The Dutch national ecodriving programme Het Nieuwe Rijden: A success story

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Keywords
ecodriving, driving behaviour, purchasing behaviour, energy-efficiency, CO₂ emission reduction, traffic safety, traffic and transport, mobility, evaluation and monitoring, long-term strategy, cost-effectiveness

Abstract
The Dutch national ecodriving programme 'Het Nieuwe Rijden' concerns a long-term strategy for the period 1999 until 2010. The programme is implemented by SenterNovem, on behalf of the Dutch Ministry of Transport. It encourages (professional) drivers and fleet owners to purchase and drive passenger cars, delivery vans and lorries more energy-efficiently. Recently the scope of the programme was even enhanced to trains.

The programme collaborates with over 30 consumer and retail organisations, mainly in the transport and car business.

The Dutch national ecodriving programme comprises the following issues:
1. Driving school curriculums
2. Re-educating licensed drivers
3. Fuel saving in-car devices
4. Tyre pressures
5. Purchasing behaviour

Important elements of the programme are also communication, evaluation and monitoring and international cooperation.

The Dutch ecodriving programme has proven to realise substantial reductions in CO₂ emissions and to contribute to Environmentally Sustainable Transport. It also has shown to have positive effects on other important policy issues like road safety, traffic noise nuisance and driver stress.

The Dutch ecodriving programme is evaluated annually. The target of the programme is a CO₂ emission avoidance of 1.5 Mton in 2010. This amount equals 4% of the total emissions of Dutch traffic and transport in 2010 and half a million cars not being driven for one whole year.

The cost-effectiveness of the ecodriving programme results in a favourable cost-effectiveness of less then €10 per ton avoided CO₂ emissions.

The programme is a model for EU countries as well as for the EC.

Introduction
Ecodriving is 'hot'. In several countries ecodriving programmes are embedded in climate change policies, e.g. in Austria, Spain and the Netherlands. In these countries ecodriving programmes substantially contribute to meeting Kyoto and air quality targets. Ecodriving programmes result in a very favourable cost-effectiveness. Moreover ecodriving is a no-regret measure that can be implemented rather easily and leads to solid results rather quickly.

Measures to improve car driving behaviour have the potential for considerable fuel savings and consequently reduced CO₂ emissions from traffic. Governmental policies so far give little attention to such measures though both the EU and UN/ECE, OECD and ECMT have repeatedly concluded that they are potentially effective.
CONTRIBUTION TO POLICY TARGETS
The European Climate Change Programme (ECCP) calculated in 2001 a potential for driver re-education and ecodriving of at least 50 Mton CO\textsubscript{2} emission reductions by 2010. This would mean savings for consumers of about €20 Billion per year. Therefore ecodriving is a promising low-cost "no regret" option that helps achieving Kyoto targets.

Ecodriving considerably contributes to policy targets. It reduces:
- Fuel consumption (10 % on average)
- Vehicle maintenance costs
- Stress
- Noise nuisance
- Local air pollutants
- Green house gasses

Ecodriving improves:
- Traffic safety
- Comfort

MODERN TECHNOLOGY NEEDS AN ADAPTED DRIVING STYLE
In the last decades, the engine technology and performances of both passenger cars and lorries has improved rapidly, while most drivers have not adapted their driving style. Ecodriving is an adapted driving style, which best fits modern engine technology. Ecodriving means smart, smooth and safe driving at lower engine speeds (< 2,500 RPM), which saves 10 % fuel on average. Without increasing travel time.

The basic driving style tips are:
1. Shift up as soon as possible, between 2,000 and 2,500 RPM (petrol + diesel).
2. Maintain a steady speed, using the highest gear possible.
3. Look ahead as far as possible and anticipate to surrounding traffic.
4. When you have to slow down or to stop, decelerate smoothly by releasing the accelerator in time, leaving the car in gear.

Ecodriving is not bad for the engine. On the contrary revving a car has negative consequences on maintenance.

The Dutch national ecodriving programme Het Nieuwe Rijden
One of the successful ecodriving programmes is the Dutch national ecodriving programme ‘Het Nieuwe Rijden’.

This programme results from the Kyoto agreement and from national policy documents targeting CO\textsubscript{2} emission reductions in traffic and transport. The programme concerns a long-term strategy for the period 1999 until 2010, involving about €35 Million.

There already was a long tradition of ecodriving projects and activities in the Netherlands since 1988. After the Kyoto agreement however, the programme grew to maturity. The programme is implemented by SenterNovem, the Dutch national energy agency, on behalf of the Dutch Ministry of Transport and in cooperation with the Ministry of Environment. It aims to motivate (professional) drivers and fleet owners to purchase and drive passenger cars, delivery vans and lorries both more energy-efficiently and safe. Recently the scope of the programme has even been enhanced to trains.

The programme creates conditions and organisational and logistical structures to achieve CO\textsubscript{2} emission reductions. The programme cooperates with over 30 branche, consumer and retail organisations. These organisations have signed an agreement to support and implement ecodriving activities and are best fitted to convey the ecodriving message to the licensed drivers.

The Dutch ecodriving programme has proven to realise substantial reductions in CO\textsubscript{2} emissions and to contribute to Environmentally Sustainable Transport. It also has shown to have positive effects on other important policy issues like road safety, traffic noise nuisance and driver stress. The Dutch ecodriving programme is evaluated annually. The target of the programme is a CO\textsubscript{2} emission avoidance of 1.5 Mton in 2010. This amount equals 4 % of the total emissions of Dutch traffic and transport in 2010 and half a million cars not being driven for one whole year.

Over a period of ten years the cost-effectiveness of the ecodriving programme results in a favourable cost-effectiveness of less then €10 per ton avoided CO\textsubscript{2} emissions. In plain English this means that the avoidance of 1 ton of CO\textsubscript{2} emissions through the ecodriving programme costs less than €10.

ISSUES ADDRESSED BY THE PROGRAMME
The Dutch national ecodriving programme addresses the following issues:
1. Driving school curriculums
2. Re-educating licensed drivers
3. Fuel saving in-car devices
4. Tyre pressures
5. Purchasing behaviour (e.g. car labelling and CO\textsubscript{2} differentiated purchase tax).

Important elements of the programme are also international cooperation, communication and evaluation and monitoring. The Dutch ecodriving programme is already involved in several...
joint international projects and the number of international activities is growing, e.g. collaboration with new accession countries in Central and Eastern-Europe.

COMMUNICATION, MARKETING AND BRANDING
The programme is supported by a corporate communication and marketing strategy, which stresses individual benefits and hedonistic elements, such as safety, comfort, fun of driving and cost reductions. Energy savings and CO$_2$ emission reductions come as a side effect with the individual benefits. In communication and marketing ecodriving is presented as the driving style that best fits modern engine technology.

The branding of the programme (logos, house style, templates, etc.) has turned out to have significantly contributed to the recognisability of the Het Nieuwe Rijden message and the achievements of the programme.

The communication largely takes place through the partners of the Dutch ecodriving network. A varied range of information materials, facilities and gimmicks has been produced especially for reaching the also varied target group of licensed drivers. Also dedicated websites have been launched. The programme regularly gets attention and free publicity from media and press.

MASS MEDIA CAMPAIGN
In June 2004 the Dutch ecodriving programme Het Nieuwe Rijden has launched a mass media campaign. The aim of the campaign is to encourage the 10 Million Dutch licensed drivers to apply the major driving style tips. The campaign deploys TV and radio commercials, print, information desk and many supporting activities mainly implemented by the vast Dutch ecodriving network.

The campaign format is based on the popular American TV series of the 70’s, 80’s “The Dukes of Hazzard”. Like the general programme communication the focus in the campaign is not on the environment or CO$_2$ emission reductions but on cost savings, traffic safety and relaxed driving. The Dutch interpretation:

The licensed drivers seem to appreciate the Doeks concept. This clearly shows from the results of periodic polls. Especially the TV commercials are received very well. The TV commercials touch on the following issues:

- Shifting at low revs
- Coasting (releasing the accelerator in time)
- Tyre pressure
- 50 in 5th gear

In 2007 new TV commercials with the Doeks’ ecodriving adventures will be launched. The TV commercials are not only appreciated by the target groups, they also proof to be very effective. According to poll results from mid 2006 about ¾ of the Dutch licensed drivers were familiar with the ‘Het Nieuwe Rijden’ brand (only 1/5 at the start). And about ¼ of the licensed drivers stated that they already operate their car according to the main driving style tips.

OTHER ACHIEVEMENTS OF THE PROGRAMME
- More than 90 % of the Dutch driving instructors and examiners (6,500) have been trained in ecodriving.
- Ecodriving has already been integrated into the practical exams for driving instructors, examiners and novice drivers concerning buses and trucks. Shortly ecodriving will also become part of the practical exams concerning passenger cars.
- The ecodriving programme aims at the standard equipment of all newly sold cars in the European Union with fuel-saving in-car devices such as on-board computers, cruise controls and sophisticated gear shift indicators.
- The programme cooperates with a large network of branche, consumer and retail organisations (over 30). These organisations actively promote ecodriving to the target groups.
- A certification and education system for ecodriving trainers has been set up.
- The number of providers of ecodriving courses as well as the variety of courses have increased significantly.

EVALUATION AND MONITORING
The aim of the Dutch ecodriving programme Het Nieuwe Rijden is to reduce CO$_2$ emissions from traffic and transport. The calculations for the estimated CO$_2$ emission avoidance are done with a specially developed monitoring methodology. The premises of this methodology have been approved by the Dutch Governmental Institution on Environment Protection RIVM (Rijksinstituut voor Milieuhygiëne). The monitoring methodology is an essential tool in a step-by-step evaluation process.

The evaluation and monitoring methodology distinguishes input, output and outcome:
**Input:** The input of the programme are means and labour, within the programme these means and people are deployed in the policy process to deliver output.

**Output:** The output of the programme are projects, activities, deliverables, etc. With this output the programme tries to influence the licensed drivers, fleet owners and intermediaries.

**Outcome:** The outcome of the programme are savings in energy and CO₂ emissions that are the result of the output and external processes like autonomous developments, public opinion, fuel prices, etc. The results have to be adjusted for both autonomous developments (e.g. fuel prices) and other relevant policy measures, which might have an effect on driving behaviour as well.

The relationship between input and output shows the efficiency of the programme (did the invested input lead to a sufficient amount of output). The relation between output and outcome shows the effectiveness of the programme (did the output lead to a sufficient amount of reduced emissions and energy savings). The relationship between input and outcome shows the cost-efficiency of the programme: The amount of money that has to be invested to realise 1 Ton of CO₂ emission avoidance.

The CO₂ emission avoidances are calculated by determination of the amount of people that have been engaged, their mean annual CO₂ emission exhaust and the efficiency of their change in behaviour towards an ecodriving driving style. To calculate the CO₂ emission avoidances the following criteria are determined:

- **Participation rate:** The number of people participating in projects initiated by the programme
- **Effectiveness:** The actual change in behaviour of a person participating in a project or other kind of actions
- **Efficiency rate:** The reduction rates of CO₂ emissions by changing driving style and purchasing behaviour

The effectiveness and efficiency rates are based on the results of best practices, field experiments and administrated data on fuel-efficiency improvements and related CO₂ emission avoidances. Otherwise on the best possible assumptions of experts.

**EVALUATION 2005**

The 2005 evaluation concerned a multi-level approach to determine also autonomous effects. This approach included:

- Information of implemented ecodriving projects and activities;
- A telephone survey comprising over 1,000 licensed drivers;
- Tracking survey results concerning the effects of the mass media campaign;
- Statistical information concerning fuel consumption and fuel sales.

The 2005 multi-level approach provided CO₂ reduction data for both passenger traffic and freight and public transport. Concerning **freight and public transport** the evaluation shows an effect of 0.10 Mton CO₂ reduction as a direct result of the ecodriving programme. Concerning **passenger traffic** the evaluation provided CO₂ reduction data at three levels:

- The achieved CO₂ emission reduction as a direct result of the ecodriving programme amounts to 0.22 Mton. Added up to the 0.10 Mton reduction by freight and public transport this results in 0.32 Mton CO₂ emission reduction.
- Some driving style improvements can not directly be attributed to the ecodriving programme. The effects of this rather autonomous shifts towards an ecodriving driving style added up to the 0.22 Mton of the first level amounts to 0.46 Mton CO₂ reduction for passenger traffic. Including the 0.10 Mton reduction by freight and public transport the total effect for traffic and transport adds up to 0.56 Mton. This equals the total amount of CO₂ emitted by approximately 185,000 passenger cars in one year.
- The total amount of CO₂ reduction in passenger traffic as a result of adapted driving behaviour in general amounts to 0.80 Mton. This includes the effects of autonomous developments like other policy measures (e.g. police enforcement of speed limits and fiscal measures) and rising fuel prices.

Figure 6 shows the development in CO₂ reductions as a result of the ecodriving programme since 1999/2000. Also a forecast is added for the next several years on the basis of the development until 2005. The figure displays maximal expected reductions of around 0.9 Mton in 2010.
As a result of the enhancement of the Dutch national ecodriving programme from 2006 on, the target was increased to 1.5 Mton in 2010. The green line displays the achieved CO\(_2\) reductions as a result of licensed drivers applying the ecodriving principles in the past years. This line shows that meeting the new target needs considerable additional reductions.

The costs of the Dutch national ecodriving programme Het Nieuwe Rijden amounts to about 2.5 million Euro in 2005. Additionally the government loses revenues as a result of e.g. tax-exemption for fuel saving in-car devices and less tax revenues due to fuel savings. When relating these costs to the amount of CO\(_2\) emission avoidance, the effective lifespan of the programme has to be taken into account. This results in a mean cost-effectiveness for the government between 40 Euro/ton (including tax-exemption) and 300 Euro/ton (including both tax-exemption and less tax revenues through fuel sales).

When income losses for the government are not taken into account (which is usually the case for CO\(_2\) reduction projects in traffic and transport), the cost-effectiveness for the government amounts to less than 10 Euro per ton CO\(_2\) emission avoidance.

The results of the Dutch ecodriving programme show that it is possible to assess 'hard' data on a 'soft' issue like influencing purchasing and driving behaviour. From a policy point of view it is evident that the government gets value for money by implementing an ecodriving programme. The implementation of no-regret ecodriving programmes, alongside with technical measures, proves to be successful in meeting policy targets on the reduction of CO\(_2\) emissions.

**Involvement in EU ecodriving projects**

The Dutch national ecodriving programme Het Nieuwe Rijden is (co-)leading several EU projects on ecodriving. Running projects are:

- **TREATISE**
- **ECODRIVEN**
- **TRAINER**

All three projects have been submitted to and approved in Intelligent Energy Europe (IEE) tenders.
TRAINER

TRAINER (TRAining programmes to INcrease Energy-efficiency by Railways) TRAINER aims at improving energy-efficiency by railways in at least 5 EU-countries, including Eastern-European countries (NL, SI, SK, IT, GR). Training programmes and facilities will be established to initiate and optimise energy-efficiency improving measures by railway operators.

Improving energy-efficiency by railways has a very high potential. Recent field tests in Germany show that for both electric trains and diesel trains energy savings of 10% on average can rather easily be achieved. TRAINER will result in an annual 1 Mton CO₂ emission avoidance. The potential for all 150,000 EU25 train drivers is an annual CO₂ emission avoidance of 6.5 Mtons.

TRAINER will focus on energy-efficient driving but will go beyond, addressing additional energy saving possibilities concerning technology (rolling stock and infrastructure) and organisation. Long Term Agreements, which include Energy Management Systems (EMS), will also be addressed as means to accelerate and substantiate energy-efficiency improving measures in the railway sector.

TRAINER has started in November 2006 and will run until October 2008. The website is under development.

Further information


References

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