative propulsion systems and sustainably produced renewable fuels in transport can create a foundation for sustainable growth and prosperity for society at large. The motives for such an ambitious road map for alternative fuels are not only the direct economic and social benefits derived from the reduction in emissions, but also the impact on the current account of the balance of payments, the opportunities for a green economy and the regional effects of decentralised fuel production. The working group issued its report (Ministry of Transport and Communications' publications 15/2013) in May 2013.

The working group proposes that under the targeted conditions for 2050, passenger car traffic, rail transport and boating would be almost completely independent of oil; liquid and gaseous biofuels would account for at least 70% of the fuels used in heavy goods transport; and electricity would account for a similar proportion of the fuels used in bus and delivery transport in urban areas. In aviation, biokerosine would replace 40% of the fuel needed, and in shipping, sustainable alternative fuels would have contributed to a 40–50% reduction in CO<sub>2</sub> emissions. Transport at airport and port terminals would be almost completely emission-free as early as 2030. Achieving these targets will require the right regulatory environment and an innovative approach.

Extensive use of alternative fuels will depend very much on the policies adopted by the EU. Finland must therefore actively exert its influence at EU level to enable implementation of the road map for new propulsion systems nationally on justifiable grounds. A robust EU vision will also further the achievement of action globally, especially for reducing emissions from aviation and shipping without weakening regional competitiveness. Steps must be taken in good time to ensure that cars and other means of transport are capable of using the best available fuels.

The market for environmentally favourable mobility is expected to grow by at least 30% by 2020 from its 2010 level (from EUR 200 billion to EUR 260 billion). This rate of growth will make a major contribution towards achievement of the environmental goals for the transport sector.

#### Other goals

The other environmental policy goals of the Ministry of Transport and Communications and the organisations within its administrative sector include water resources and soil conservation, the efficient use of natural resources and prevention of waste generation, promotion of biodiversity and the management and protection of the landscape and cultural environment. These other goals will be taken into account in the performance management, environmental programmes and practical activities (e.g. procurement) of the government agencies within the Ministry's administrative sector.

Climate change adaptation needs will be taken into account in the transport sector as part of other operations, especially planning, construction and maintenance and the contingency preparations for extreme circumstances.

## Environmental work in transport

Conventional environmental measures in the transport sector (catalytic converters, noise barriers, groundwater protection, etc.) will no longer be sufficient for meeting the environmental challenges of transport and responding to changes in the operating environment. Halting the growth in energy consumption in transport will require changes in modal splits, passenger car use, propulsion systems and vehicle technologies. This energy goal is unlikely to be met without new economic tools, such as road user charges or incentives for acquiring low emission technology. To implement the goals, these solutions must be decided as quickly as possible. This is being investigated by the Ollila working group, which will issue its report in December 2013.

Besides new economic tools, other new transport policy tools and intelligent transport services will also be needed if the ever more stringent environmental targets are to be met. Innovating, piloting and using such new tools will be essential for achieving the environmental goals for transport. The methods pursued must also be considered in wider terms, across ministerial borders, as the input of all stakeholders will be needed.

## Economic effects of the Environmental Strategy for Transport

The Environmental Strategy for Transport will be implemented within the framework of the Government's decisions on spending limits. The Government Programme of Prime Minister Jyrki Katainen nevertheless states that the public transport subsidy for major urban areas will be increased without compromising public transport acquisitions. This increase has not been taken into account in the current spending limits. Preparations are being made to produce the information needed for decision-making purposes.

Influencing modal splits and curbing traffic growth:

| <i>Principal measures</i>              | <i>Party responsible + participants</i>   | <i>Timetable</i> | <i>Environmental challenges targeted by the measures</i> |
|--|---|------------------|--|
| Coordination of transport and land use | ME and MTC<br>Finnish Transport Agency, Centres for Economic Development, Transport and the Environment, municipalities | 2013–2020        | Climate change<br>Air quality<br>Noise                   |
| Promotion of public transport          | Finnish Transport Agency<br>MTC, Centres for Economic Development, Transport and the Environment, municipalities        | 2013–2020        | Climate change<br>Air quality<br>Noise                   |
| Promotion of walking and cycling       | Finnish Transport Agency<br>MTC, Centres for Economic Development, Transport and the Environment, municipalities        | 2013–2020        | Climate change<br>Air quality<br>Noise                   |
| Mobility management                    | Finnish Transport Agency<br>MTC, Motiva, Centres for Economic Development, Transport and                                | 2013–2020        | Climate change<br>Air quality<br>Noise                   |

|  |  |           |   |
|--|--|-----------|---|
|  | the Environment, municipalities  |           |   |
| Transport pricing (taxation, subsidies, subsidies with an undesirable impact, road user charges)                 | MTC and MF<br>Finnish Transport Safety Agency, municipalities  | 2014 ->   | Climate change<br>Air quality<br>Noise                |
| Intelligent transport (traffic management and traffic control, information provision, incident management, etc.) | Finnish Transport Agency and Finnish Transport Safety Agency<br>MTC, Finnish Meteorological Institute, Centres for Economic Development, Transport and the Environment, municipalities | 2013–2020 | Climate change<br>Air quality<br>Noise                |
| Reduction of speed limits on inbound routes in built-up areas  | Finnish Transport Agency<br>Centres for Economic Development, Transport and the Environment, municipalities, MTC   | 2013–2014 | Noise<br>Climate change<br>Air quality<br>Groundwater |

*Improving energy efficiency and reducing energy consumption in transport:*

|   |   |           |  |
|---|---|-----------|--|
| Promotion of alternative propulsion systems (especially electricity) in transport | MEE and MTC<br>Finnish Transport Safety Agency, Finnish Transport Agency, ME, | 2013–2020 | Climate change<br>Air quality<br>Noise |
|---|---|-----------|--|

|  |  |           |  |
|--|--|-----------|--|
|  | municipalities   |           |  |
| Renewal of vehicle stock   | Finnish Transport Safety Agency and MF<br>MTC, Motiva  | 2013–2020 | Climate change<br>Air quality<br>Noise |
| Transport energy efficiency agreements                                     | Finnish Transport Safety Agency<br>MTC, MEE, Motiva  | 2013–2020 | Climate change<br>Air quality          |
| Dimensions and weight of heavy vehicles                                    | Finnish Transport Agency,<br>Centres for Economic Development,<br>Transport and the Environment<br>MTC   | 2013–2020 | Climate change                         |
| Taking account of energy efficiency in public sector transport procurement | MTC, Finnish Transport Safety Agency,<br>Motiva, Finnish Transport Agency, Centres for Economic Development,<br>Transport and the Environment,<br>municipalities | 2013–2020 | Climate change<br>Air quality          |
| Promotion of eco-driving   | Finnish Transport Safety Agency<br>MTC, Finnish Transport Agency, Motiva   | 2013–2020 | Climate change<br>Air quality<br>Noise |
| Promotion of public transport  | Finnish  | 2013–2020 | Climate change                         |

|                                  |  |           |  |
|----------------------------------|--|-----------|--|
|                                  | Transport Agency<br>MTC, Centres for Economic Development, Transport and the Environment, municipalities   |           | Air quality<br>Noise                   |
| Promotion of walking and cycling | Finnish Transport Agency<br>MTC, Centres for Economic Development, Transport and the Environment, municipalities   | 2013–2020 | Climate change<br>Air quality<br>Noise |
| Intelligent transport            | Finnish Transport Agency and Finnish Transport Safety Agency<br>MTC, Finnish Meteorological Institute, Centres for Economic Development, Transport and the Environment, municipalities | 2013–2020 | Climate change<br>Air quality<br>Noise |

*Substitution of fossil fuels with other alternatives:*

|  |   |           |  |
|--|---|-----------|--|
| Promotion of alternative propulsion systems in transport | MEE and MTC<br>Finnish Transport Safety Agency, Finnish Transport Agency, ME, | 2013–2020 | Climate change<br>Air quality<br>Noise |
|--|---|-----------|--|

|  |                |  |  |
|--|----------------|--|--|
|  | municipalities |  |  |
|--|----------------|--|--|

Other measures:

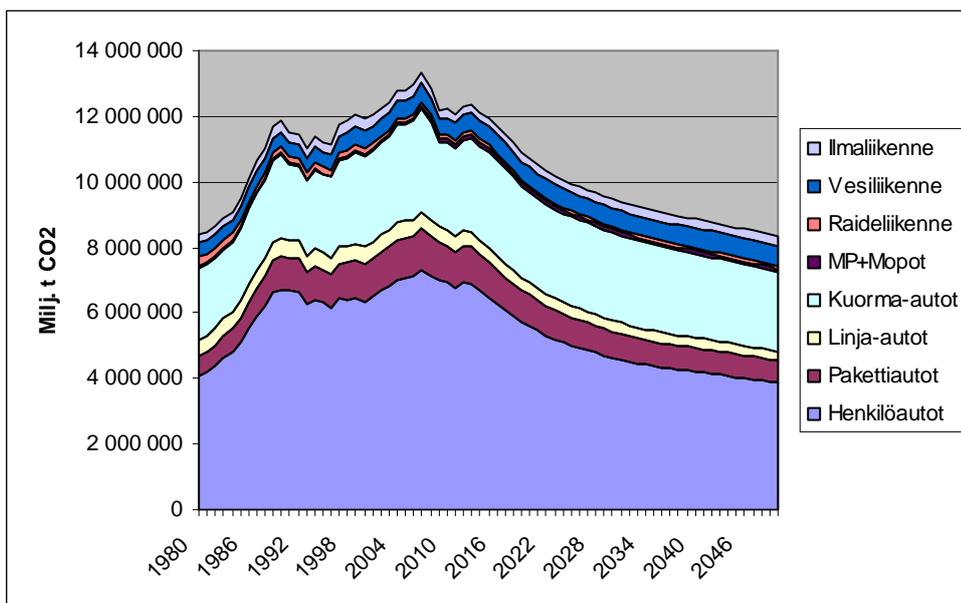
|   |  |           |             |
|---|--|-----------|-------------|
| Noise abatement   | Finnish Transport Agency<br>Centres for Economic Development, Transport and the Environment, MTC | 2013–2020 | Noise       |
| Groundwater risk management (groundwater monitoring and protection plans, location of activities, alternative anti-skid substances, groundwater protection) | Finnish Transport Agency<br>Centres for Economic Development, Transport and the Environment, MTC | 2013–2020 | Groundwater |
| Advice, marketing, campaigns  | Finnish Transport Agency and Finnish Transport Safety Agency<br>MTC                              | 2013–2020 | All themes  |
| International cooperation and exerting influence at EU level  | MTC<br>other ministries  | 2013–2020 | All themes  |

# Update of Ministry of Transport and Communications' Climate Policy Programme

The Climate Policy Programme for the Ministry of Transport and Communications and its administrative sector was completed in March 2009. The programme confirms the greenhouse gas emissions reduction targets for transport that were set in Finland's Climate and Energy Strategy 2008 and in the 2013 update to that strategy, and further specifies the measures, responsibilities and resources necessary to achieve it. The Climate Policy Programme covers only the emissions from domestic transport. Emissions from international transport are not yet included within the scope of international treaties and are therefore not within the scope of Finland's emissions reduction targets that obligate the non-emissions trading scheme sector.

The Climate Policy Programme contains six different measures: 1) renewal of the stock of passenger cars; 2) improving the energy efficiency of transport; 3) directing the growth in passenger traffic volumes in larger urban areas to more environmentally friendly transport modes; 4) using information society and communications policies to support achievement of Finland's climate goals; 5) deciding on possible new economic tools in 2012; and 6) adapting to climate change. The basic principle in the programme is that measures 1–4 will be implemented first, and then if it appears in 2012 that the emissions reduction targets or the targets for final energy consumption will not be reached, measure number 5 will be introduced. *In the Climate Policy Programme, transport pricing therefore acts as a kind of adjustment screw, though the decisions on it are transferred to the period after 2013, when the working group on fair and intelligent transport has completed its task.*

Implementation of the objectives of the Climate Policy Programme has been monitored annually (monitoring reports in the MTC publications series, nos 28/2010, 29/2011, 23/2012). In addition to the monitoring reports, the Ministry of Transport and Communications has commissioned a new baseline forecast of greenhouse gas emissions from transport (the 'ILARI forecast', see below). The forecast shows that the transport sector will probably achieve its emissions reduction targets for 2020, but not those for the longer term. Further challenges will be brought by the transport energy efficiency targets in 2020.



[Kuvan teksti:  
Mill. tonnes CO<sub>2</sub>

Air traffic Waterborne traffic Rail traffic M/cycles+mopeds HGVs Buses+coaches LGVs  
Cars]

Figure 1: Baseline forecast of greenhouse gas emissions from transport 1980–2050 (ILARI)

The updated Climate Policy Programme presented below is an integral component of the Environmental Strategy for Transport. With the exception of the strategic outlines given, it also serves as the administrative sector's action plan for mitigating climate change in 2013–2020. Any action plans for other environmental themes will be prepared by the government agencies within the Ministry's administrative sector.

Climate Policy Programme action 2013->

## 1. Promoting the use of alternative propulsion systems

Climate Policy Programme 2009 objective: The Climate Policy Programme does not set specific targets for the use of alternative propulsion systems. However, the Programme's baseline forecast assumes that biofuel use in transport will, from 2020 onwards, account for about 10% of all fuel used in transport, compared with 5.75% in 2010 based on the Act on the Promotion of the Use of Biofuels for Transport as it was then. However, in 2010 the objectives of the Act were amended. Under the amended Act, distributors are required, in the period 2011–2014, to supply 6% of the total energy content of transport fuels as biofuels for consumption. After this the distribution obligation rises at a steady rate annually and is 20% from 2020 onwards.

The ILARI baseline forecast of greenhouse gas emissions from transport, updated in 2011, assumed that first generation biofuels would account for 10% of transport fuels and that second generation biofuels (the so-called double counted biofuels) would account for 5%. In the ILARI forecast, biofuels would therefore replace about 15% of fossil fuels in road traffic. The forecast did not separately assess the proportions of electrically powered or hybrid vehicles. The calculation did, however, take account of average CO<sub>2</sub> emissions of new vehicles, the useful lifetime of vehicles and the annual kilometrage based on vehicle age.

Achieving the objective: The biofuel objective was achieved in 2009–2012 in the manner laid down in the Act on the Promotion of the Use of Biofuels for Transport. The continued achievement of the objective may, however, be affected by the EU's ILUC proposal. In October 2012, the European Commission issued a legislative proposal under which the proportion of first generation biofuels based on food crops would be restricted to 5%. Discussion of the proposal at the EU is still ongoing. In climate policy for the transport sector it would, however, be prudent to prepare for a restriction on the use of first generation biofuels and to aim to reduce emissions instead through the use of second generation biofuels.

It is also appropriate to take the desired trend into account in the longer term. The target set by the working group on future propulsion systems for transport was that the oil dependency of passenger car traffic would be broken by 2050. In other modes of transport too, the use of oil-based fossil fuels would be minimised. In addition to its impact on the climate, breaking the dependence on oil would also have a very considerable economic impact. In Finland, fuel accounts for approximately EUR 4 billion annually in the current account. For Europe as a whole, transport fuels represent an income transfer of over EUR 100 billion annually to oil-producing countries outside Europe. The use of biofuels produced from domestic raw materials and the use of electricity as a means of propulsion in transport would considerably improve Finland's current account and its competitiveness.

Policy 2013->: Passenger car traffic in 2050 will be almost completely emissions free. To achieve this objective, all new cars sold in 2030 will have to be able to use alternative fuels or propulsion systems. Liquid and gaseous biofuels will account for at least 70% of all fuels in heavy goods transport, and electricity will account for a similar proportion of the total in bus

and delivery transport in urban areas. In aviation, the aim is that biofuels will account for 40% of the total, and a similar reduction in greenhouse gas emissions will be sought in shipping.

The objective for 2020 is that sustainably produced biofuels will account for at least 20% of all transport fuel sold. No more than 5% of the total would be first generation biofuels, and no less than 7.5% would be double-counted second generation biofuels. In 2020, biofuels would thus replace about 12.5% of the fossil fuels used in road traffic.

In the transport sector close attention will be given to the trends in energy consumption in transport, because some of the emissions will be transferred to other sectors (e.g. electricity generation) as biofuels and electricity become more widely used in transport.

## 2. Lower emissions from renewed passenger car stock

Climate Policy Programme 2009 objective: The objective is that in 2020 specific emissions from new passenger cars sold in Finland will be close to the EU target (95 g/km; compared with about 163.5 g/km in 2008 and about 131 g/km in August 2013), and that the car stock will be renewed at an annual rate of about 7% (approx. 150,000 cars sold p.a.). The objective for the entire car stock is that in 2020 the average CO<sub>2</sub> emissions from passenger cars will be 137.9 g/km (about 180.1 g/km in 2008 and about 170 g/km in August 2013).

Achieving the objective: The average CO<sub>2</sub> emissions from new passenger cars fell by about 24% in the period 2007–2012, exactly in line with the objective set. However, the objective for the entire car stock is being achieved at a slower pace than expected. Significantly fewer new cars have been sold since 2009 than the target figure (150,000 cars p.a.), which means that the car stock is not being renewed at the desired rate and the switch to low emission cars is not occurring as quickly as expected. New technologies (propulsion using electricity, gas and E85) are not being taken up at the expected rate.

Policy 2013->: The objective (in addition to the 2009 objective) is that in 2020 50% of new cars sold will be able to use alternative fuels.

The information available to guide people in their choice of new cars will be updated and improved in the Ministry's administrative sector and measures will be introduced for accelerating the renewal of the car stock. New, technology-neutral incentives for adopting new low emission vehicle technology will be introduced. Measures will be taken in support of the recommendations of the working group on future propulsion systems for transport (MTC publications 15/2013).

Attention will also be given to the relationship between the declared emissions of new vehicles and their actual emissions.

## 3. Improvement in energy efficiency of transport

Climate Policy Programme 2009 objective: The objective is an energy saving of 9% in the operations of companies joining the energy efficiency agreements for goods transport and public transport, and an improvement in general energy efficiency throughout the transport sector, for instance through the use of intelligent transport services. The public transport energy efficiency agreements aim at a minimum coverage of 80% of all companies or vehicles in the sector (approx. 560 companies and 10,000 vehicles), and the goods transport agreements aim at 60% coverage (approx. 5,000 companies and 25,000 vehicles).

Achieving the objective: It currently appears that the objective concerning the energy efficiency agreements will not be achieved. About 800 companies have joined the goods transport agreement, and 12 companies have joined the public transport agreement. The

situation is better in regard to intelligent transport. The intelligent transport market and the associated products and services are at a stage of rapid growth and development, although there are still challenges to be resolved regarding the operating environment, operating models and new technologies.

Policy 2013->: The National Strategy for Intelligent Transport will be implemented effectively in the different modes of transport in order to improve the energy efficiency of the entire transport system.

The actions taken within the Ministry's administrative sector for promoting eco-driving will be developed further. The Ministry will participate actively in the development of a public sector energy efficiency advisory service (main responsibility with ME and MEE) and in implementing the Energy Efficiency Directive in the transport sector.

4. Directing the growth in passenger traffic volumes in larger urban areas to more environmentally friendly transport modes

Climate Policy Programme 2009 objective: The objective is that in 2020 there will be 100 million more journeys made by public transport and 300 million more on foot or by bicycle than at present, which means an increase of about 20% in the numbers of these journeys. The popularity of public transport, walking and cycling will be increased especially in the growing urban areas, which have the best operating conditions for public transport and moderate distances for walking and cycling.

Achieving the objective: It appears that the objective is being met for public transport but not for walking and cycling. The number of passengers on public transport has been rising in recent years (with the exception of 2009). In 2011, public transport passenger volumes grew in the Helsinki metropolitan area and in Tampere and Turku. Achievement of the objective (20% increase in public transport passenger numbers) would appear to be possible by 2020 or perhaps sooner. The situation regarding walking and cycling is less promising. According to a passenger transport survey completed in 2012, Finns are walking and cycling less than before. The decrease concerns all age groups, but most significant is the reduction in walking and cycling among the young and the old.

Policy 2013->: Expansion of public transport passenger volumes by developing information provision and through economic and regulatory controls will be continued. Public transport subsidies in major urban areas will be promoted in accordance with the Government Programme. Increases in other financial support for public transport must be separately agreed in the Government's budget negotiations, as this is not part of the current spending limits for the Ministry's administrative sector. Walking and cycling will be promoted in cooperation with the municipalities and in accordance with the National Strategy for Walking and Cycling and the associated action plan; walking and cycling will also be included as part of the letters of intent for land use, housing and transport (MAL). Special attention will be given to mobility management in order to ensure that the levels of service in transport are met.

5. Using information society and communications policies to support achievement of Finland's climate goals

Climate Policy Programme 2009 objective: The use of information society services will be systematically promoted within the Ministry and its administrative sector. Information society services will reduce emissions in business activities, administration and government, and in people's daily lives. Information society policy will pay considerable attention to the objectives of climate policy. The impact of communications technologies and of the spread of e-services on the level of emissions from transport in particular will be investigated in 2009–2011.

Achieving the objective: The emissions reduction study included in the programme was undertaken in 2010. The study information should be updated as the environmental effects of the ICT sector are growing rapidly. The other objectives set in the 2009 Climate Policy Programme are not specific in terms of ICT and have been promoted largely indirectly, for instance in the form of promoting broadband projects and e-invoicing.

Policy 2013->: Pilot projects will be introduced for developing methods for measuring the carbon footprint and energy consumption of the ICT sector and communications infrastructure in order to achieve the goals of the EU's digital agenda. The Ministry will prepare a plan based on the results assembled from the pilot projects, which could be used to set detailed emissions reduction targets. The impact of ICT on energy consumption will also be taken into account. Attention will be given to new market opportunities brought by renewable energy production, to developing and demonstrating intelligent energy networks and to market launches of new ICT-based energy efficiency products.

## 6. Decision on new economic tools for (road) traffic

Climate Policy Programme 2009 objective: If the climate objectives for the transport sector are not being achieved with measures 1–4, economic tools will be introduced to influence traffic volumes and modal splits. Such means include transport fuel taxes and road user charges. The decision on introducing any economic tools will be made no later than 2012. When making this decision, account shall also be taken of any new EU and/or global emissions reduction targets.

Achieving the objective: Road traffic taxation has in recent years been developed to a point where, alongside the fiscal aims, there are also environmental aims, especially reducing CO<sub>2</sub> emissions. Emission-based car and vehicle tax and fuel tax, together with the EU's binding CO<sub>2</sub> limit values concerning vehicle manufacturers, have proved to be effective means of guiding vehicle purchases made in Finland. Due to the nature of fixed taxes, the tax burden on those who drive a lot is lower in relation to total kilometres driven than it is for those who drive very little. The purchase of a vehicle and the annual taxes are not based on the level of usage, although they do steer purchasers towards low emission models.

People's transport choices are governed not just by taxes but by many other economic mechanisms. These do not necessarily take environmental effects into account in an optimal way. For example, Finland's tax deduction for commuting expenses is significant by international comparison. Assessments have indicated that in growing urban areas this has contributed to a decentralisation of the urban structure. Company cars, free parking for employees, and kilometre travel allowances can tempt people to use their cars even when the journey could be accomplished by public transport. The problem with the employer-subsidized commuter ticket scheme has been its relatively poor popularity. Many have found it difficult to see the benefit or have found the benefit to be minor compared with, for instance, a free parking space provided by the employer.

Policy 2013->: The working group on fair and intelligent transport will complete its task by the end of 2013. Decisions on economic tools, such as possible road user charges or incentives, will be needed after that.

The aim will be to revise taxation practices regarding employment and transport (e.g. parking benefit offered by employer, kilometre travel allowance, right to tax deduction for commuting expenses, employer-subsidized commuter ticket) to ensure that they support the climate policy goals for transport more effectively than at present.

## 7. Adapting to climate change

Climate Policy Programme 2009 objective: The objective is that climate change should not weaken the service level in transport and communications from its current position. To achieve the objective, the Ministry of Transport and Communications and the organisations within its administrative sector will update their guidelines concerning the construction, management and maintenance of infrastructure, and will prepare action plans for operating in exceptional circumstances and allocate resources to research on the issues. They will also monitor and utilise any new opportunities that climate change brings to the transport and communications sectors (e.g. the impact of longer snow-free periods on cycling, and the impact of shorter periods of ice cover on shipping).

The Ministry and its administrative sector still have insufficient information about adaptation, and so research must be carried out in order to rectify this. The results can then be applied to infrastructure management through guidance and new practices.

Policy 2013->: As for 2009.