Sustainable Transport Perspectives for Estonia

Key Findings

- The trend in Estonian transport and mobility has not been towards sustainability, primarily due to the rapid increase in private car use and road freight, urban sprawl, and a decreasing share of public transport and walking in daily mobility. Road transport has increased at the same pace as economic growth which puts Estonia as one of the most transport and energy intensive economies in the EU. For example Estonia uses twice as much transport fuel per unit of GDP than the average EU country.
- A quarter of Estonian final energy demand comes from the transport sector (of which 94 per cent is cars and trucks). The fastest growth in fuel consumption and GHG emissions was in 2004-2007. The possible EU 11 per cent GHG emissions "growth limit" up to 2020 has already been exceeded. The potential for efficient transport energy use has not yet been taken into account by national and local governments. Measures for directing planning and customer choice towards more fuel-efficient cars and towards sustainable transport modes are still missing.
- Newly registered cars in Estonia consume approximately 20 per cent more fuel than the average new car in the EU. The largest urban areas in Estonia - Harju and Tartu counties - are the leading regions for least fuel efficient cars. In Finland the average new car CO_2 emission is 155 g/km, but in Estonia the average is 170 g/km.
- Widespread transition to electric cars in Estonia would not result in a rapid decrease of GHG-s with the current energy mix. As long as most of Estonian electricity is produced from oil shale then electric cars using such energy source would produce significantly more GHG than the vehicles used in Estonia currently. Yet electric vehicles would be justified with direct green energy certification and in urban areas because of lower noise and air pollution.
- Three development scenarios for Estonian transport system were designed and analysed (BASE, TECHNO and EFFECT)
  - In the BASE scenario Estonia would continue with the same development trends as previous decade, but with slower increase in motorisation due to more modest economic growth forecasts. The main challenges would be: increase of transport energy demand and GHG emissions (36 per cent increase by 2020 compared to 2005 levels), increase of PM emissions, and increase of private car use.
  - The TECHNO-scenario analysed to what extent the 2020 goals could be achieved with solely technical measures, such as a shift to more fuel efficient vehicles, eco-driving and fulfilling biofuel targets. This policy path would put a lot of pressure on quick changes in the vehicle stock, including government incentives and disincentives.
  - The EFFECT-scenario focussed on a policy package that would influence mobility patterns and car use and would thus result in less transport energy use and improve other sustainable transport indicators. The 11 per cent GHG emissions "limit" would require in this scenario that ca 2 million (ca 20 per cent of forecast total mileage) vehicle kilometres should be shifted to sustainable transport modes.
  - Implementing TECHNO or EFFECT scenarios separately would not be feasible, as the first scenario requires implementation of strong regulative measures (high car taxation) and thesecond scenario requires very quick changes in urban and transport system planning. Estonian transport systems can become more sustainable only when both TECHNO and EFFECT scenarios are implemented together.

The aim of the report was to evaluate the Estonian transport system and mobility trends using sustainable transport indicators and to give recommendations for a more sustainable transport policy. The report focuses on several aspects where government can enhance transport energy efficiency and increase public transport use, encourage cycling and walking while tackling private car use.

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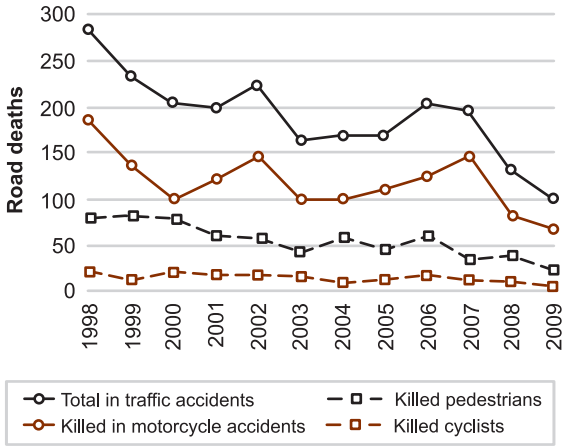
The business-as-usual or so called "BASE-scenario" and 13 sustainable transport indicators show that if current

trends continue, Estonian transport and mobility will fail to achieve sustainable goals. Current transport policy in Estonia lacks measures to achieve EU level commitments for improving transport energy efficiency and limiting greenhouse gas emissions by 2020. At the same time Estonian cities have large potential to increase transport energy efficiency due to diversified mobility and therefore can develop a more sustainable transport system.



Number of people killed in traffic accidents 1998-2009

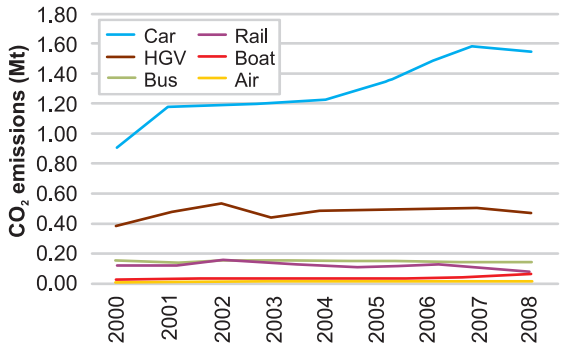
Source: Estonian Road Administration

Estonian traffic safety has significantly improved during the last three years. 196 people died in traffic accidents in Estonia in 2007 and already by 2009 this number had decreased to 100. In 2007 Estonia was ranked among the lowest countries in the EU by traffic safety indicators.

Transport scenarios

The report analysed three possible scenarios, which focused mainly on changes in peoples' mobility, road transport demand and transport greenhouse gases (GHG) up to 2020. The continuation of current trends is the BASE-scenario, which was compared to the TECHNO-scenario (fast improvement of vehicle fuel efficiency) and the EFFECT-scenario (modal shift scenario). The calculated "cap" for the GHG-s in 2020 was set to a maximum 11 per cent growth compared to 2005 levels based on the European Parliament decision to limit non-ETS sector GHG levels in the EU .

The BASE-scenario is drawn on the assumption that road transport in Estonia will continue to increase in the same way as the previous 10 years, being directly linked to economic growth rate. Several current road construction plans

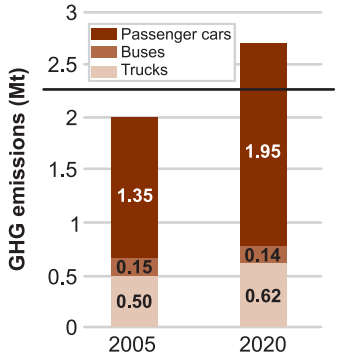


Transport CO_2 emissions 2000-2008 in Estonia (million tons)

are based on such outlooks and encourage such trends in Estonia. If such trends continue, the main problems remain: there will be increase in transport energy demand and GHG emissions, increase of PM emissions, and a further modal shift from rail to road and to private car use.

The BASE scenario GHG trends surpass the set 11 per cent limit by 0.484 million tons. In order to reduce this gap two policy pathways/scenarios were proposed.

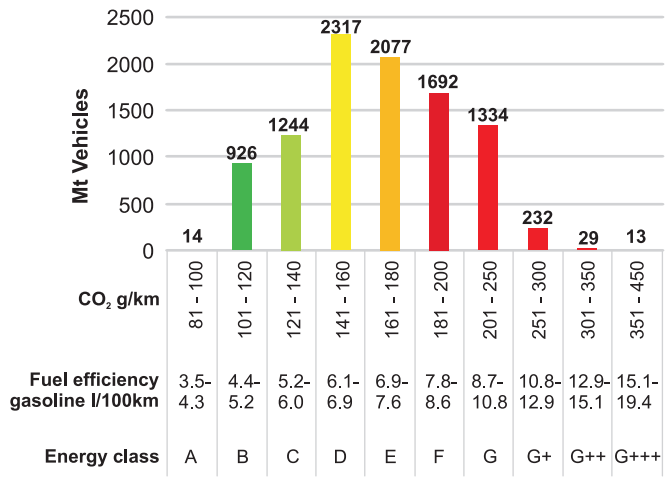
The TECHNO-scenario analysed how the efficiency of vehicles should increase in order to limit GHG emissions growth. This requires rapid replacement of the current car fleet with more fuel efficient ones, introducing eco-driving and increasing the share of renewable energy in the transport sector to 10 per cent. Compared to the BASE-scenario



BASE (BAU) scenario, road transport GHG, million-tons. Black line marks non-ETS sector GHG target for 2020 in Estonia: max 11 per cent growth

transport energy efficiency will improve, GHG emissions would decrease (-18 per cent) and PM emissions are reduced. This goal also requires strong implementation of CO_2 based vehicle taxes, incentives and other fiscal measures, which directly affect consumer choice. This scenario would also use regulatory measures, like limiting car parking options for cars with large fuel consumption.

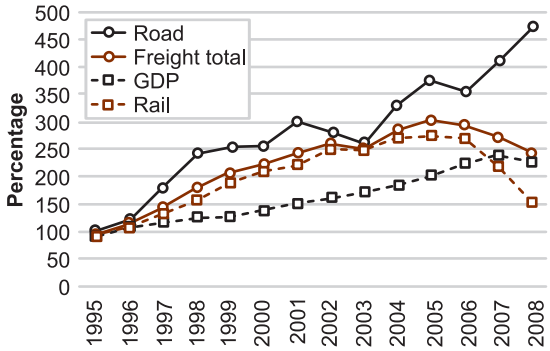
The EFFECT-scenario focused on influencing modal choices of people and the level of car use, which would result in slower increase in energy demand and improve the per-



Distribution of new passenger cars CO_2 emissions g/km; energy class in Estonia, 2009

Source: Estonian Road Administration 2010

formance of other sustainable transport indicators. The 11 per cent GHG emissions "cap" would require in this scenario that ca two million (ca 20 per cent of total mileage) vehicle kilometres should be shifted to sustainable transport modes. Compared to the BASE-scenario the following indicators would be affected: improved energy efficiency (ca 18 per cent saved), decreased PM and GHG emissions (ca 18 per cent less emissions) and an increase in the share of public transport, cycling and rail use. Traffic safety would improve more than in the BASE and TECHNO-scenarios as more investment is made to enhance pedestrian and cyclists's safety. The transport price index would also improve with the EFFECT-scenario – sustainable transport modes would become more competitive and the transport price would reflect more accurately environmental and health related impacts.

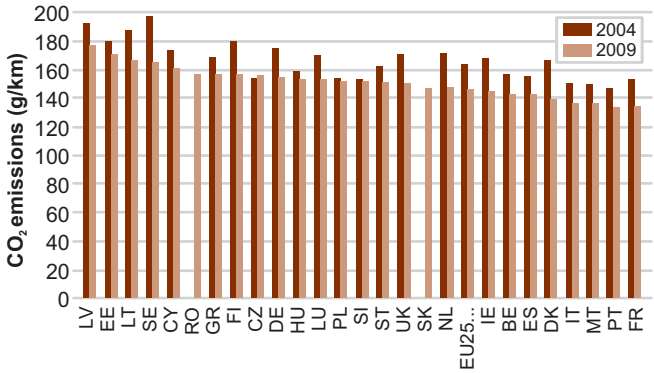


Freight turnover and GDP in Estonia 1995-2008, per cent

Implementing TECHNO or EFFECT scenarios separately would not be feasible, as the first scenario requires implementation of strong regulatory measures (high levels of car tax) and the second scenario requires significant changes in urban and transport system planning. *Estonian transport systems can become more sustainable only when both TECHNO and EFFECT scenarios are implemented together.* Before implementation social-economical analyses should consider alternative scenarios or current development possibilities.

Electric cars and oil shale electricity

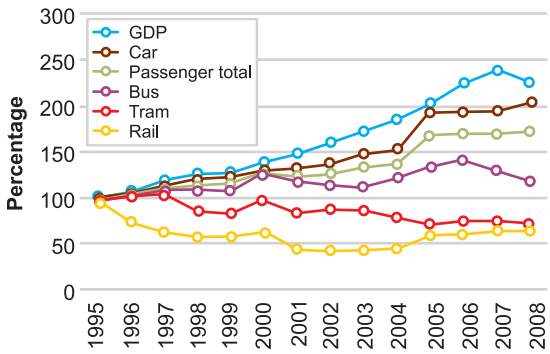
Average electric cars use 0.2 - 0.3 kWh electricity per km. If Estonian electricity production continues to be oil shale based, then shifting to electric cars would not be justified on CO_2 reduction grounds.



CO_2 from new cars in EU member states 2004-2009

Source: Eurostat

For example production of 1 kWh electricity in Estonia emits on average 1.18 kg CO_2 (EU average is 0.34 kg). New cars in Estonia have average CO_2 emissions of 170g/km. Electric car which uses electricity from oil shale, emit 250-300 g CO_2/km. This is two times more than the EU 2015 target for CO_2 emissions for cars. A move to electric vehicles as a potential method for mitigation of climate change impacts would only be justified when electricity in Estonia is produced from less CO_2-intensive energy sources than oil shale. However supporting the use of electric cars in urban areas is necessary considering their smaller external costs, like decreased noise levels and significantly reduced local air quality emissions.



Passenger turnover and GDP in Estonia 1995-2008, per cent

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Recommendations for a more sustainable transport system in Estonia:

- Land use planning for new housing developments (residential and office buildings) should target locations with existing public transport networks (areas near rail and public transport stops). This would help to improve the efficiency of existing public transport use and avoid automobile dependency.
- Fixed public sector budget resources should be allocated to public transport, cycling and pedestrian traffic measures to enhance competitiveness of sustainable transport modes and to decrease transport externalities. The next programming period for EU funds (2014-2020) should give a clear priority to public transport and integrated transport schemes. Currently earmarking 75 per cent of fuel excise duty revenues for state road building relegates public transport and integrated urban mobility solutions to a minor position.
- A four-stage evaluation process should be considered when resolving transport issues:
  - Is it possible to resolve the transport problem by influencing the demand for private car use and increasing the share of more efficient transport modes?
  - Is it possible to resolve the transport problem by better use of existing infrastructure and vehicles?
  - Is it possible to resolve the transport problem by minor improvements in existing infrastructure?
  - When the answers to the previous three questions are negative only then should construction of new infrastructure be considered as an alternative solution.
- In this type of decision making process traffic and transport problems are handled as a whole, not as aspects of road construction.
- Mobility management plans. Large companies, employers, public sector institutions and shopping centres should develop and implement mobility management plans which would favour sustainable transport choices for employees and customers. This would limit parking infrastructure costs and raise awareness about sustainable transport modes and about the environmental impacts of transport.
- Innovative solutions should be used to make transport mode changes smoother and to allow better connectivity between different transport modes (car sharing, bike sharing, bus-on-demand etc).
- Introducing energy labelling for cars, similar to domestic electric appliances, can be used to influence consumer choice towards more fuel efficient vehicles. Energy labelling should include internet car sales portals, which would allow customers to search easily for cars by fuel efficiency and energy classes.
- Financial measures to achieve sustainable transport:
  - public procurement conditions should clearly prioritise more fuel-efficient vehicles (national and local authorities can organise joint procurements);
  - CO_2 based registration tax or annual car tax;
  - regulative measures and national programs to encourage scrapping of high consumption vehicles and the purchase of more efficient vehicles;
  - limiting the use of inefficient vehicles in cities, by differentiating parking fees and introducing congestion charges

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This policy brief is based on the transport carbon audit of the Interreg IVC Power programme TraCit project and *Sustainable Transport Report 2010* commissioned by Sustainable Development Committee and the Estonian Government Office, compiled by the Stockholm Environment Institute-Tallinn centre together with experts from Tallinn University of Technology, University of Tartu, Tallinn University of Applied Sciences.

The full version of the report is available in Estonian:

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Published by:
Stockholm Environment Institute,
Tallinn Centre
Lai str 34,
10133, Tallinn, Estonia
Tel: +372 6 276 100

Authors: Mari Jüssi, Kaur Sarv
Further Information:
SEI Head of Communications
+46 8 6747070

sei-international.org
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