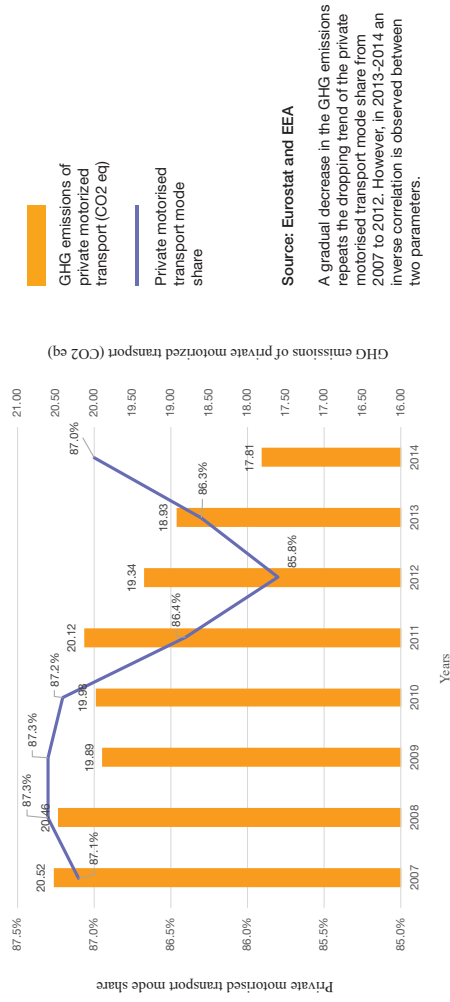


The use of private motorised transport and associated GHG emissions



Source: Eurostat and EEA

A gradual decrease in the GHG emissions repeats the dropping trend of the private motorised transport mode share from 2007 to 2012. However, in 2013-2014 an inverse correlation is observed between two parameters.

Mobility Management and Traffic Management in the Netherlands and Rijkswaterstaat

Mobility Management in the Netherlands

There is no dedicated Mobility Management framework in the Netherlands, but Mobility Management is promoted and encouraged as part of the wider national policies and strategies on infrastructure and spatial planning which is a remit of the Ministry of Infrastructure and Environment. RWS defines Mobility Management as a mechanism to organise Smart Mobility to utilise the total transport system optimally, influence transport demand, facilitate and influence travel demand with an aim to increase short-term flexibility in travel behaviour in terms of time, place and travel mode. RWS defines Traffic Management in a very similar manner.

Policy making for Mobility Management

On the national level, there is no dedicated Mobility Management policy as such. However, there is a national strategy document "Structural Vision Infrastructure and Spatial Development" by the Ministry of Infrastructure and Environment which outlines the nation's vision for 2040 and as part of this encourages modal shift, better land use planning and better use of the existing infrastructure. The regional and local authorities to some extent reflect these principles in their own plans and strategies that are mainly shaped around effective spatial planning.

NRA and Mobility Management

RWS is responsible for the design, construction and management of the main infrastructure facilities in the Netherlands which include the main road network and waterway systems. RWS is involved in ad hoc Mobility Management implementation which directly relates to its regular activities. When dealing with roadworks, RWS ensures that Mobility Management measures are considered where possible. RWS leads a number of Mobility Management projects as part of the national "Beter Benutten" ("Better Use") programme (2015-2017) aiming at the implementation of Mobility Management measures locally. RWS also started its own cycling awareness programme to stimulate cycling.

NRA and Traffic Management

RWS carries out Traffic Management on the main road network which involves working on daily traffic flow monitoring and improvement as well as on the innovation of Traffic Management and Smart Mobility. RWS is in charge of Traffic Management for both planned and unplanned road events. As part of this role, RWS does carry out some Mobility Management measures and do get involved in Mobility Management projects, for example as part of the "Beter Benutten" ("Better Use") programme aiming to change and improve local mobility patterns. Traffic Management and Mobility Management concepts are observed to be overlapping a lot and ultimately merging into one Smart Mobility concept.

Funding for Mobility Management and Sustainable Transport

At the national level, there is little structural investment in sustainable transport. Less than 2% of the overall national budget is spent on Mobility Management and behavioural change projects. The funds for Mobility Management measures usually come as part of dedicated Mobility Management projects and programmes. Some contributions come from local and regional authorities as well as European subsidies.

Good Practice

"Beter Benutten" ("Better use") is a dedicated programme encouraging collaboration for a better use of the existing infrastructure and focusing on local improvements.

The Smart Mobility toolkit is a set of Mobility Management measures used to influence travel behaviour. These measures encourage to consider and use alternative route, alternative travel mode, alternative travel time, alternative destination, no travel, and better communication.

Mobility Management

- Promoting modal shift
- Promoting ITS application
- Pricing instruments (financial incentives) ↑↑
- Non-financial incentives ↑↑
- Encouraging off-peak travel
- Stimulating smarter travel
- Promoting car sharing
- Cycle stimulating awareness programme
- Collaborating with local authorities, key employers and logistics companies ↑↑
- Temporary shuttle buses during road works ↓

The number of 'peak-hour avoidances' is the main indicator used for the evaluation of Mobility Management measures.

Measures

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Data collection and performance monitoring
- Special event management
- Incident management
- Traffic safety measures
- Ramp metering
- Rush hour lanes
- Network-wide traffic management
- Talking traffic (Roadside and In-car traffic information)

The effectiveness and cost efficiency of measures depends on locations and traffic situation.

KPIs used are delay time, travel time, section speed, congestion location, vehicle kilometres, queue length, waiting time, congestion time, congestion heaviness, capacity, headway, lane distribution and others.

Media and Communication

- Website
- Travel information apps
- Variable Message Signs

- Road side based communication
- Radio
- Mobile phone apps
- On-board units
- In-car communication

Challenges for Implementation

- Lack of funding at the local level
- Lack of expertise at the local level
- Political controversy over privacy issues
- Conflict of national and local priorities

- Lack of funding and time
- Conflict of interest
- Difficulties to define a strategy

Stakeholders

- Schools
- Businesses
- Public transport operators
- National authorities
- Local authorities
- Regional authorities
- Private partners

- Schools
- Businesses
- Public transport operators
- National authorities
- Local authorities
- Regional authorities
- Private partners

↑ = Effective, ↓ = Least cost efficient

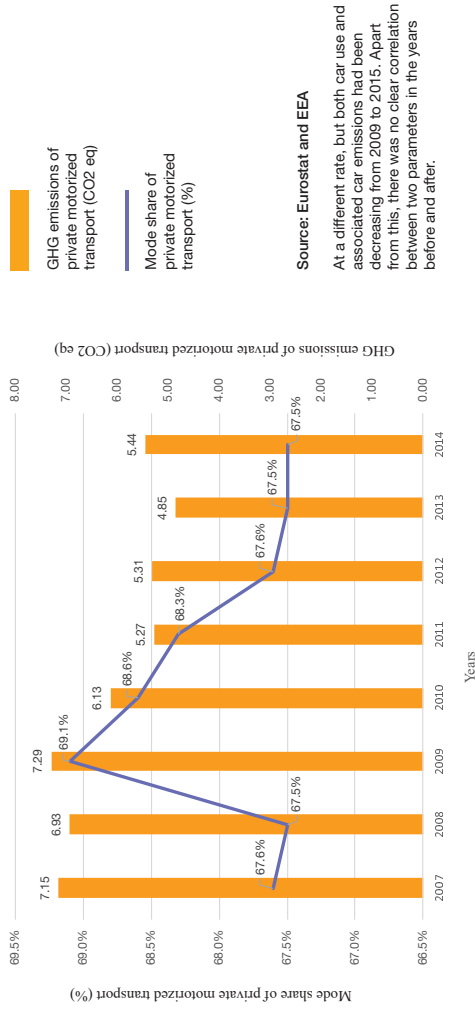
↑ = Effective, ↓ = Cost efficient

Country: Hungary



National Road Authority (NRA): Hungarian Public Road Nonprofit Company

The use of private motorised transport and associated GHG emissions



Source: Eurostat and EEA

At a different rate, but both car use and associated car emissions had been decreasing from 2009 to 2015. Apart from this, there was no clear correlation between two parameters in the years before and after.

Mobility Management and Traffic Management in Hungary and in Hungarian Road Non-Profit Company

Mobility Management in Hungary

In Hungary, a well-defined approach to Mobility Management is yet to be developed. Despite this, the industry experts are familiar with the Mobility Management concept and mainly associate it with such objectives as travel behaviour change and influence.

Policy making for Mobility Management

Mobility Management does not have a dedicated policy, but is partially covered by some national policies. For example, the National Transport Infrastructure Development Strategy touches on the sustainability issues and focuses on the reduction of emissions. On a local level, the Mobility Plan for Budapest represents an important milestone in Hungary's efforts to start building sustainable urban mobility planning practice.

NRA and Mobility Management

The Hungarian NRA is not involved in Mobility Management. Instead, the Hungarian Public Road Non-Profit Company (the CEDR member) is partially involved in Mobility Management planning and implementation. In addition to this, the CEDR member also takes part in the international cooperation that focuses on Mobility Management related activities that involve cross-border Traffic Management Plans, ITS applications and promotion of electromobility, connected and automated driving.

NRA and Traffic Management

The CEDR member takes an important role in Traffic Management. It is fully responsible for the actual operation and maintenance of the national roads. As part of this role, it carries out Traffic Management for both planned and unplanned road events.

Funding for Mobility Management and Sustainable Transport Mobility Management and Traffic Management are usually funded with the national budget contributions and the European Union funds (TEN-T, CEF).

Good Practice

The Memorandum of Understandings between the neighbouring countries in the field of (Cross-Border) Traffic Management is a good example of coordinated Traffic Management measures.

Mobility Management

- Promoting the application of ITS
- Intermodal transport
- Private-Public Partnership in transport
- Coordination with land-use planning

Measures

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Data collection to monitor system performance
- Special event management strategies
- Traffic safety measures
- Speed monitoring systems
- Cooperative ITS

Some Traffic Management measures are monitored and evaluated, e.g. the impact of speed limits or overtaking prohibitions.

Media and Communication

- Website
- Social media
- Radio
- Mobile phone apps
- Variable message signs
- Traffic ManagementC
- DATEX II messages

- Website
- Social media
- Radio and call centres
- Mobile phone apps
- Variable Message Signs
- Traffic ManagementC, DATEX II messages
- C-ITS

All communication channels are equally important but the call centres are seen as the most effective.

Challenges for Implementation

- Lack of funding and time
- Conflict of interest

- Lack of funding and time
- Lack of political support
- Conflict of interest

New infrastructure developments are more popular than investing in traffic management.

Stakeholders

- Regional Transport centres

- Ministry of National Development
- Ministry of National Economy
- ITS Hungary Association
- General Assembly of Budapest Transport Research Institute
- Hungarian Road and Railway Society

👍 = Effective

⬆️ = Cost efficient

⬆️ = Least cost efficient

👍 = Effective

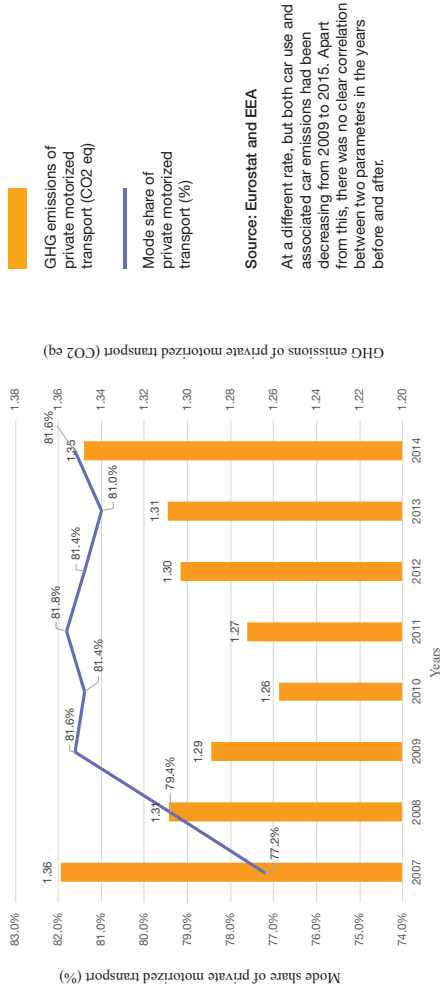
⬆️ = Cost efficient

Country: Estonia



National Road Authority (NRA): Estonian Road Administration (ERA)

The use of private motorised transport and associated GHG emissions



Mobility Management

- Modal shift to reduce car traffic
- Promote the application of ITS
- Pricing instruments 👍

The ERA monitor and evaluate Mobility Management measures. The key performance indicator is the number of people using public bus transport on the national level.

The use of pricing instruments such as subsidies to reduce public transport price had the greatest effect on travel behaviour.

Traffic Management

Measures

- Directing traffic to alternative routes
- Providing information on alternative routes
- ITS
- Bottleneck removal
- Intersection and traffic light improvement
- Data collection to monitor system performance
- Special event management strategies
- Traffic safety measures
- Speed monitoring systems 📈
- Traffic Management centres

The ERA monitor and evaluate Traffic Management measures. One of the key performance indicators is the number of fatalities.

Speed monitoring systems have had the greatest effect on traffic and travel behaviour.

Mobility Management and Traffic Management in Estonia and Estonian Road Administration (ERA)

Mobility Management in Estonia

Mobility Management in Estonia is at early stages of the development. Whilst the concept of Mobility Management exists, there is no official definition for it yet. The existing concept is mainly associated with such objectives as sustainability, travel behaviour change and influence as well as effective transport network.

Policy making for Mobility Management

The concept of Mobility Management is covered by national policies such as National Spatial Plan "Estonia 2030+," and National Transport Development Plan 2014-2020. It is also reflected in municipality and local plans and documents. There is no dedicated policy for Mobility Management.

NRA and Mobility Management

The main role of the ERA is to implement National Transport Development Plan 2014-2020. As part of this, the ERA is in charge of planning, organising and promoting the use of public bus transport at county level. Under this role, the ERA is partly involved in Mobility Management.

NRA and Traffic Management

The main role of the ERA is to implement National Transport Development Plan 2014-2020. As part of this, the ERA is responsible for implementing Road Management Plan 2014-2020 and is in charge of road construction, maintenance and management of national vehicle registry. The ERA manages both planned and unplanned road events to ensure continuous availability of connectivity. In 2017 the ERA established Traffic Management Centre for smart road project management.

Funding for Mobility Management and Sustainable Transport

All ERA activities which involve the implementation of Traffic Management measures and some Mobility Management measures is financed from the state budget. Overall, more than 10% of the national transport budget is invested into behavioural change projects that promote the use of sustainable transport.

Good Practice

In 2017, the ERA established a Traffic Management Centre for smart road project management.

Media and Communication

- PR channels
- Social media

- PR channels
- Social media
- TV
- Website
- Radio
- Mobile phone apps (Waze, Google)
- Variable Message Signs
- Weather stations
- Speed cameras

- Lack of mandate

- Lack of funding and time

Stakeholders

- Ministry of Economic Affairs and Communications
- Estonian Road Association
- Estonian Civil Aviation Administration
- Estonian Maritime Administration
- Local authorities and municipalities

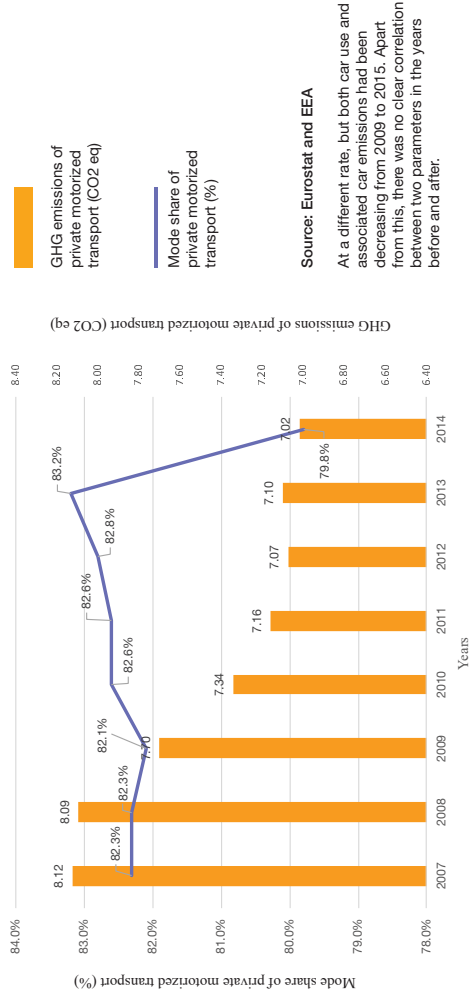
- Ministry of Economic Affairs and Communications
- Estonian Road Association
- Estonian Civil Aviation Administration
- Estonian Maritime Administration
- Local authorities and municipalities



Country: Ireland

National Road Authority (NRA): Transport Infrastructure Ireland (TII)

The use of private motorised transport and associated GHG emissions



Mobility Management and Traffic Management in Ireland and in Transport Infrastructure Ireland (TII)

Mobility Management in Ireland
 Mobility Management is defined as a transport demand management mechanism seeking to provide for the transportation needs of people and goods and encouraging more efficient use of the transport network. It can be applied on both strategic and local levels. Mobility Management is widely promoted under such terms as Smarter Travel, Demand Management and behavioural change. Mobility Management is planned and implemented by the National Transport Authority (NTA).

Policy making for Mobility Management
 On the national level, Mobility Management planning and implementation in Ireland are governed by the national transport policy document "Smarter Travel: A Sustainable Transport Future. A New Transport Policy for Ireland 2009 – 2020" developed by the Department of Transport and enforced by the National Transport Authority. This policy defines overarching principles of Mobility Management that inform strategic transport planning. On regional and local levels, these principles are reflected in Regional Planning Guidelines and Local Development Plans and enacted by respective regional and local authorities.

NRA and Mobility Management
 TII is responsible for the operation of light rail infrastructure and the national road network. It is not in charge of planning and implementing Mobility Management as such, but does request it as part of the development planning process to ensure efficient and effective use of the country's rail and road infrastructure. TII also promotes the concept of Mobility Management and its supporting measures in its activities and projects.

NRA and Traffic Management
 TII operate and manage the national road network and its traffic. As part of this role, TII manage both planned and unplanned road events by providing travel information, traffic data and emergency services. By doing so, TII indirectly does impact local and regional mobility patterns.

Funding for Mobility Management and Sustainable Transport
 As per 2016 data, less than 2% of the national budget is allocated to the development of sustainable transport modes. Since TII are not in charge of Mobility Management, its funds are not used for strategic planning and implementation of Mobility Management. However, its funds are used for specific measures and projects that can enhance local and regional mobility at times. All TII funds come from the national budget.

Good Practice
 The National Transport Authority provides a set of guidance documents for local authorities and companies to support the implementation of Workplace Travel Plans which is key part of their Smarter Travel concept.

Mobility Management

- Promoting the application of ITS
 - Promoting new concepts of mobility
 - Intermodal transport
 - Technological solutions
 - Coordination with land-use planning
 - Early planning
- Early planning and co-ordination of transport planning with land use planning prove to be an important prerequisite for effective Mobility Management for TII. Measures are monitored and evaluated.

Measures

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Data collection to monitor system performance
- Traffic safety measures
- Speed monitoring systems
- Traffic monitoring systems
- Incident monitoring system

All measures used for Traffic Management prove to be effective and cost efficient. Measures are monitored and evaluated.

Media and Communication

- Variable Message Signs
- TII traffic information website
- TII twitter account
- Radio and TV communication

- Variable Message Signs
- Website
- Social Media

The Social Media account by TII (Twitter) proves to be the most cost efficient in terms of providing advance information and warnings.

Challenges for Implementation

- Lack of knowledge
- Lack of funding and time
- Lack of political support
- Lack of coordinated approach
- Narrow focus (travel plans with employers only)
- Lack of clarity in terminology

- Lack of funding
- Lack of political support

Stakeholders

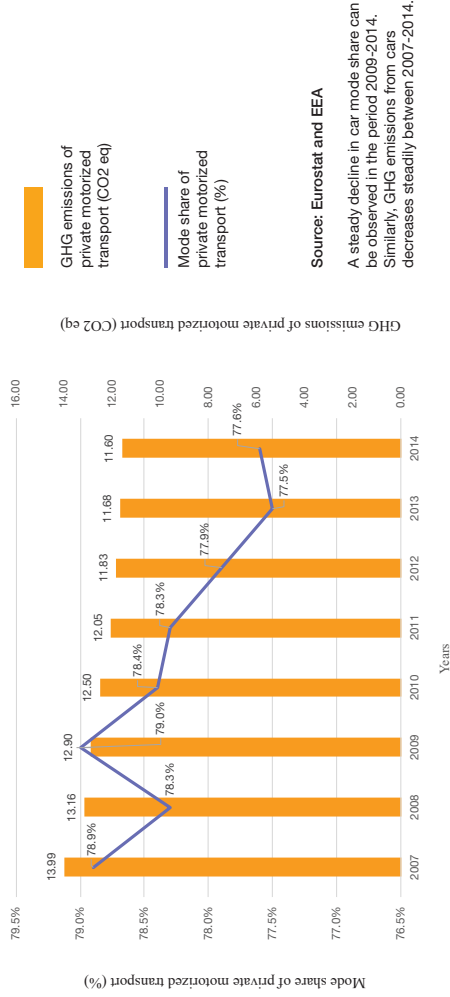
- Local authorities
- The National Transport Authority – Smarter Travel
- Workplace team
- Employers

- Local authorities
- The National Transport Authority (NTA)
- Customers and users of the national road network
- Tolling companies
- Private consultancies
- Technology manufacturers
- Construction companies
- Police

Country: Austria

National Road Authority (NRA): Federal Ministry of Transport, Innovation and Technology (BMVIT) - ASFINAG (deputy)

The use of private motorised transport and associated GHG emissions



Source: Eurostat and EEA

A steady decline in car mode share can be observed in the period 2009-2014. Similarly, GHG emissions from cars decreases steadily between 2007-2014.

Mobility Management and Traffic Management in Austria and in BMVIT and ASFINAG

Mobility Management in Austria

The Austrian NRA, BMVIT, recognizes the importance of Mobility Management. Therefore, the BMVIT finances the "Mobility of the Future" programme that funds Mobility Management research, networking operations, and dissemination of information with €15 mill p.a. between 2012-2020.

The implementation of Mobility Management is mainly organised at a lower level, e.g. in cities and municipalities.

Policy making for Mobility Management

On national level, transport competencies are split in a great variety of ways, making the implementation of a consistent transport policy rather difficult. Hence there is no national level policy for Mobility Management in place.

NRA and Mobility Management

The NRA takes a role in Mobility Management by creating a strategy, overarching guidelines and future objectives and is supported in this task by AustriaTech who acts as the Austrian agency for sustainable traffic and mobility solutions. This non-profit company, owned by the NRA, acts as an integrator for different mobility stakeholders, and their services range from policy advice, to knowledge sharing to technical expertise. Implementation is not driven by the national level but by local and regional level. However, the BMVIT acts as project enabler, provides project platforms and finances Mobility Management-related research and projects.

NRA and Traffic Management

Similarly to Mobility Management, the NRA is not active in implementing measures but in providing guidelines and strategy. The BMVIT relies on ASFINAG, a government owned agency responsible for operation, construction and management of the National Road Network, who is in charge of "Integrated Network Management" in Austria.

The ITS act about the introduction of ITS in Road Traffic forms an important reference for Traffic Management on national level. Other strategic documents include the ITS Action plan, the transport master plan, and the C-ITS strategy.

Funding for Mobility Management

Mobility Management is funded through budget funds. Several R&D projects are subsidized by means of EC and/or national programs.

Good Practice

A good example for Mobility Management information dissemination is the major Klimaaktiv initiative that provides measures and guidance for different fields of action: schools, companies, public administrations, tourism, spatial planning, residential development and addresses cities, municipalities and regions and provides guidance for Mobility Management (amongst others about Electromobility, alternative fuels, Eco-Driving, Carsharing).

Mobility Management

- Modal shift to reduce car traffic
- Promote the application of ITS
- Intermodal transport
- PPP in transport
- Technological solutions
- Coordination with land-use planning

For the evaluation of Mobility Management measures, the KPIs defined by the EC are used.

Measures

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Data collection to monitor system performance
- Special event management strategies
- Traffic safety measures
- Speed monitoring systems
- National and international traffic management plans for Rerouting
- Network management

Strategies for incident management, traffic management plans, as well as traffic information on Variable Message Signs and digital channels (mobile phone apps, website, radio), Speed Monitoring and Enforcement are seen as the most effective and efficient measures.

KPIs to measure traffic safety and congestion are being used.

Media and Communication

- Website
- Mobile phone apps
- Radio
- Lane control systems
- Variable Message Signs and trivisions
- Real-time information for travellers and businesses, alternative routing in case of accidents, congestion
- VAO – dedicated company for Traffic Information in Austria

Challenges for Implementation

- Lack of knowledge
- Lack of funding and time
- Conflict of interest

Behavioural change projects always face a certain resistance by the public in Austria, especially if it concerns reduced use of cars.

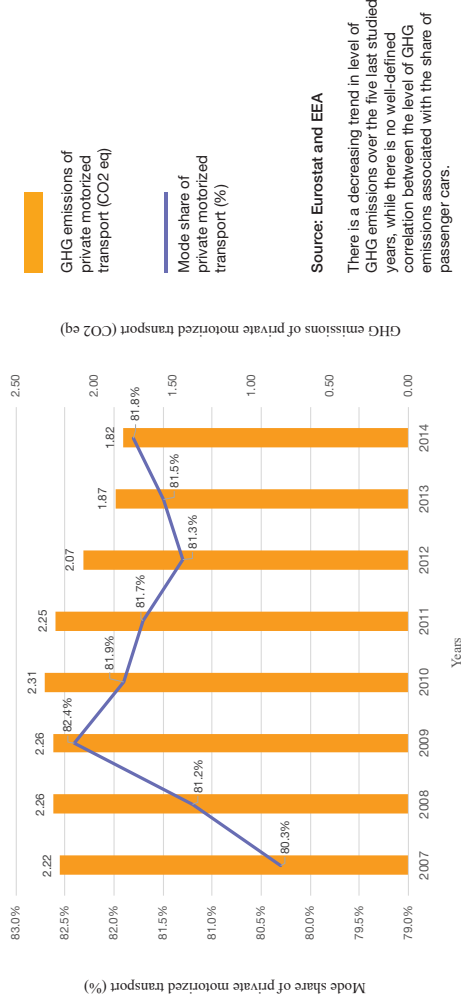
Stakeholders

- Federal states, municipalities, cities
- Public transport operators
- Railway operators
- Automobile clubs
- AustriaTech
- Research Institutes in the field of mobility

- National and regional road authorities
- ASFINAG (Operator of Austrian motorways and expressways)
- Police
- Broadcasting companies



The use of private motorised transport and associated GHG emissions



Mobility Management and Traffic Management in Cyprus and in the Public Works Department (PWD)

Mobility Management in Cyprus
 Cyprus defines Mobility Management as "Mobility can be interpreted as the ideal scenario wherein all citizens have environmentally sound, convenient, fast, comfortable and affordable means of transport, helping to improve accessibility across the functioning area of a city".

Policy making for Mobility Management
 Cyprus have through Climate-KIC, EU's largest public-private partnership addressing climate change, developed a strategy document for transport and mobility on national level, named "How can we ensure sustainable transport and mobility in the wider united Nicosia region by 2030?".

NRA and Mobility Management
 The PWD has the leading role of Mobility Management in Cyprus. When it comes to planned events, the PWD is involved in all major road construction projects and annual road maintenance plan. For unplanned events the PWD is directly involved handling severe weather events or accidents.

NRA and Traffic Management
 The PWD is responsible for the main road network and national highway, but do not have any official policy or strategy document for Traffic Management. The PWD is involved in Traffic Management for construction projects and maintenance of roads, also when work is executed by other companies. For unplanned events on the main road and national highways, the PWD provides Traffic Management equipment, signs and markings.

Funding for Mobility Management measures and Sustainable Transport
 Mobility Management measures are financed through local funding and EU funding, for example regional structural funds and TEN-T funds.

Mobility Management

- Modal shift to reduce car traffic
- Promote the application of ITS
- Promote new concepts of mobility
- PPP in transport

The PWD evaluates indicators such as travel time savings, percentage use of HGVs, air quality and noise as well as accidents reduction. The most effective and cost-efficient measures are the improvement of bus services/public transport followed by the construction of bicycle/walking facilities and the introduction of ITS.

- Website
- Roadside information
- Mobile phone apps

Media and Communication

- Website
- Facebook Page (DIAVLOS Projects)
- Mobile websites
- ITS (provide information to motorists)

Challenges for Implementation

- Lack of knowledge
- Lack of funding and time

- Lack of knowledge
- Lack of funding and time

Stakeholders

- Local bus companies
- Taxi companies
- Transport operators
- Map and guidance system services

- Police
- Local Municipalities
- Private companies/organizers of events
- Emergency services
 - Fire
 - Civil defence
 - Etc.

Traffic Management

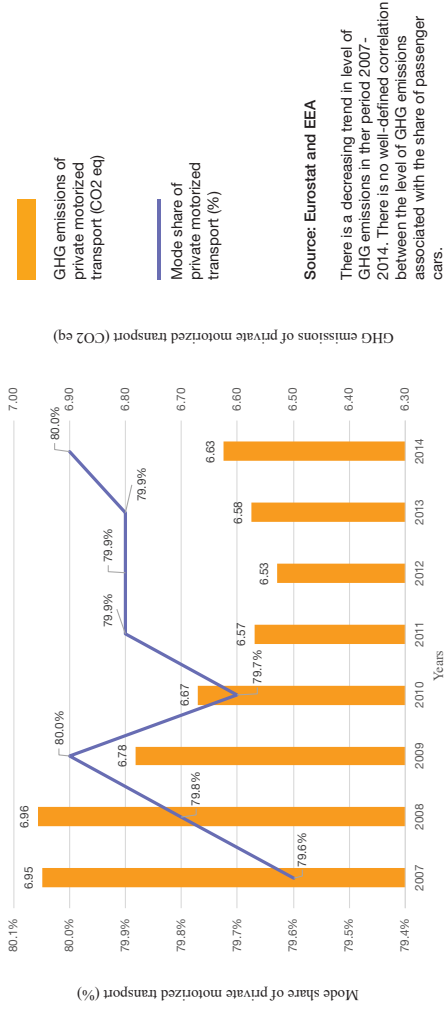
Measures

- ITS and traffic information
- Intersection and traffic light improvement
- Data collection to monitor system performance
- Special event management strategies
- Traffic safety measures
- Speed monitoring systems

The PWD does not evaluate their Traffic Management measures but consider providing information via announcement to motorists as the most effective and cost-efficient measure.

National Road Authority (NRA): Danish Road Directorate (DRD)

The use of private motorised transport and associated GHG emissions



Source: Eurostat and EEA

There is a decreasing trend in level of GHG emissions in their period 2007-2014. There is no well-defined correlation between the level of GHG emissions associated with the share of passenger cars.

Mobility Management and Traffic Management in Denmark and in the Danish Road Directorate (DRD)

Mobility Management in Denmark

Mobility Management in Denmark has no official definition but is commonly accepted as "mobility planning". Mobility planning is an approach to ensure traffic planning focused on a high degree of mobility considering the environment and climate. The approach has a user-oriented perspective on transport and focuses on influencing the journey before it begins to affect the choice of means of transport, as well as to make transport more effective. The instruments can focus on attitude, information and technical measures.

Policy making for Mobility Management

On the national level, a "Green Transportation plan" was developed in 2009 which supports behavioural change from the use of cars to the use of public transport, bicycles, etc. On regional and local levels, it is an ongoing project to develop mobility plans and strategies for Mobility Management in traffic planning.

NRA and Mobility Management

The DRD is not in charge of Mobility Management in Denmark. To a little extent they collaborate with public transport companies in early planning stage and in larger road projects, dealing primarily with coordination and information activities.

NRA and Traffic Management

The DRD has the responsibility for planning and performing tasks at the state road network and some adjacent roads, in relation to road construction, events, accidents and emergencies, both planned and unplanned events. The DRD collect data and send out traffic information in connection with the daily traffic settlement and make traffic prognosis prior to big holidays and events. The regional and local road network is not under DRDs responsibility. In 2016 DRD conducted an internal strategy on national level for traffic management.

Funding for Mobility Management measures and Sustainable Transport

The DRD doesn't fund Mobility Management activities, but the partnership Gate 21 which in part works with Mobility Management is partly financed by the national budget.

Mobility Management

- Intermodal transport

Measures

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Data collection to monitor system performance
- Special event management strategies
- Traffic safety measures
- Speed monitoring systems

The NRA evaluates their ongoing Traffic Management measures together with the police. Traffic information, in cooperation with the national radio broadcasting DR, is the most effective and cost efficient Traffic Management measure in Denmark.

Media and Communication

- Internet
- Mobile phone apps
- Mobile phone apps (Trafikinfo)
- Websites (trafikinfo.dk)
- Traffic radio (broadcasting traffic information)
- Data feeds to external services (Google, TomTom etc.)
- TMC
- Variable Message Signs

Challenges for Implementation

- Lack of political support
- Conflict of interest
- Lack of funding and time
- Lack of political support

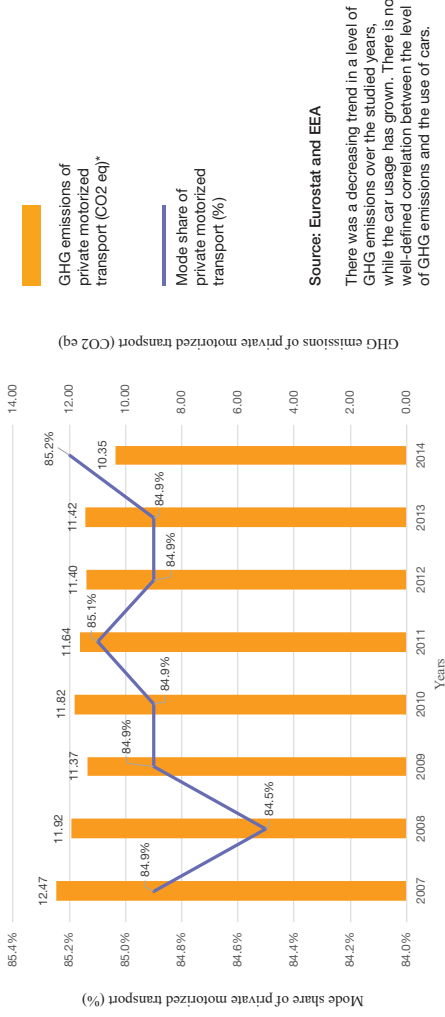
Stakeholders

- Public transport company (Movia)
- Gate 21 - Partnership between:
 - Municipalities
 - Companies
 - Knowledge institutions
- Municipalities
- Police
- Radio stations
- Services from private service providers (like Google and TomTom)



National Road Authority (NRA): Finnish Transportation Agency (FTA)

The use of private motorised transport and associated GHG emissions



Source: Eurostat and EEA

There was a decreasing trend in a level of GHG emissions over the studied years, while the car usage has grown. There is no well-defined correlation between the level of GHG emissions and the use of cars.

* Road Transport and private motorised transport emissions are not distinguished

Mobility Management and Traffic Management in Finland and in the Finnish Transportation Agency (FTA)

Mobility Management in Finland
In Finland, Mobility Management was first strongly linked with environmental issues, which in recent years broadened towards public health issues and established extensive cooperation between key players in the transport and health sectors. Today, Mobility Management is defined by the Finnish government as "informational measures, marketing as well as development of services, in order to impact people's modal choices".

Policy making for Mobility Management

On the national level, the Ministry of Transport and Communications developed the policy document "The Climate Policy Programme for 2009-2020" together with "The Environmental Strategy for Transportation 2013-2020" which helps to coordinate Mobility Management. For the implementation of Mobility Management, the Ministry of Transportation and Communication also developed the strategy document "Finland's Second Generation Intelligent Strategy for Transport". On a regional and local level, municipalities develop their own strategies that reflect the principles set by the national policies.

NRA and Mobility Management

The FTA has been supporting Mobility Management since 2010 and has the leading role in Mobility Management information and coordination. It applies a top-down approach where the NRA encourages and promotes the Mobility Management activities on a local level and provides subsidies for municipalities to implement Mobility Management. However, the NRA itself does little in terms of Mobility Management planning and implementation. The state-owned company Motiva Ltd. helps coordinating the national Mobility Management expert network, the European Mobility Week and other activities e.g. sharing expertise and communications.

Mobility Management is rarely used in road construction projects, where Traffic Management measures are widely implemented.

NRA and Traffic Management

The FTA is responsible for the operation of the national road network and traffic management including for both planned and unplanned road events. The FTA organisation is divided into four road traffic management centres. The FTA also carries out a similar role for rail and maritime traffic.

Funding for Mobility Management and Sustainable Transport
The FTA's coordination work which is carried out by Motiva Ltd, is financed by the FTA yearly budget with 200 000 euros per year. Since 2012 the government subsidises Mobility Management projects to municipalities with 900 000 euros per year. Since the launch of the national subsidy scheme, Mobility Management work has become better established all over Finland and many local initiatives and processes have started taking shape.

Good Practice

The FTA has the largest national Mobility Management network in Europe with 500 professionals which they provide with newsletters, invitations to national meetings, links to webinars and social media releases.

Mobility Management

- Modal shift to reduce car traffic
- Promoting the application of ITS
- Intermodal transport
- Private-public partnerships in transport
- Technological solutions
- Coordination with land-use planning
- Promoting Mobility-as-a-Service

The FTA's general understanding is that the combination of services and infrastructure, combined with marketing and information, is the most effective as well as cost-efficient measure.

Measures

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Data collection to monitor system performance
- Special event management strategies
- Incident management
- Traffic safety measures
- Speed monitoring systems
- Weather warnings

The measures are monitored by the following parameters: number of fatalities and injuries, journey time, emissions and cost/benefit.

Incident management, speed monitoring systems and road weather warnings are the most effective and cost-efficient measures.

Traffic Management

Media and Communication

- Internet
- Radio
- TV
- Variable Message Signs
- Mobile phone apps/device used by drivers

Challenges for Implementation

- Lack of funding and time
- Lack of political support

- Lack of political support
- Lack of coordinated approach
- Difficult in defining a strategic vision due to a conflict of interest between relevant stakeholders

Stakeholders

- Municipalities
- National Authority
- Private companies
- NGO's
- Centre for Economic Development
- Centre for Transport and the Environment
- Cities
- Traffic information service providers
- Dynamic navigation service providers
- Police
- Rescue organisations including emergency centres

👍 = Effective

👆 = Cost efficient

👇 = Least cost efficient

👇 = Cost efficient

👆 = Effective

Country: Germany



National Road Authority (NRA): Federal Ministry of Transport and Digital Infrastructure (BMVI – Bundesministerium für Verkehr und Digitale Infrastruktur)

The use of private motorised transport and associated GHG emissions



Source: Eurostat and EEA

There's no clear tendency in passenger car transport GHG emission levels over the past years, hence there's no obvious correlation between any changes in mode share or newly introduced Mobility Management measures.

Mobility Management and Traffic Management in Germany and in the Federal Ministry of Transport and Digital Infrastructure (BMVI)

Mobility Management in Germany

Mobility Management in Germany is generally understood as sustainable mobility. There is no coordinated Mobility Management strategy on national level in Germany. However, a lot of Mobility Management projects, initiatives, research and information campaigns and initiatives exist and are sometimes supported by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMU). Mobility Management is most often handled by the Federal States or locally for the major cities, for instance Berlin – "Mobility Strategy for Berlin 2030", or Frankfurt – "Mobility Strategy for Frankfurt". Company mobility plans are a big topic in the field of Mobility Management.

Policy making for Mobility Management

Mobility Management is not an integral part of policy making on the national level. The BMVI publishes Mobility Management related articles and brochures to inform the wider public, completed by a number of initiatives and research institutes that publish measures for Mobility Management, but there is no direct link to legislation. The most important document regarding roads and infrastructure on national level is the "Federal Transport Network Plan 2030" developed by the BMVI. It represents the key element of the infrastructure planning in Germany and fixes investments in construction of federal transport projects on roads, rail and waterways. Mobility management is not specifically mentioned. The most important instrument for a national cycling strategy and investments is the National Cycling Plan 2020. It contains quantitative objectives (e.g. modal split for urban/rural environment) on the national level, and generally promotes projects and activities in the field of cycling.

NRA and Mobility Management

The BMVI has an important role in the development of strategic policy concepts that feed into planning and financing of

infrastructure investments and as such is not directly in charge of Mobility Management or Mobility Management implementation. However, an important task of the BMVI is the "modernisation of mobility", which touches on Mobility Management by setting a focus on climate friendly mobility in connection with ITS applications, connected vehicles and connected infrastructure, public transportation, cycling, electromobility, or noise protection. The BMVI has put in place a contact point for municipalities to provide fast advice about sustainable transport measures and also installed a "Network of Experts" that addresses urgent transport questions of the future through innovation relating to adaptation to climate change and environmental protection.

NRA and Traffic Management

The NRA has a significant role in Traffic Management, such as the preparation of regulations and specifications, and budget funds allocation. The NRA published an important document in relation to Traffic Management called the "ITS Action Plan Road 2010" supporting the introduction of ITS for Traffic Management purposes. Generally, the implementation of Traffic Management measures is handled on federal state level and the NRA is only responsible for Traffic Management on motorways and national roads.

Funding for Mobility Management measures and Sustainable Transport

Funding for Mobility Management and sustainable transport comes from budget funds.

Good Practice

DePOMM is a central platform for Mobility Management, an initiative for exchanging experience on national and regional level, sponsored by the BMU, promoting and informing about all sorts of Mobility Management measures.

Mobility Management

- Promoting modal shift
- Promoting ITS application
- Promoting new concepts of mobility
- Intermodal transport
- Pricing instruments
- Private-Public Partnerships in transport
- Technological solutions
- Coordination with land-use planning

Mobility Management measures are evaluated based on statistical data.

Measures

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Data collection and performance monitoring
- Special event management
- Traffic safety measures
- Speed monitoring systems

Traffic Management measures are evaluated based on statistical data (such as time cost, accident cost, operational cost).

Traffic Management

Media and Communication

- Info panels
- reports

- Pre-trip: internet

- On-trip:

- Navigation systems
- Radio traffic services
- Variable Message Signs
- Dynamic signposts with integrated congestion information

Challenges for Implementation

- Defining a strategy
- Conflict of interest

- None mentioned

Stakeholders

- Citizens, logistics organisations, Chambers of Commerce and Industry (CCI/IHK), local public transport, municipal transport authorities, public authorities, automotive industry, providers of navigation services, companies for company mobility plans

- Providers of private navigation services, traffic offices, police, traffic authorities, automotive industry, telecommunication and broadcasting organisations

👍 = Effective

👆 = Cost efficient

👇 = Least cost efficient

👍 = Effective

👆 = Cost efficient

👇 = Least cost efficient

👍 = Effective

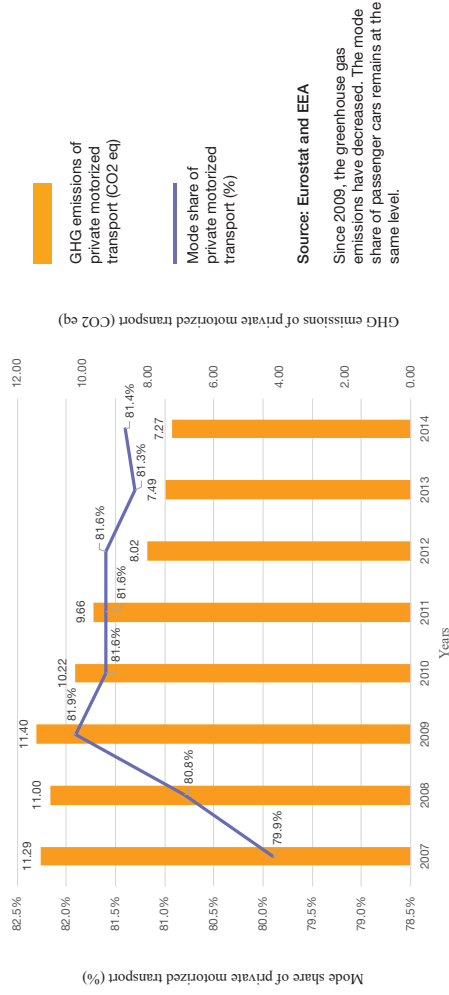
👆 = Cost efficient

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National Road Authority (NRA): Hellenic Ministry of Infrastructure, Transport and Networks - General Secretariat of Public Works/Special Service of Public Works GSPW

The use of private motorised transport and associated GHG emissions



Source: Eurostat and EEA

Since 2009, the greenhouse gas emissions have decreased. The mode share of passenger cars remains at the same level.

Mobility Management and Traffic Management in Greece and in the General Secretariat of Public Works/ Special Service of Public Works (GSPW)

Mobility Management in Greece

Mobility Management is defined as a concept to promote sustainable transport and manage the demand for cause by changing travellers' attitudes and behaviour. Apart from the National Transport Plan, every regional government authority can plan and implement transport policies to their network. At local level, several municipalities are guided by Sustainable Urban Mobility Plans.

Policy making for Mobility Management

Currently, The National Transport Plan is under development and expected to be completed in May 2019. The plan will be the main transport policy document for Greece on the national level and will include Mobility Management. Guidelines are given by the Civil Protection authority on how to manage the road network under planned and unplanned events.

NRA and Mobility Management

The role of the NRA related to Mobility Management encompasses innovation, interoperability and e-toll systems.

NRA and Traffic Management

The Ministry is responsible for developing a future intelligent transport infrastructure system consistent with the guidelines of EU. In some regions, the Ministry is also responsible for the operation and maintenance of the Traffic Management system, to develop and integrate an intelligent Traffic Management system for traffic incident management and to create and integrate an Intelligent Transport System for the management of traffic data.

Funding for Mobility Management measures and Sustainable Transport

Mobility Management is financed by national and EU funds, such as Regional Operational Programs, structural funds and research programs.

Good Practice

Greece have some case studies from Trikala, Heraklion and Ecomobility, information available in Greek.

Another example is the Athens traffic management centre with a cordon based access-restriction scheme.

Mobility Management

Measures

- Modal shift to reduce car traffic
- Promoting the application of ITS
- Promoting new concepts of mobility
- Pricing instruments
- PPP in transport
- Technological solutions
- Coordination with land-use planning

The NRA evaluate, among other indicators, passenger and tonne kilometres, modal split, network length, greenhouse gas emissions, car ownership and accident indices. The most effective and cost-efficient measure is promoting Intelligent Transport Systems.

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Data collection to monitor system performance
- Special event management strategies
- Traffic safety measures

Traffic Management measures are regularly evaluated by the e-toll company HELLASTRON.

Media and Communication

- TV
- Radio
- Electronic media
- Newspaper
- Variable Message Signs
- Cooperative ITS (only Thessaloniki)

- TV
- Radio
- Variable Message Signs
- CCTV
- Loops

Challenges for Implementation

- Lack of funding and time
- Defining a strategy
- Conflict of interest

- Lack of funding and time
- Defining a strategy
- Conflict of interest

Lack of a national transport strategy

Stakeholders

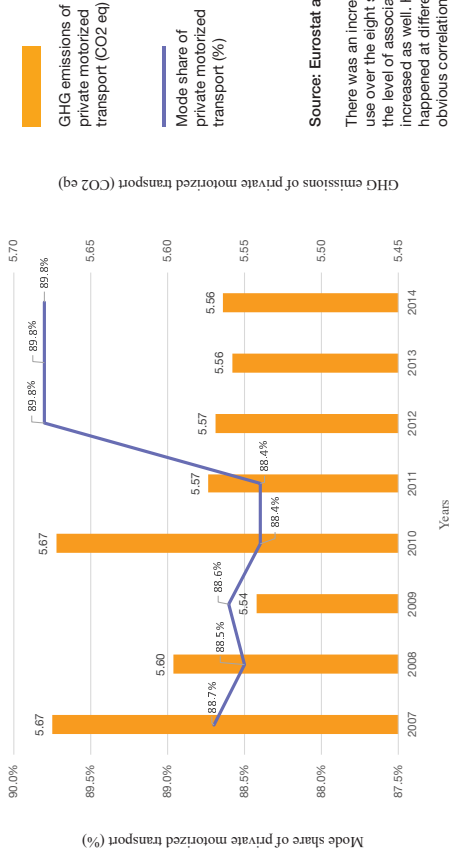
- Ministry of Environment, Energy and Transport
- Ministry of Interiors- responsible for regional and local authorities
- Universities
- Concessions
- The Observatory of Road Networks in Western Greece and Peloponnese (POADEF)
- HELLASTRON
- Hellenic Institute of Transport engineers
- Hellenic Institute of Transport (HIT/CERTH)

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National Road Authority (NRA): Danish Road Directorate (DRD)

The use of private motorised transport and associated GHG emissions



Source: Eurostat and EEA

There was an increasing trend in the car use over the eight studied years, and the level of associated GHG emissions increased as well. However, the increase happened at different rates and no obvious correlation can be identified between two parameters.

Mobility Management and Traffic Management in Norway and in the Norwegian Public Road Administration

Mobility Management in Norway

The NPRA defines Mobility Management as “Management of transport demand and traffic flows (people, vehicles and goods) either by information, education and motivation of transport customers, by laws, taxation, enforcement, physical planning or by traffic management”.

Policy making for Mobility Management

On the national level, the Ministry of Transport and Communication, through the Norwegian Public Roads Administration and Directory of Public Roads, is responsible for the policy making for transport and infrastructure. Mobility Management is included in The National Transport Plan for 2018-2029.

NRA and Mobility Management

The NPRA has a strategic Mobility Management role as it is responsible for achieving a more sustainable transport system, for management of long term events that affect transport network capacity and for piloting new mobility services. Mobility Management is implemented via specific road projects and on a local level. Mobility Management is often subsidised on the national level.

NRA and Traffic Management

Traffic Management is included in “The National Transport Plan 2018-2029” and performed on all levels, from the national to a local level. The NPDR operates 24/7 Traffic Management monitoring. The monitoring includes monitoring traffic, road conditions and incidents. The NPDR generates traffic information, safety related messages as well as messages on road operation, road maintenance and rescue options.

Funding for Mobility Management and Sustainable Transport

The NPDR fund certain guidelines related to Mobility Management by their general budget. Less than 2% of the budget is dedicated to behavioural change projects. The general budget is 64 billion NOK where walking/cycling investments stands for 2.6% and road investments for 53%.

Mobility Management

- Modal shift to reduce car traffic
- Promote the application of ITS
- Promote new concepts of mobility
- Intermodal transport
- Pricing instruments
- Private-Public Partnerships in transport
- Technological solutions
- Coordination with land-use planning

The NPDR evaluates Mobility Management by examining if the information reached the intended audience and what the effects of the implemented measures were.

- Variable Message Signs
- Traffic alert messages
- General information in several media channels
- Social media

Most effective is to have a combined communication plan using several media channels and repeating messages a long time before the event.

Traffic Management

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Data collection to monitor system performance
- Special event management strategies
- Traffic safety measures
- Speed monitoring systems
- Tunnel surveillance and control systems

ITS and special event management strategies are the most effective measures. Intensified traffic information on multiple channels is an important basic measure.

Media and Communication

- Variable Message Signs
- Traffic alert messages
- Map based services
- Social media

Most effective is to use a combined communication effort in several media channels.

Challenges for Implementation

- Variable Message Signs
- Traffic alert messages
- General information in several media channels
- Social media

Most effective is to use a combined communication effort in several media channels.

Stakeholders

- Lack of knowledge
- Conflict of interest between stakeholders

👍 = Effective

⬆️ = Cost efficient

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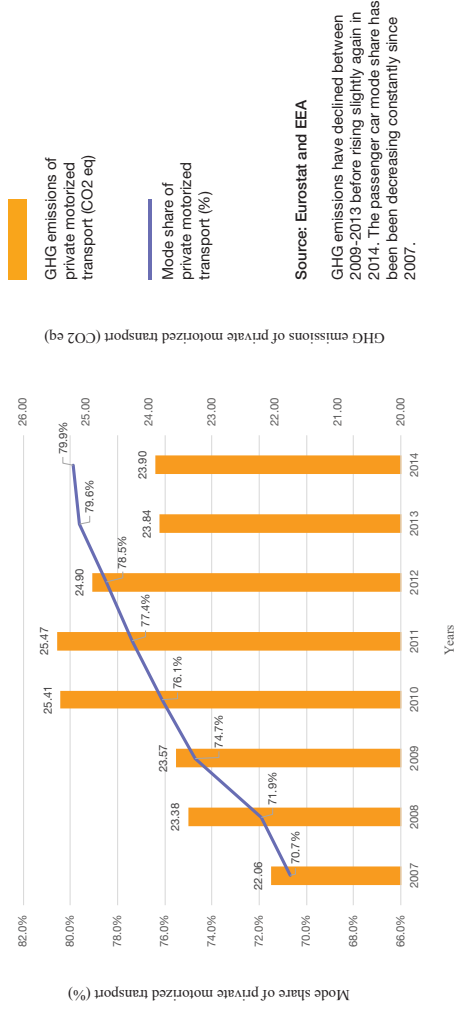
⬆️ = Effective

Country: Poland



National Road Authority (NRA): General Directorate for National Roads and Motorways (GDDKIA)

The use of private motorised transport and associated GHG emissions



Mobility Management & Traffic Management in Poland and in the General Directorate for National Roads and Motorways (GDDKIA)

Mobility Management in Poland

Decision makers at national and local level are willing to implement Mobility Management actions which has been reflected on numerous transport policies documents and integration on national level policies. Mainly urban centres develop guidelines and plans to improve the mobility offer and to simultaneously reduce private car usage. Implementation, however, is sometimes regarded as advancing slowly.

Policy making for Mobility Management

The main policy documents and basis for promoting mobility policy and planning is the National transport policy for 2006-2025, developed by the Ministry of Infrastructure, where the directions of sustainable urban transport policies were formulated, and the National Transport Development Strategy 2030, focussing on transport system improvements, modal shift and similar topics. Furthermore, over 100 cities and communes were obliged to prepare Plans of Sustainable Public Transport until 2014. Additionally, the Ministry of the Environment is responsible for environmental policy and planning and also for sustainable development, which includes transportation and mobility issues. In the National Urban Policy, adopted by the Council of Ministers in October 2015, sustainable urban mobility is one of ten main areas. The strong impact of EU policy on the development of urban transport systems in Polish cities is visible. Regulations, the promotion of appropriate solutions/practices and the financing of research and development and investment projects (infrastructure, rolling stock and ITS) are main areas of support.

NRA and Mobility Management

While Mobility Management is implemented on National Level Policies, it is not the NRA who is responsible for Mobility Management within the meaning of long-term focussed measures

to encourage the behavioural change from car driving to more sustainable modes of transport. Mobility Management is primarily being implemented at local levels, notably in the bigger urban centres in Poland such as Warsaw, Krakow, Gdansk and Wroclaw. Polish cities, the R&D community and other entities have been actively participating in various EU projects around Mobility Management and sustainable urban mobility.

NRA and Traffic Management

Traffic Management planning and implementation is one of the regular competences of the Polish NRA. As part of its daily operational work, it is in charge of managing traffic on national roads. The NRA also is responsible for preparation and implementation of traffic management measures for any planned and unplanned events on the national road network. There is no official definition of traffic management but its processes are governed by some wider national policies such as The ordinance on detailed conditions on road traffic management and supervision of this management, Transport Development Strategy 2020, National Road Safety Program 2013 – 2020.

Funding for Traffic Management

Traffic Management measures are funded from the state budget as well as from EU funds. All actions of the Ministry of Infrastructure and the NRA are financed from the national budget.

Good Practice

There is a Good Practice Guidance document ITS for Traffic Management developed by the ITS Poland Association. Urban Mobility Planning Guidance is available as Guidance Document on Sustainable Development of Public Transport for Communities and Intercommunal Associations (2011).

Mobility Management

Measures

• Not provided

- ITS
- Intersection and traffic light improvement
- Bottleneck removal
- Special event management strategies
- Traffic safety measures
- Speed control
- Designation of detours
- Dynamic designation of detours
- Providing information to drivers
- Providing information on incidents, traffic conditions and travel times, conditions on road network, weather, traffic lights, etc.

There is no mechanism in place to measure the effectiveness of the measures used.

ITS measures prove to be the most cost-efficient measures.

Media and Communication

• Not provided

- Website
- Call centres
- Road information points
- Variable Message Signs
- Prism signs
- CCTV

Challenges for Implementation

• Not provided

- Lack of funding and time
- Lack of political support

Stakeholders

- Ministry of Infrastructure and Construction
- Local Transport Authorities
- Chamber of Urban Transport
- Consultants

- Ministry of Infrastructure and Construction
- Chief Inspection for Road Transport
- ITS Poland Association



National Road Authority (NRA): Swedish Transportation Administration

The use of private motorised transport and associated GHG emissions



Source: Eurostat and EEA

There is a decreasing trend in GHG emissions over the period 2007-2014. There is no well-defined correlation between the level of GHG emissions associated with the use of cars.

Mobility Management and Traffic Management in Sweden and in the Swedish Transport Administration

Mobility Management in Sweden
In Sweden, Mobility Management is defined in two ways: one general and one adapted to construction phase also including freight transport: Mobility Management aims to promote sustainable passenger transport and affect car use through actions that change the attitudes and behaviours of travellers. Mobility Management in construction phase include the Mobility Management concept and actions that ensure and/or increase usability, safety and competitiveness of walking, bicycling, public transport as well as carpooling. Mobility Management in construction phase also includes measures that promote accessibility for freight transport before private cars.

Policy making for Mobility Management
The NRA in Sweden promotes Mobility Management as a concept and measure to optimise the use of existing infrastructure, before considering construction of new infrastructure. The concept is established country wide and named "Four Step Principle". The NRA develops the "National Transport Plan for 2018-2029" where Mobility Management in the construction phase is included as well as the four step principle. On local levels, local authorities develop traffic strategy documents where Mobility Management often is included.

NRA and Mobility Management
The NRA is responsible for planning Mobility Management solutions during construction phase only, minimising the effects on mobility during the period of construction. For early studies in the project phase, the NRA works together with many stakeholders in strategic choice of measure studies based on the four step principle. Mobility Management measures often are an outcome of these studies, and the responsibility for planning and financing of the Mobility Management measures are shared between the participating stakeholders. However, the Swedish NRA only has the mandate to finance Mobility Management measures in the

construction phase of infrastructure projects in order to maintain accessibility for all transport modes, and cannot finance general Mobility Management measures.

NRA and Traffic Management
The NRA is responsible for the national road network and therefore responsible for planning, implementing and maintaining infrastructure. Traffic Management is mainly to inform the road users of construction works and travel time in planned and unplanned events. For the cities Stockholm and Gothenburg, the work is done in close collaboration with other stakeholders such as municipalities, public transport authorities and rescue services. A number of different management and traffic control systems are used in Sweden, from local Variable Message Signs, queue detection and speed monitoring systems to more complex and interconnected travel calculation and traffic management systems.

Funding for Mobility Management measures and Sustainable Transport
Sweden is currently going through an internal process to clarify which measures can be financed by the NRA and under which circumstances. Generally, physical measures supporting a change of behaviour as well as information about the concerned construction and improvements in accessibility can be funded by the Swedish NRA. Increased service of other modes, behaviour change measures, etc. have to be funded by other stakeholders.

Good Practice
The NRA has developed a handbook on planning Mobility Management measures during construction phase. From earlier work, the NRA has gained experience in implementing information campaigns, test traveller campaigns, etc. compiled in several example books.

Mobility Management

Measures

- Modal shift to reduce car traffic in construction phase
- Intermodal transport
- Technological solutions
- Dedicated Mobility Management programmes and projects

The NRA monitor and evaluate Mobility Management measures that have been implemented in the construction phase of projects.

Traffic Management

- ITS
 - Intersection and traffic light improvement
 - Bottleneck removal
 - Data collection to monitor system performance
 - Special event management strategies
 - Traffic safety measures
 - Speed monitoring systems
- Evaluation is done on national level for robustness, capacity and punctuality, plus traffic accidents every five minutes. The most effective measures are local parking strategies together with congestion charges, intersection and traffic light improvement, bottleneck removal and speed monitoring. For driver behaviour change, the NRA uses real-time travel information services, like trafikken.nu in Stockholm and Gothenburg.



Media and Communication

- Website (trafikken.nu)
- On-site information
- Communication/dialogue with workplaces
- Direct dialogue with households

- Websites (trafikken.nu and trafikverket.se)
- RDS
- GPS
- SMS
- DATEX
- Message signs
- Variable speed signs

Challenges for Implementation

- Lack of knowledge
 - Lack of funding and time
- At the time of the study there was a lack of structure in the organisation if and how Mobility Management was being implemented, and stakeholders inside the organisation had a lack of knowledge. This problem was being addressed internally with a new policy to clarify which measures can be financed by the NRA and under which circumstances.

- Defining a strategy
- Conflict of interest

The work is done sufficiently in a smaller perspective but more work can be done in a larger perspective.



Stakeholders

- Cities/Municipalities
- The community of cities
- Regions
- Consultants
- The regional organisation for public transport
- Bicycle shops

- Municipalities
- Public transportation authorities and operators
- Rescue services
- Rail operators

