ECOWILL

Work Package 3
“Quality Control and Certification”

Deliverable 3.2
Ecodriving standards for ECOWILL seminars

<table>
<thead>
<tr>
<th>Deliverable Dissemination Level</th>
<th>Public</th>
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<td>Year of Preparation</td>
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1 Introduction

This document provides the essence of the minimum standards, contents and targets of ECOWILL high quality Ecodriving seminars as well as train-the-trainer seminars.

For seminars, which are given in the framework of the ECOWILL project, the mentioned contents need to be included and the targets fulfilled so that the seminars and lessons could be classified as meeting the ECOWILL standards.

The full training concepts, regarding both content and didactics, of the ECOWILL project can be found in the following handbooks

- Ecodriving in Learner Driving Education. ECOWILL – Level 1. Handbook for driving instructors (Deliverable 3.1)
- Short Duration Training ( SD-Training). ECOWILL – Level 2. Handbook for trainers (Deliverable 3.3)

These two handbooks are also available in national languages of the 13 ECOWILL partner countries. The national versions are adapted to national circumstances and legal requirements.

All mentioned material is available at the website www.ecodrive.org for download.

In the Annex of this document, examples of existing national guidebooks on the topic of Ecodriving are given. The respective handbooks are used in the ECOWILL partner countries Austria, Germany, Finland and the Netherlands and may serve as additional input for similar handbooks.

2 Level #1-Learner Drivers Education

ECOWILL wants to achieve various targets. One of the main goals is the systematical integration of Ecodriving in the national education of learner drivers in the participating countries. For countries which have not integrated Ecodriving in their education systems for category B/ BE so far, seminars of Level #1 will provide information for driving instructors/ master-trainers on the basic facts, strategies and guidelines how to implement Ecodriving in the practical and theoretical education.

2.1 Targets for the Level 1# Seminars

1. Driving instructors/ Master-Trainer will be enabled to understand and implement the objective targets of the GDE-Matrix
2. Driving instructors/ Master-Trainer will become acquainted with background information, facts and data of Ecodriving
3. Driving instructors/ Master-Trainer will be able to apply and educate Ecodriving driving techniques in real world traffic/ on public roads
4. Driving instructors/ Master-Trainer will get to know different methods and strategies how to deal with different target groups
5. Driving instructors/ Master-Trainer will be able to structure and operate a Train-The-Trainer Seminar with other driving instructors.
2.2 Contents of Level 1# Train-the-Trainer seminars

- Warming up - Situation
- Expectations
- Experiences
- Ecodriving techniques: Background
- Ecodriving techniques: Practical application
- Observation tasks and Feedback rules
- The GDE-Matrix as guiding principle in the learner driver education
- The technical components of Ecodriving in the learner driver education
- The social components of Ecodriving in the learner driver education
- Designing/ organisation of Train-the-Trainer-Seminars
- Standardised qualification test

Ecodriving in Driver Education

- theoretical lessons
  - ECOWILL qualified Trainer/Coach
  - License Class B
  - Golden Rules and Silver Rules
  - GDE-Matrix
  - Coaching
  - Ecodriving contents should be integrated as “normal driving style” on different levels of proficiency

- practical lessons

- examination

- curriculum
3 Level #2 – Short duration trainings

The creation of an offer towards licensed drivers (category B) to implement and train an Ecodriving driving style on public roads is one of the major targets. The training will be offered in form of a highly effective 1:1 (one trainer, one participant) training situation, within an attractive timeframe (max. 1 hour) for licensed drivers of category B/BE.

Seminars of level #1 (or acknowledged equivalents in advanced countries) will serve as entrance requirements for Level #2 Train-The-Trainer seminars. Seminars regarding level #2 provide information on the didactical concept of short-duration trainings, methods how to implement them and additional strategies and guidelines how to elaborate and apply approaches for specific target groups of experienced licensed drivers of category B/BE.

3.1 Targets for the Level 2# Seminars

1. Driving instructors/Master-Trainer will be enabled to understand and implement the objective targets of the GDE-Matrix
2. Driving instructors/Master-Trainer will become acquainted with background information, facts and data of Ecodriving
3. Driving instructors/Master-Trainer will be enabled to apply the specific contents/ driving techniques for a short duration Ecodriving training on public roads
4. Driving instructors/Master-Trainer will learn various strategies and methods to work with different, more experienced groups of licensed drivers
5. Driving instructors/Master-Trainer will be introduced in possible acquisition and implementation strategies for short duration Ecodriving trainings

3.2 Contents of Level 2# Seminars

- Warming up – Situation
- Expectations
- Experiences
- Didactics of short duration Ecodriving trainings
- Relevant Ecodriving techniques
- Pedagogical principles for the training of experienced licensed drivers
- The role of instructors within short duration Ecodriving trainings
- Design/ organisation of Train-the-Trainer-Seminars
- Standardised qualification test
Short Duration Training

5-10' minutes  Warm up (first contact)
15-20' minutes  First drive  
(measurement of fuel consumption)
5-10' minutes  Feedback session  
(Agreement of goals for the training)
15-20' minutes  Second drive  
(Training and measurement of Fuel consumption)
5-10' minutes  Feedback session  
(new agreement of goals for the future)

Theoretical lesson

Overall driving

Core tips from the Golden Rules
Coaching
1:1 (Coach/Coachee)
License Class B
Public roads
ECOWILL qualified Trainer/Coach
QSM-System?

Speeding course
Risk assessment
4 Annex
A. Austria

1 Ecodriving Objectives and History

1.1 What is Eco-driving?
Ecodriving – Modern Driving means more environmentally-friendly and more cost-saving driving, and at the same time increasing traffic safety without any time losses. The main objectives of Ecodriving – Modern Driving are anticipating the traffic, energy efficient driving and making the right decisions in traffic situations.

1.2 History of Eco-driving in Europe

- In 1986, first concepts prepared at the technical university TU Berlin, Germany, (Prof. A.-E. Bongard), supported by VW
- More widespread impact in Germany due to the “Fahr und spar mitSicherheit” (drive and save with safety) programme by DVR, supported by Ford (1996)
- Successful eco-driving programmes established in many other countries, such as the Netherlands (since 1988), Finland (since 1997), Switzerland (since 1998), Sweden (since 1998) and Norway (since 2000)
- Eco-driving initiatives at a European level (in collaboration with the Austrian Energy Agency):
  - ECO-DRIVING EUROPE (2001-2004): creating a platform for national Eco-driving initiatives, conducting surveys and pilot projects with the aim to measure the results of Eco-driving training courses, recommendation: Eco-driving should become an integral part of driving education.
  - Treatise (www.treatise.eu.com, 2005-2007): establishing know-how and skills in the field of energy-efficient, sustainable mobility, including fuel-saving driving, at Austria’s local and regional energy agencies.

1.3 Objectives and benefits of Eco-driving

Ecological aspects

- Reduction in the CO₂ emissions of motorised private transport (due to the use of stronger engines and more frequent and longer car rides, technical developments alone are not sufficient)
- 10% to 15% less fuel consumption due to defensive driving and utilisation of modern automobile technology
- Less air pollution, fewer exhaust gases
- Less noise pollution thanks to defensive driving style
- Saving of resources due to reduction in fuel consumption
Economic aspects

- Lower fuel costs
- Lower maintenance costs caused by wear and tear
- Reduced accident risk and accident costs thanks to a safer, more defensive driving style as well as overall decline in social costs

Road safety

- Improving safety by increasing the scope of action (i.e. defensive driving anticipating traffic flow, maintaining a safety distance to other cars to consider irregular traffic flow, maintaining a larger safety distance than necessary (plus 1 second)).
- Improved safety and relaxed interaction in traffic thanks to a defensive driving style
- Decline in accidents (e.g. data provided by the water distribution company Hamburger Wasserwerke):
  - Third party liability claims: minus 35 %
  - Comprehensive insurance plus collision claims: minus 22 %

1.4 Examples and results from Eco-Driving application

Eco-driving trainings for car, lorry and bus drivers throughout Europe have shown that a reduction in fuel consumption between 5% and 15% can be achieved, without any loss of time. In addition, a fuel-saving driving style improves road safety, diminishes the costs of maintenance and accidental damage as well as noise and pollutant emissions.

1.5 Target groups for Eco-Driving

- Private companies with fleets
- School bus drivers, taxi drivers
- Public service drivers (federal government, federal provinces, municipalities)
- Police, Austrian armed forces, Austrian railways, postal service
- Other public transport operators

2 Contents of the Ecodriving seminars in Austria

2.1 Clever use of cars

Avoid short car trips

About 50% of all car trips are shorter than 5 km. Such trips are especially inefficient as the following consumption figures (after a cold start) show:

- Fuel consumption 0 km to 1 km: 30 to 40 litres per 100km
- Fuel consumption 0 km to 2 km: 25 to 30 litres per 100km
- Fuel consumption 0 km to 3 km: 18 to 25 litres per 100km
Furthermore, during the warm-up period the catalytic converter is not efficient at all or only to a minor extent. This means that in this operating mode, pollutants leave the car practically unconverted. Also, the heating system does not produce heat, which strongly impairs the driving comfort in winter. High engine wear and engine loads result in higher maintenance costs caused by wear and tear and shorter maintenance intervals.

Especially in the case of short trips, it is often possible to find an alternative to using the car. Taking the bike or walking are particularly interesting from an energetic point of view, mainly because superfluous weights will not be taken along. To draw a comparison, it takes

- about 1,200kg of car weight, when driving a car,
- about 20kg of bike weight, when cycling,
- but no kilo of additional weight at all, when walking,

to transport 70kg of body weight.

Consequently, alternative modes of transport should be chosen for short trips. For example, distances of up to 500 metres should be walked, trips of up to 3km should be taken by bike. This improves health and the tiresome search for a parking lot can be avoided.

**Avoid traffic congestions**

Smart time and route planning may provide significant advantages. If journeys are made outside the rush hour, this will result in:

- a shorter duration of the journey
- reduced fuel consumption (if the average speed drops from 40km per hour to 20km per hour, fuel consumption will double)
- improved safety
- less stress
- more joy of driving

Traffic-service aided navigation systems help plan routes during the journey, as they can discover temporary congestions and find alternate routes.

**Create carpools**

In statistical terms, an average of 1.2 persons (work traffic) to 1.5 persons (leisure-time traffic) drive a passenger car. Thus, if only one person is in a vehicle, about 1,200kg of mass (that of the vehicle weight) are put into motion to transport 70kg of a human being. This means that “only” 800kg of mass has to be moved in the case of a statistical 1.5 persons per vehicle.

If 2 persons are in a car, the fuel consumption and pollutant emissions calculated per person will only be about 50%, i.e. 50% are saved.

If 4 persons are in the car, the savings will amount to 72% compared to the assumption that each person drives a care alone.
Alternative means of transport

Walking, cycling:
Advantages: exercise, no search for parking lots, no environmental impact, independence, manoeuvrability, often quicker in the case of short distances
Disadvantages: vulnerability to weather conditions, transport of luggage, clothes, exhausting

Public transport:
Advantages: quicker in urban areas, other activities (such as reading) are possible during the journey, environmentally friendly,
Disadvantages: depending on time-table, transport of luggage, comfort

Car sharing combined with public transport:
Advantages: large choice of vehicles, low costs, no maintenance, all advantages of a car at low costs, efficient use
Disadvantages: booking, limited availability, parking spaces, cost relation not favourable in the case of many annual vehicle miles travelled

2.2 Vehicle maintenance

Flexible maintenance intervals
For more and more vehicles, the maintenance intervals are not based on specific kilometre intervals but on the conditions of use. With Modern driving it is possible to enhance the maintenance intervals considerably and so contribute significantly to the reduction of operating costs of a vehicle. Factors which affect the maintenance intervals include oil temperature, engine revs, engine load, oil volume and driving distance. Driving short distances means driving with low oil temperature. This causes not only higher engine abrasion and fuel consumption, but the engine electronics record the need for more frequent maintenance intervals, resulting in higher operational costs.

Avoid unnecessary load
Acceleration depends on the mass of the object which is to be accelerated and the accelerating power.

Unnecessary load has a negative impact on fuel consumption in particular when driving up-hill, in urban traffic and at each accelerating manoeuvre. Unnecessary weight enhances the road resistance of tyres, which leads to higher fuel consumption even at constant speed.

As a general rule, 20 kg additional load increase fuel consumption by approx. 1%. The unnoticed transport of snow chains in summer, spare cans of fuel and similar items can easily result in such an additional weight.

The use of light alloy wheels can reduce fuel consumption by approx. 0.5 - 1%. Also the use of RunOnFlat tyres contributes to reduced fuel consumption because no spare wheel has to be carried.
Roof luggage rack only when needed

The aerodynamic drag (Cw-value) increases with the square of speed. Thus fuel consumption increases extensively at higher speed.

By the installation of a roof luggage rack not only the surface size of the vehicle but also the Cw-value is significantly increased.

An increased fuel consumption by 1 - 3l per 100km is possible due to the installation of a roof luggage rack.

Check tyre pressure

See ECOWILL Golden Rules

(Half-)full refuelling?

Driving with a half-full tank can contribute to a considerable reduction of fuel consumption.

Winter tyres in summer?

Many drivers still believe that winter tyres lead to higher fuel consumption than comparable summer tyres. However, this is not true for modern winter tyres. From an economical point of view, there is nothing to be said against the further use of winter tyres in spring or summer.

However it should be noted that the road grip of winter tyres is, in the warm season, lower than the grip of summer tyres.

2.3 Clever use of car technology

Fuel cut-off

Modern vehicles are equipped with an overrun fuel cut-off system, which leads to zero consumption whenever the driver steps of the gas. The cut-off is working for diesel engines until the idle-running speed, for petrol engines until approx. 1,400 rpm (due to the after-treatment of exhaust gases).

By the use of the engine break more momentum is lost than by coasting the vehicle with the engine idling. The decision between engine break or engine idling can only be done by a driving style anticipating the traffic flow.

Air condition

Air condition is powered by the vehicle engine and thus consumes fuel. The required power of up to 5 kW can result in a increase of fuel consumption by up to 2 litres/100km.

A meaningful temperature control (not very much below the outside temperature) can contribute to lower fuel consumption.

Apart from temperature control air condition can have the positive effect of drying the internal air and avoid windows filming over.

Open side windows increase the aerodynamic drag due to resulting turbulences by up to 5%.
Power consumers increase fuel consumption

Many drivers don’t consider that also power consumers increase fuel consumption when switched on.

<table>
<thead>
<tr>
<th></th>
<th>Electric power</th>
<th>Fuel consumption in 1 hour</th>
</tr>
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<tbody>
<tr>
<td>Rear window defroster</td>
<td>Approx. 5 kW</td>
<td>Approx. 0.1 l</td>
</tr>
<tr>
<td>Seat heating</td>
<td>Approx. 0.3 kW</td>
<td>Approx. 0.07 l</td>
</tr>
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</table>

For all power consumers together (from windscreen wiper to radio) an electric power of up to 4 kW is required.

In modern vehicles, “large” power consumers are automatically switched off after approx. 5 minutes.

Daytime running light is increasing fuel consumption by 0.5 % - 1%, but also traffic safety.

Cruise control

A cruise control helps to hold a constant speed and thus reducing fuel consumption. The cruise control accelerates in a way which is optimised for fuel consumption. One can see that approx. ¾ of the gas is used by cruise control systems. Thus the cruise control accelerates in a modern way!

The disadvantage of cruise control systems is that drivers have to cut of the cruise control whenever they want to use momentum after having anticipated the traffic flow. A „modern driver“ doesn’t have his cruise control dictate his driving style. If the cruise control is operated incorrectly this may cause stress.

Automatic transmission

Modern vehicles with automatic transmission often have less fuel consumption than comparable vehicles with a manual gearbox.

The automatic transmission will shift to higher gears at low revs and thus reduce fuel consumption.

The frequent use of the „kick down“ function results in high engine revs. This is avoidable by anticipating the traffic flow.

Frequent accelerating and decelerating results in unnecessary gear shifting and increases fuel consumption. A modern „learning“ automatic transmission adapts itself to the way of accelerating and decelerating of the driver (unfortunately also to the poor, inefficient driver).

A modern automatic transmission shifts down a gear when driving downwards, even if the driver is braking.

In general, the use of automatic transmission motivates to a smooth and calm driving style.
Navigation systems

Navigation systems help to avoid congestion.

Voice-controlled routing helps avoid reading any maps during the journey and thus increases traffic safety.

By indicating the scheduled arrival time the system reduces stress.

Information on the range and distance to the target motivates to a modern driving style.

2.4 Eco-Driving in various traffic conditions

- Driving a car just as a bicycle:
  - Read the road ahead and use momentum
  - Unnecessary acceleration spends energy = fuel
  - Let the vehicle roll
  - Frequent braking manoeuvres is revealing of insufficient use of momentum

- Calm and smooth driving style:
  - Making one’s own decisions makes happy
  - One second more distance to the vehicle ahead than the minimum distance leads to higher freedom of well-being – “I decide” leads to higher well-being
  - Avoid unnecessary braking and accelerating manoeuvres

- Cooperating with other drivers rather than driving against each other:
  - Helping other drivers makes oneself superior
  - Being patronising (schoolmasterly) makes other drivers aggressive

2.5 Road safety first

Keep in mind in all circumstances: Safety first

[This statement is repeated in various topics]

3 Design/Organisation of Train-the Trainer Seminars

3.1 Agenda, timetable, seminar duration, number of trainees per trainer

Train-the Trainer Seminars include a theoretical part, followed by a discussion (approx. ½ day) and a practical training in public traffic (approx. 1 day).

Trainees get a trainer manual which includes all information on the theoretical and practical part of the trainer education and PowerPoint slides which are supposed to be used for the training lessons, printed and on CD.
The exam consists of a theoretical and practical part and takes approx. ½ day. The trainers eventually receive a certification document and commit with their signature to observe the rules of the Ecodriving initiative which are stated in the contract and the trainer manual.

Usually there are three master trainers jointly leading the training seminars. The number of trainees depends on the number of master trainers and is typically four trainees per master trainer. Thus, a training seminar which is conducted by three master trainers will involve 12 trainees.

3.2 Place of training (theory and practice)

Most of the training seminars take place in Eugendorf near Salzburg which is centrally located in Austria and easy reachable by driving instructors of different Austrian regions. Additionally a specific course was defined in the area which proved to be very suitable for practical trainings.

3.3 Theoretical part (Eco-driving techniques, didactics etc.)

The Austrian seminars concentrate on how to motivate drivers to change their driving style. Modern driving offers more benefits than saving fuel costs. It is crucial that these benefits are made clear in the seminars.

For many drivers, their car is more than just a means of transportation. Thus it is essential to take the emotional aspects of car driving into account. Whenever addressing emotions in the seminar, the question whether the drivers feel good when acting in a specific way, should be considered.

Ecodriving tips, which are refused by drivers, will not be realised in practice. The joy of driving is legitimate, and Ecodriving should even enhance the joy.

3.4 What a good Ecodriving training should offer:

- Find out about the individual needs of the driver
- Show and explain reasons and incentives for an alternative driving style and encourage participants to adopt this style
- Emphasis on practical training
- Recommendation of tips which can be easily adopted
- Concentrating on the benefits of the driver in person, e.g.
  - I am feeling fine
  - I make decisions in traffic
  - I am saving costs due to lower fuel consumption
  - I treat my vehicle with care
  - I am driving more safely
  - I am not losing any time due to my modern driving style
  - I have fun when driving
- Concentrating on benefits for the public
  - Less waste of resources
Less GHG-emissions
Less noise
More traffic safety
Calm and smooth togetherness with other drivers

3.5 Practical part (training vehicle specifications, route selection, monitoring equipment etc.)

Vehicles are provided by the Austrian trainees (driving instructors) and must have fuel consumption monitoring devices.

Practical trainings must be on public roads and should be in an area with medium traffic (no congestion but also no empty roads).

The ideal route for practical trainings includes the following specifics:
- Road junctions controlled by traffic lights or signals
- Pedestrian crossings, bicycle crossings
- Roundabouts
- Uphill and downhill grade
- Acceleration and deceleration lanes
- Country roads and urban areas
- Many different speed limits
- Length of route: Approx. 20 minutes with an average speed of approx. 40 km/h
- Sections with lots of congestion and “stop and go” driving should be avoided

The following aspects have to be necessarily met for practical trainings:
- Acting like a coach instead of acting like a driving instructor
- Giving feedback in a professional way, because complements help to change behaviour
- Addressing of new issues such as car computers, letting the car roll without gear etc.
- Make use of the full time of the practical training
- Get involved with the individual drivers
- Impart feeling of success

Avoid the following aspects:
- The same procedure as a normal driving lesson
- Only search for negative points of the driving style
- A commentary such as “It was all ok”
- Shortening the practical part
- Concentrating on banalities such as the way of holding the gearshift
- Acting like a schoolmaster
3.6 Schedule of short-duration Ecodriving trainings

Before the first training, the driving instructor should reset the fuel and speed monitoring devices without the trainee being aware of this. The topic fuel consumption is not covered during the first drive.

Topics covered during the first training include seating position, steering wheel handling, driving at complex junctions, commented driving for approx. 5 minutes, potentially overtaking and traffic safety, discussion about distractive activities such as telephone calling.

At the end of the first training the fuel consumption and average speed are monitored and filled in a template.

After presenting and discussing the Ecodriving contents the same route is driven and the trainee is encouraged to follow the tips. The instructor is coaching the trainee in order to achieve an as low fuel consumption as possible. Eventually, the consumption and speed data are compared and the experiences are discussed. The benefits of Ecodriving are repeated and the instructor encourages the trainee to calculate the possible annual fuel and costs savings due to lower consumption and lower maintenance costs.

The instructor asks the trainee whether he or she felt to drive slower or faster when using the Ecodriving tips. In the following the instructors enlightens that speed is felt mostly due to the noise of accelerating and decelerating and that therefore Ecodriving often appears to be slower driving even if it isn’t.

Monitored data per driver (fuel consumption, time, average speed etc.)

Fuel consumption, time and average speed are monitored.

Analysis/Presentation of pre and post training results

It is considered important not to concentrate too much on the results of pre and post training drives in order to avoid negative effects of competition.

Use of Assessment tools and learning modules

Powerpoint slides are used for theoretical training. No assessment tools are used.

Preparation-Seminar duration

See slides in paragraph 3.7.

Place of training (during workload, in a dedicated seminar etc.)

Training takes place in dedicated seminars.

Theoretical briefing and feedback

All participants are asked to fill out a questionnaire on their impressions of the training seminar.

Presentation/Discussion of results and Eco-Driving impressions

A debriefing takes places after the training.
3.7 Schedule for Ecodriving trainings in Austria

**Schedule for Ecodriving trainings**

**Ecodriving seminar for drivers – Schedule of one-day seminar**

- **Theory** 100 minutes
- **Practical training** 200 minutes
- **Debriefing** 60 minutes

**Theoretical part**

- Make aware of the own driving style by a questionnaire (remains with the participant)
- Work on the contents, mainly using a coaching-method (no lecture-style teaching but participatory learning)
- Hand over of course materials covering specific topics
- Take notes of discussion points and keep them in mind for the practical training
Practical part

- 2 or 3 participants in the vehicle
  Driver + 1 oder 2 bystander, trainer rides with the car for minimum one course per driver
- Check of vehicle (tyre pressure etc.)
- Provision of a map describing the course
- Bystanders have to observe the driving style precisely
  Experiences have to be noted in a template

Schedule

4 participants per trainer

<table>
<thead>
<tr>
<th>Theory 100 minutes</th>
<th>Debriefing 60 Minuten</th>
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<tbody>
<tr>
<td>trainer 1 á 1 driver 2 bystanders</td>
<td>trainer 2 á 1 driver 2 bystanders</td>
</tr>
<tr>
<td>3 drivers 4 bystanders</td>
<td>3 drivers 4 bystanders</td>
</tr>
<tr>
<td>2 drivers 1 bystander</td>
<td>2 driver 1 bystander</td>
</tr>
<tr>
<td>1 driver 2 bystanders</td>
<td>1 driver 2 bystanders</td>
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<td>4 drivers 3 bystanders</td>
</tr>
<tr>
<td>4 drivers 3 bystanders</td>
<td>4 drivers 3 bystanders</td>
</tr>
</tbody>
</table>

Trainer 1 à 4 participants

Trainer 2 à 4 participants
Debriefing

- Exchange of experiences
- Repetition of key aspects via a second questionnaire
- Hand out of certificates and vehicle labels
- Information on further training options and competitions
B. Finland

The quality classification approved by MOTIVA for ecodriving training

Motiva has compiled criteria for ecodriving training in Finland. Directions include minimum requirements for training in order to decrease the environmental effects and energy consumption in transport sector as well as improve the road safety.

This material has been drawn up based on the contract between Motiva and trainer networks. Reciprocal obligations between Motiva and trainer networks have been left out from this document. The main focus here is on the demands for the training itself and the trainers.

1 Demands for the trainer

Right to train

- The training organisation / the trainer must have a valid contract assigned by the organisation managing the product in question.
- The content of the training and its basic material must be accepted by the organisation responsible for promoting ecodriving.

Competence of the trainer

- The trainer must have a sufficient basic education and expertise as well as practical experience in order to be an ecodriving trainer.
- The trainer must have a valid certificate granted by the organisation managing the product in question.
- In order to receive the ecotraining right the trainer must participate in basic training arranged by the organisation managing the product, so called starting level training, approved by the responsible administrator of the training. In the training participants will learn the basic and educational elements of ecodriving with reference to the environmental aspects.
- The trainer must strengthen his/her professional skills and knowledge about ecodriving training as well as improve his/her educational skills by participating at least once in every three years in further studies or a seminar organised by the administrator of the ecodriving.

2 Content requirements of the training programme

The training is a combination of topic entities and educational levels. The topic entities reflect the content of the training and the levels refer to the implementation ways.

The training programme may include one or several topic entities or sections. The training programme must cover at least the following aspects:
2.1 Driving training (driver section)

Theory section

- Basic information about a driver’s possibilities to have influence on:
  1) traffic emissions and their amount
  2) the effects of vehicle choices on energy consumption
  3) the effects of technical tools and equipment on energy consumption
  4) economical and environmentally friendly way to drive

- Practical instructions on how to connect driving habits to one’s own or company’s actions
- Traffic environment, route choices, connection parking and vehicle navigation and its advantages

Driving test

- Test driving must last at least 2x20 minutes
- Test driving must be carried out in normal traffic conditions
- Training car must be equipped with a reliable on-board computer

The environmental impacts of a vehicle (technical section)

- Energy efficiency and sustainability as selection criteria for vehicles
- New and more environmentally friendly vehicle technology
- Alternative traffic fuels

How to pay attention to environmental issues in a transport company (company section)

- traffic’s share of emissions and emission development in Finland
- environmental impacts and concrete instructions for a company to decrease emissions
- energy saving in business premises
- energy efficiency agreements in transport sector

2.2 Implementation of the training

The trainer/trainer organisation compiles a training programme in cooperation with the customer and chooses procedures, makes schedules and determines the number of training sections (appendix 1: Training levels).

<table>
<thead>
<tr>
<th>Training levels</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level A</strong></td>
<td>Further training in compliance with EU directive (2003/59/EY)(includes training in proactive driving)</td>
</tr>
</tbody>
</table>
| **Level B**     | For groups:  
| Basic course in ecodriving | test driving: 15–30 min.  
|                  | lecture: 2–4 h  
|                  | test driving: 15–30 min |
3 Driving school instructor training

The following is a brief description of the two-day training course organised for driving school instructors in Finland in 1999 – 2000. At the time, only economical driving style was assessed. The safety of instructors’ driving style was not assessed, as this aspect was already in hand.

The training was organised by SuomenAutokouluiliitto and implemented by experienced instructors specifically selected for the task. These instructors were coached first. The undersigned was responsible for the training content and method.

3.1 Day one (practical driver training)

The training venues were suitable hotels or similar in the various areas. The driving environment was formed by the local road traffic conditions.

One coach – one training vehicle – two instructors under training in the same car

Morning

1. First, the coach carries out a driving style analysis on the instructors to be trained. In other words, the instructor’s personal driving style is mapped with the focus on economical driving. At the same
time, the instructor sees the viewpoint of the client. Both instructors drove the route first and the feedback was given after both driving analyses were completed.

Driving style analysis

The test run is driven in the coach’s vehicle (test car has a reliable driving computer).

Training process

1. Drive 1, person drives a varied route of about 25 minutes in his usual driving style. The driving computer readings for average fuel consumption, average speed and driving time are recorded.

2. The person receives written feedback on his driving style. The feedback identifies any personal risk factors and issues affecting fuel consumption, as well as giving instructions on safer and more economical driving.

3. The coach demonstrates possible issues related to economy that have emerged during the drive, at the same time using the driving computer to show variations in fuel consumption with different driving styles. Duration about 5 minutes.

4. Practice stage

5. Drive 2, person drives the first route again. The driving computer readings for average fuel consumption, average speed and driving time are recorded.

6. Final result and analysis together with the trainee. The time taken by this analysis is about 1 h 15 minutes, in this case longer, as it was specialist training for driving instructors.

Lunch

Afternoon

The afternoon was spent practising carrying out a driving style analysis. The coach drove like a client, and the instructor under training had to assess the coach’s driving style.

The coach had a piece of paper in his pocket with at least 3 things written on it which he did deliberately (uneconomically). The instructor had to find those issues and enter them on the feedback form filled in after the drive. Practical issues related to carrying out a driving analysis (using driving computer, approach to client, etc.) were also discussed.

The instructor on the back seat took part in carrying out the analysis, and he also assessed the driving style.

This was very successful, and the greatest problem was usually posed by recording the feedback on the form in plain language and a motivating manner.
3.2 Day two (theoretical training)

During the second training day (8 hours) all the driving instructors in the area took part in theoretical training. Issues related to economical driving and saving the environment were addressed during the day.

In addition, a summary of the driving performances was made and a group result calculated. On average, the instructors’ economical driving improved almost 10% (the average saving percentage of people with driving licenses is usually 12 – 15%).

The feedback from the instructors on the training was very positive.

Since then, the training materials have been updated several times, and now the driving instructors should be retrained. ECOWILL will be a great help in this.

Attached examples of the training materials Theory 1 and Theory coach tips.

3.3 Driving test, general instructions

A comprehensive test route is prepared in advance by the coach.

3.3.1 Route directions:

The route used in training is always planned in advance so that it resembles so-called mixed driving as closely as possible. This is important because we need to be able to prove to the client that the manufacturer’s consumption figures can easily be reached. The route distance can vary depending on the surrounding area, but the driving time is approx. 25 minutes. A good average speed on the route is about 33 km/h. The consumption information for combined driving is obtained at average speeds of 33-34 km/h.

In some instances, the characteristics of the route must be taken into consideration and the result compared with normative consumption corresponding to an ancillary average speed area.

When planning the route, at least the following should be considered:

1) The route includes several sets of traffic lights. If possible, several sets of lights are visible at the same time on a straight stretch of road.

2) The route also includes a part with several stops, accelerations, and turns. E.g. residential conurbations or similar areas are suitable.

3) If possible, the route should include driving uphill and downhill, to assess the use of terrain as an aid to economical driving.

4) The route should include a section of open road if possible.

5) The route should have sections with several lanes, to demonstrate lane choices in relation to economy.

6) The route should not be prone to traffic jams.

7) The coach should drive the route ‘baseline’ himself. His own result helps to ascertain the kind of consumption it is possible to achieve on the route.
On the coach’s drive, the consumption figure should be 0.5-1 litre below the manufacturer’s combined consumption figure (cars) at an average speed of about 33 km/h.

During the driving test, the coach fills in the test form as agreed and notes down any issues affecting safety, increasing fuel consumption, and reducing consumption.

After the drive, the client receives a detailed report of his driving and how he can improve his own safety and fuel consumption.

**Start**

The client familiarises himself with the test vehicle and, if necessary or if he so wishes, try it out by driving a short run.

The coach gives the instructions on the coming analysis:

Instruction at start (example/cars):

Coach:

*Next, we will take a drive lasting about 25 minutes, and I want you to drive as you normally do. I will direct you in good time, and you can also ask for directions if you wish. If I don’t tell you to turn, take the nearest lanes going straight on.*

*My job is to assess if your driving style still has potential risks and identify issues to help you save fuel during driving. I will be writing things down during the drive, including things that might save fuel. So, if I am writing something, it doesn’t mean that the fuel consumption is high just at that moment.*

*After the drive, the driving computer (brief description of Ecosse) reports the fuel consumption, average speed and driving time.*

*You will then receive a written report of the issues emerged during the drive. Next, we can try out and practise any issues that have emerged, and you can do the same drive again. The driving computer will record any changes in fuel consumption and driving time.*

*Any questions at this point? OK… off we go.*

If necessary, the client may be informed that at possible police checkpoints or speed traps, the client is responsible for his own driving. On occasions, it may be necessary to check that he had a driving license.

Naturally, the client should comply with speed limits.

**Drive 1**

The client drives the route in his normal style. The coach should not intervene in his driving, unless the situation results in actual risks to any of the parties. Accidents must be prevented in any event. Someone might drive too fast or take high risks in other ways, but no advice is given at this stage.

In the event of a police speed trap or check, the driver is responsible as usual.
The coach records the issues requiring improvement on the test form. Most important is to identify the main issues related to safety and (3-5) any shortcomings of the driving style that raise fuel consumption. A note is also made of good performances (enhancing safety) and those saving fuel, in order to help provision of feedback.

**Feedback**

The feedback is provided in writing on a feedback form using the 'hamburger' technique.

Important: During the drive, you are not looking for mistakes, but things the client can do even better than before!

The first information recorded on the feedback form is the readings from the driving computer.

The coach has done a test run on the route in advance and has a preliminary idea of the vehicle’s fuel consumption on the route.

**Hamburger technique:**

1. The coach lists the driver's strengths in relation to economical and/or safe driving style. Even a minor point is enough. The idea is to make the client listen and arouse his interest in the subject.

   A positive approach aids internalisation of information.

2. Next, the coach introduces issues that may possibly reduce accident risk and/or save fuel. **It is important to always give the client clear instructions in plain language.**

   The feedback should not be a list of faults, but a list of instructions. The instructions are recorded on the feedback form. The feedback may include text and pictures.

   | RISK OBSERVED – WHY THE RISK ARISES – INSTRUCTION: HOW TO REDUCE THE RISK |
   | FACTORS INFLUENCING FUEL CONSUMPTION – WHY – INSTRUCTION: HOW TO REDUCE FUEL CONSUMPTION |

3. Finally, the coach records on the feedback form a feature of the client’s driving style he thought the best. The intention is to induce the client to accepting the instructions and to motivate him to perform better in the future.

**Demonstration**

Now the coach is the driver, demonstrating with the help of the driving computer how much fuel consumption can vary during driving. At the same time, the coach demonstrates issues related to observation.

This way, the client can concentrate on looking at the computer screen, and the risk of him staring at the device during his own drive is minimised. It is also easier for the coach to show the variations in fuel consumption by driving himself.

During the demonstration, issues arising in the feedback are stressed. At the same time, the client understands how even small things can make a big difference, and it is easier for him to assimilate the instructions into practice.
Practice under instruction

After the demonstration, the client can try out the instructions given, before the second drive. This also allows the coach to see how well he has understood the points made.

The practising lasts x minutes, depending on the situation (fit into total duration). It is important to remember that further instructions may be given during the second run, if necessary. The intention is to show that driving style has a significant effect on fuel consumption.

Drive 2

Now the client drives the same route following the instructions, and the coach helps if necessary, encouraging the client as he assimilates the new information.

After the drive, the fuel consumption, average speed and driving time information are recorded, like after the first run.

During the final conversation, the possible changes are listed and the effects of driving style are discussed.

The test form is never given to the client. The client receives the feedback form.

The time reserved for personal analysis is 2 hours/person. This also includes the time spent on changeover of clients (10-15 minutes).

Accident risk and its contributing factors

A few examples of the effects of various factors on accident risk.

LEAVING THE ROAD

- The coach estimates that the driver enters situations, bends etc. at clearly higher speeds than are appropriate to the situation.

The fault may lie in observation; the driver is concentrating on near distance and notices the situation too late.

LOSS OF CONTROL

- Clear shortcomings in vehicle control become apparent during the drive.

The reason may be linked to handling the car and/or poor choice of driving speed. Steering wheel handling may be excessive. Driving speed too high.

COLLISION WITH AN OBSTACLE

- Situations occur during driving where a collision is close or possible. The obstacle may be anything.

The fault may lie in observation; the driver is concentrating on near distance and notices the situation too late. Consequently, he brakes too late.

COLLISION WHILE REVERSING

- Near-miss situation while reversing in connection with parking.
The driver reverses without looking behind. Pedal control may be poor.

COLLISION WITH PEDESTRIAN

- A situation arises during driving where a pedestrian is in danger. Perhaps the pedestrian has been spotted too late. The driver is looking too close. He does not give way to the pedestrian even in a clear-cut situation (pedestrian stepping onto pedestrian crossing or is already on it).

COLLISION WITH CYCLIST

- A situation arises during driving where a cyclist is in danger. Not ensuring no cyclist possibly approaching at junctions (sides, blind spots). Driving too close to the cyclist.

COLLISION AT JUNCTION

- Situations arise at junctions where a collision with another road user is possible. Approach speed is not appropriate to visibility. Too much reliance on the other party. Insufficient observation. Insufficient flexibility.

DAY FINE

- The driver constantly risks incurring day fines.

FIXED PENALTY

- The driver constantly risks incurring fixed penalties.

REAR END SHUNT ahead

- Driver repeatedly drives too close to the vehicle in front. Under 3 seconds in built-up areas and under 4 seconds on open road (+bad weather allowances).

The reason may be that the matter is not recognised as a risk. The driver knowingly drives too close? The driver does not know the correct safety distance or how to calculate it.

MULTIPLE PILE-UP

- Driver brakes without checking behind. Safety distances insufficient. Control of rear view is insufficient.

Vehicles following are not recognised as a risk, therefore no control. Poor use of mirror.

SIDE COLLISION

- During the drive, poorly timed lane changes take place. Driver alongside sounds his horn. Insufficient checking of sides. Head not turned. Driving alongside another vehicle (in blind spot) for a long time. Driver is unaware of the issue.

Last-moment lane changes. The route is not anticipated and lane selections are left to last moment.

COLLISION IN CAR PARK


Careless driving in car park. Near-collision with other road user. The other party gives way.
Driving speed not appropriate to visibility. Observation of other road users lacking or poor. Poor parking style.

LOSS OF DRIVING LICENSE

- A situation occurs during driving where the police may confiscate the driving license.

OTHER ACCIDENT

- In addition to the situations above, some other situation where driving style may cause an accident.

Coach’s own discretion.

4 Driving style analysis

The aim is to establish two facts about the driving style:

1) Is there anything dangerous in the driving style? Are there any personal risk factors?

2) Does the driving style cause unnecessary fuel consumption?

If items requiring correction are found, record clear instructions in plain language on the feedback form on how to reduce unnecessary risks and fuel consumption.

FEEDBACK

The test form assesses a number of issues. Of these, some are related to technical aspects of driving and a significant proportion to actions in various traffic situations (more important section).

Next, explanations on the importance of the various objects of assessment and a few examples (fictional) of feedback. The examples are intended as guidelines only. The same issues can always be expressed using pictures.

Moving off

Mark here if there are excessive and unnecessary actions at the start of the drive.

- Driver starts the car and only then starts adjusting the seats and mirrors. He may even get out of the car and remove his jacket at this stage. The engine is running unnecessarily.

- The moving off may be careless. The driver moves off without checking the traffic around the car (moving off blind).

FEEDBACK: Make sure that other road users see you are moving off. Look ahead before you move off and always before the car is moving. This way, you don’t hit anybody on moving off.

Adjust the seats and mirrors before starting the engine, so you are not running it unnecessarily.

Acceleration

Acceleration can be inadequate in many ways. It may be unnecessary, long, slack or excessive. Try to pinpoint the essential. Acceleration may be appropriately effective but ‘stay on’. The driver does not
see the obstacles ahead and accelerates unnecessarily. The revs should not exceed 3,000 rpm. An appropriate gear-change point is about 2,000–2,500 rpm (petrol vehicles - or below, in modern cars where the valve timing is set according to revs, e.g. new Toyota Corolla) and about 2,000 rpm (diesel vehicles).

**FEEDBACK:** Accelerate quickly but smoothly to target speed.

Change gear at 2,000 rpm (max. 2,500 rpm) and select the highest gear at which the car pulls well. If the revs exceed 3,000 rpm, the emissions (hydrocarbons, carbon monoxide and nitrogen oxides) from the vehicle increase significantly.

Make sure you have room to accelerate first. If the traffic is slowing down ahead or at a standstill, move off slowly and wait until you have room to accelerate.

Avoid accelerating towards an obstacle. You may hit the car in front or other obstacles.

**Using the accelerator/brake/clutch**

Watch the driver’s use of pedals. Any unnecessary use? Many drivers always depress the clutch when braking. Some pump the gas without realising it. The use may be jerky, too fast, etc. Some don’t know how to ease off the brake before stopping.

**FEEDBACK:** Use the clutch only when changing gear and before stopping. Braking is possible without using the clutch.

Ease off the gas. Use the gas more evenly. Try to find a minimum gas point, where your driving speed stays even. Ease off the brake just before stopping.

**Using the gears**

Establish whether the driver tends to use too high or too low (more common alternative) a gear.

**FEEDBACK:**

1st gear, only for moving off; a couple of car lengths at most in 1st gear.

Accelerate in 2nd gear until the engine revs are about 2,000 rpm (max. 2,500 rpm) and change up.

Rule of thumb: 3rd gear 30 km/h, 4th gear 40 km/h and 5th gear from 50 km/h.

Take account of the client’s own car. His car may be older, in which case the instructions may not apply as such. Clarify: ‘Cruising’ at target speed in the highest gear at which the car pulls well.

N.B. Skipping gears is not advisable if the acceleration is not yet completed. The 5th gear is not an acceleration gear at a speed of 50 km/h.

**Engine braking**

Usually, the driver makes use of engine braking or constantly changes into neutral. It is important to note that both methods are very economical. With new cars, the former is naturally a couple of litres better per hundred kilometres. Many drivers cut short good zero periods by changing too soon or unnecessarily. If the driver changes into neutral often and coasts e.g. up to traffic lights, note the
positive side. The driver has utilised motion energy excellently! It can also be done in a different way, with the gear engaged.

**Feedback:**

If you see obstacles ahead, e.g. a red traffic light, react immediately and release the gas.

Change down only if you want extra slowing power with the help of a lower gear. The engine (gearbox) also helps to brake, and fuel consumption is 0 litres. In many cases, the light turns green and you don’t need to stop at all. Near a junction, this makes no difference.

Release the gas as soon as traffic ahead slows down.

**Observation**

Timely observation is fundamental. Many problems arise because the driver’s attention is too close, or he doesn’t react at all to what he sees.

Ensure that the driver is in control of a 360° view. Watch especially the control of the rear view and checking the sides (timing) before turning at junctions.

**Feedback:**

Look a long way ahead. You will see the obstacle earlier (e.g. a red traffic light). You can adjust your driving speed so that you can drive on without stopping.

Check the traffic on a cycle track in good time before turning, so you don’t cause a sudden stop (or you will hit a cyclist or pedestrian) when turning. You may cause the vehicle behind you to run into your rear.

**Driving at junctions**

Most important is to watch the speed on approaching a junction and the observation technique (timings). “Enter a junction like a lamb but exit it like a lion!” Note also that the driver should communicate with other road users in good time.

**Feedback:** Look in the direction of the side roads earlier. Release the gas and move your foot onto the brake immediately, if visibility to the sides is limited. Stop before the junction if you can’t see to the sides. Keep your wheels straight if you have to wait for oncoming traffic when turning left.

Note pedestrians in good time and adjust your driving speed so that you don’t necessarily need to stop. The pedestrian feels safe in stepping out onto the crossing, and neither party is liable to misunderstandings. At the same time, traffic behind you will also slow down.

Turn on your indicator clearly earlier than you start slowing down for a junction. This way, others know your intention and you allow them time to react.

**Driving at traffic lights**

Note particularly the driver’s control of his rear when approaching traffic lights. Many rear end shunts happen when traffic lights are changing. As the light changes to green, it is important to check that nobody is going through on red from a side road.
FEEDBACK: Always glance behind you before traffic lights and braking, particularly if there is an ‘old’ green ahead. Someone may be close behind you. Slippery conditions and someone driving close behind affect your decision to stop, if the light turns amber.

When the light is on red, nurse the driver behind you up to lights and junctions so that he doesn’t injure himself. NURSING CARE. This way, you can prevent being hit from behind. In many cases, the light turns to green and you avoid stopping.

Glance both sides just before moving off, to spot those who may be running the red light. Otherwise, you will drive into their path.

Avoiding unnecessary stops

An unnecessary stop is one that can be avoided by correctly adjusting one’s driving speed. At the same time, you are saving your brakes and reducing the risk of being rear-end shunted. You can also ask the driver for his assessment of what is an unnecessary stop. **There are necessary stops too!**

FEEDBACK: Look a long way ahead in queues and react as soon as you see slowing down or obstacles. A pedestrian has time to get out of the way, a turning motorist has time to turn, or an accelerating queue gets out of the way, if you ease off the gas in time. Accelerations increase the average fuel consumption, so avoid unnecessary stops in traffic.

Right speed for the situation

The right speed for the situation affects many things. Note excessive speeds and wrong speeds for the situations. Observe particularly approach speeds to junctions.

FEEDBACK: Avoid speeding, you may be fined. Adjust your driving speed according to visibility before junctions; if you can’t see to either side, gas off and foot on the brake.

Slow down sooner when approaching pedestrians and show clearly that you are giving way.

Distances in queues

Correct distances to other road users form one of the cornerstones of economical and safe driving. Driving too close, you are constantly forced to brake and accelerate. It is also important to estimate distances to those driving alongside. You shouldn’t drive for too long in another motorist’s ‘blind spot’.

FEEDBACK: Keep a distance of at least three seconds to vehicles ahead of you in built-up areas and 4-5 seconds on highways. This also allows you to see past those ahead of you, and you can react to upcoming obstacles earlier. Flash your brake lights to drivers following too close.

Avoid driving in another driver’s blind spot, to avoid being hit on the side.

Lane selection

Selection of appropriate lanes is always dependent on the driver's observation. A driver who is looking too close is not able to select the correct lanes in time. The aim is to spot the lanes that are moving and get in the correct lane when lane changes can be effected easily and preferably without changing driving speed.
FEEDBACK: Look a long way ahead and select the lane that is moving well. Enter the correct lane earlier, when it is easier and safer.

Avoid last-second lane changes, as someone may misunderstand and drive in front of you.

**Using the terrain**

Utilising the terrain (motion energy) is one of the hardest aspects to assess. The aim is to make use of the vehicle’s own speed and to let it roll without gas even for long distances before junctions and obstacles.

FEEDBACK: You can ease off the gas when going uphill even before you actually reach the top. Ease off the gas when going downhill, using it only to maintain driving speed. Try to find a minimum gas level where the vehicle speed stays suitable. Adjust the gas according to variations in the terrain.

Avoid strong acceleration when going uphill.

**Parking**

Unnecessary manoeuvring in the car park increases fuel consumption. The best way to park is so that you don’t need to reverse, neither on arrival nor on leaving. The easiest way is to drive through a parking bay into another, when possible. Most accidents related to parking occur when reversing out of a bay into traffic or obstacles.

FEEDBACK: Avoid reversing when parking. Park in such a way that you can drive out. Check the area around the car before moving off, so you don’t accidentally hit obstacles or other road users.

### 5 HERMES Coaching scenarios

Scenario designed by: SakariHopia

Name of scenario: Feedback Drive

**The aims of the scenario**

To increase self-awareness and risk awareness and to give tools to improve driving in the future, so that the coachee can find out the real level of his/her driving with the help of the coach.

**Location**

On road

**Main level /cell of GDE**

All levels of the GDE because the goal is made by the coachee.

**Summary**

This scenario can be used at any time during in-car driver training.

At first, before moving off we can ask his/her goal for this driving session. It may be anything between the sky and earth.
For example in the last driving session before the driving test, it could be that they want to drive so that they can pass the test. It is normally the most common goal.

When they are ready to start they may drive about five to ten minutes to warm up and then the coach can ask them how they think they are doing. After they have given the answer the coach may ask if they still want to have the same goal.

The goal of this feedback drive comes from the coachee and the evaluation is done with the help of the coach who is using open questions to find out the knowledge and possible sometimes, even the attitude of the coachee.

Finally together they will check if they have reached the goal.

From the environmental point of view it is also possible to measure the fuel consumption and to discuss about that topic.

5.1 Description

The manual for the second phase driving audit and “the driving school examination”

(The form which can be used is attached)

To save time and to motivate, it is sometimes better to do the first evaluation and the goal setting at home.

To calm the driving situation:

1) In the beginning of the driving, take the EVALUATION FORM.
   - Ask the own goal or goals of the student and ask to write them on the paper
   - Ask to estimate his/her own driving and mark it on the line at the spot which is in the right position

   If the form is already filled at home, you must at least discuss the GOAL and talk about the other evaluation topics.

2) Drive the first round and after that to the EVALUATION form:
   - The student put his/her own marks on the same lines again, to the place where he/she think is the right place.
   - Discuss about strengths and weaknesses
   - Note in the space “Test 1” the fuel consumption and driving time etc.

3) If necessary drive the ”demonstration drive”, where:
   - discuss something you want to comment about
   - show the right examples to develop the driving behavior

4) Drive the round 2 and after that:
   - The student evaluates his/her own success verbally
   - The coach comments the evaluation, when necessary, by asking questions
- Note in the space “Test 2” the fuel consumption and driving time and count the changes
- Check if you have reached the goal which was written on the paper earlier

During the whole education, it is only the student who is evaluating his/her driving behavior and the coach is only checking by asking questions, if there is something the coach would like to know more, etc

(Asking open questions who, when where…)

**How easily can this scenario be applied:**

This is very easy scenario to be used, but so far, after we have tried this kind of approach, we have found out that the most difficult thing here is to get old style teachers to use this kind of scenario.

Those, who are using it, are very satisfied and the coachees seem to like this kind of evaluation quite a lot, because it is very interactive.

This is very cheap scenario and it can be done easily everywhere where the teachers are ready to adopt it.
6 Slides for Train-the-Trainer seminars in Finland

This file contains the general directions to the coach on the contents of the theory section, as well as thoughts and ideas to aid the coaching.

This is the heading slide of the material. Keep this displayed at the start of the theory section, as the participants arrive. It helps to draw attention to the subject about to be addressed.

Add your own details here. You can also add an image, if it supports the organisation you represent.

Here, the introductions are done. Introduce yourself and note the persons present, possible press, sponsors, etc.

Here, the content of the theory section is introduced. The aim is to determine what an ordinary motorist can do for the environment while driving.

The motorist can influence the environmental effects of traffic in three ways. The choice of vehicle makes a difference, as does the way you drive, and general routines and measures related to vehicle use can either save or waste fuel and emissions. All three are important issues.

Go over the timetable-related matters. Break, if any, coffee provided? etc. What time the session ends. The event is not intended to be a monologue. You can ask questions, make comments, disagree and, naturally, agree.

Note that from each slide from here on you can get to this menu by clicking the image of the female in the top bar. Otherwise, the material progresses through the set by pressing enter.
CHOICE OF VEHICLE

Discuss choosing a car. Question: If you were buying a car now, what would be the most important selection criterion? Discussion around the issue. We steer the discussion towards the conclusion that when choosing a car, we consider both matters affecting the safety of the vehicle and those affecting running costs. The (other) selection criteria valued by the person himself are also important.

Which is better, petrol or diesel? Today, it can be said that both are good. The problem with diesel has been particulate emissions, but filters are now fitted to solve this. “The exhaust fumes of petrol vehicles also contain particulates. They are much smaller and have not even been studied (Juhani Laurikko/Professor, Aalto University School of Technology).”

The tax reform brought about change. Taxation of environmentally friendly vehicles was reduced.

The graph compares the combined fuel consumption values for the petrol and diesel alternatives within the same make of vehicle. There is a difference of about two litres in the fuel consumption of engines of the same capacity. Naturally, the distance driven in a year makes a difference.

The diagram compares cases where a diesel vehicle is a more economical alternative in terms of fuel costs and diesel tax. The values here are examples. In the diesel alternative, the diesel tax makes a difference. In the example, diesel is cheaper after about 12,000 – 13,000 kilometres. Take the mouse cursor over the diagram and right-click. Select: Edit information. A template appears where you can change the information. The diagram changes at the same time.
These days, it is easy to find information on the car in the showroom. It must display information on the vehicles' emissions and fuel consumption. The picture shows an example. Above or at the side of the car, there is an info page like the one in the picture, with information on the vehicle. The vehicle’s CO2 emissions and fuel consumption details are at the bottom. See the next slide.

The image shows an example of emissions information. Introduce the information.

This year, the energy labelling of vehicles becomes established. It has been piloted since last year in a few dealerships. Question: How many of you have already seen one of these labels in a car showroom?

Show the link on the left to the vehicle database. Search for the energy label of a sample vehicle and show the information found on it. The labelling helps steer the customer’s choice of vehicle in an environmentally friendly direction. Point out the limits of the green label.

Use the link on the page to introduce the Autoliitto crash test search. This is one way of comparing safety differences between vehicles. Take a real-life example and show what the tool reveals about safety.
A vehicle produces many kinds of emissions. The driver can influence CO2 emissions the most, as carbon dioxide is the result of combustion. Consuming less fuel also reduces the product of combustion.

Establish that other emissions (carbon monoxide, hydrocarbons, nitrogen oxides, etc.) are hazardous to health, and technology has been used successfully to reduce them. A catalytic converter turns gases into carbon dioxide and water. The exhaust gas emissions in new cars are now very low, thanks to new technology.

Question: How can one litre produce about 2.5 kilos of carbon dioxide? Answer: A litre requires a lot of air for combustion, and the amounts in the picture are the result.

The diagram shows that almost all emissions have been effectively reduced after 1980. Only nitrogen oxide emissions have increased. This substance is a particular problem with vehicles fitted with catalytic converters. As people buy more such vehicles, this emission has increased, but the levels will drop when more people drive new cars.

The LIISA link allows you to take a closer look at all emissions from transport.

Here, the discussion is on the different fuel alternatives. Try to identify the good and bad aspects of the various alternatives. Worth including are the availability, price, emissions, environmental friendliness, production of the fuel, etc. For example, an electricity distribution network is currently being built in Finland to make charging up of electric vehicles easier. Hydrogen vehicles are on the way, but are still expensive at this stage. The problem is the dangerous hydrogen gas and its storage. The emissions of a hydrogen vehicle are zero, the exhaust pipe emits only water.
Vehicles have improved in many ways. The equipment and vehicle structure now provide a much better chance of survival in an accident than in the 1960–1970s. The diagram shows one way of illustrating this. The number of deaths is falling, although the distances driven increase all the time.

Here is another example. The number of people disabled by injuries in vehicles falls in line with new safety equipment in cars. Question: What new safety equipment is there in cars today compared to those in the 1970s? Discussion around the issue. Which ones are found in the participants’ own vehicles?

The link in the picture lets you see short video clips on how various safety equipment works.

Brief discussion on car accessories and control systems. From the page, you can open a list of almost all the systems. If the lights on the dash board start flashing, the system is working. Have you had too much speed or has your control of the vehicle been lacking?
A navigator is a modern motoring aid. Where should it be positioned and how can it be utilised during driving? Have the participants had problems with one? The picture shows the same situation from the driver’s view and on the navigator screen.

One car accessory is a roof rack. The rack and load affect total fuel consumption to the tune of about a litre per a hundred kilometres. Ask for participants’ experiences regarding checking tyre pressures. Instruction: Pressures should be checked at least once a month.

According to research by Tekniikanmaailma, air conditioning increases fuel consumption by 6-16%, depending on how it is used.

SAFETY

Accidents happen every day. The risk exists. The set of pictures shows examples of different accidents. An accident may be minor (superficial car body damage), it may be serious (red car). A typical accident in rural areas is a collision with a moose, and luck is needed too (last example, car on the edge of a ravine).

Question: How many of the participants have been involved in a road traffic accident? What kinds of accidents? Why did they happen? Was the accident avoidable?
The graph shows the numbers of fatal accidents in Finland after the wars. The positive development after the 1970s is shown clearly.

Question: What are the reasons behind the continuing positive development?

- 1970s brought speed limits, seat belts and drink-drive legislation
- vehicles improved
- vehicle safety equipment improves
- road network improves
- reform of driving license system
- compulsory helmets
- night driving compulsory
- etc.

Note the economic boom period in Finland 1985–90. The slump struck in 1990 and shows in the statistics.

The graph shows the number of serious accidents after 1985. Finland’s official target is to get the number below 250 by the end of 2010.

Note how a figure below 400 was reached for the first time in 2000, and below 300 for the first time in 2009.

Everybody must help in this quest. Most accidents are avoidable.

Question: What kind of accident would be unavoidable in any situation?

A lot of statistics are published on Liikenneturva’s front page under ‘Statistics’.

The slide shows 9 of the most typical road accident situations or factors contributing to accidents in Finland. The idea is to introduce these issues and situations. The driving style analysis identifies whether or not the person himself may have any of these risks.
the most serious accidents are head-on or overtaking collisions
the driver’s poor capacity for driving is a serious problem (drunk driving, drugs, prescription drugs, fatigue, state of mind) and the most important contributing factor in many serious accidents
a typical accident is hitting a vehicle from behind and/or a multiple pile-up
many of the accidents take place in winter (too much speed and poor safety distances)
in Finnish traffic, the highest number of people are injured at crossings
accidents at traffic lights are a growing problem
side-on collisions
collisions with a cyclist (most often just as the car is turning)
collisions with pedestrians (most often on pedestrian crossings)

Driving while drunk is the worst problem in Finland’s traffic today. It can be said that one driver in every hundred is drunk on the road, about one in four hundred is over the 0.5 per mille limit, and of traffic deaths, about 80 – 90 die because one of the parties is not in a fit state to drive.

Click the SELVÄ PELI link at the bottom and challenge the participants to make a good resolution. “I promise that I will not knowingly get in a drunk person's car.”

Discussion on the drunk driving problem in the area. The problem is major. It can be said that if every Finn was to drive only when fully fit, the above target would have been reached long ago. About 80 – 100 people die every year because one of the accident parties is unfit to drive.

We all have some kinds of accident risks. There are no risk-free drivers. Now is the time to challenge the participants to take part in a personal driving style analysis, which assesses these risks. The diagram shows an example of one group’s result.

Go through the practical instructions on taking part in the driving style analysis.
The driving style analysis also assesses the economic aspects of driving. These days, it is possible to obtain the consumption values shown in the picture for every car. Question: How many of the participants know the fuel consumption of their own car exactly? If you don’t know it, you cannot know if the consumption is heavy or light. Give directions on how the consumption info is found in your own car.

Shown here is the fuel consumption info of some cars. The information is real and the consumption of these cars was systematically monitored throughout the sample period. Note how the winter and summer periods are clearly distinct. The final consumption of all these cars has been below the combined fuel consumption given by the manufacturer (although the cars have been used in coaching).

Motivate the participants to monitor their fuel consumption, perhaps when filling up.

The driving style analysis provides an accurate assessment of the methods you can apply to save during driving. People generally use about 10 – 15% more fuel than necessary.
The diagram shows an example of one group’s fuel consumption figures in a driving style analysis. The red bar shows consumption during the first drive and the green bar during the second. In this case, the test car was a Toyota Corolla 1.4 D. The combined fuel consumption of the car is 4.9 l/100 km.

Click on the pile of cash in the centre to open a table to help estimate cash savings, and the calculator also shows the reduction in carbon dioxide emissions. All motorists are needed for this effort. Take examples, change the figures, and discuss with the group their chances of making a difference.

It is not just a question of savings and environmental issues. Driving style affects the comfort and smoothness of the ride, as well as driving time. The picture shows oncoming vehicles, and you are turning left. By reacting to the situation in time (gas off and slow down), it is possible to complete the turn without stopping. Question: Have you noticed differences in people’s driving styles? Are you scared in some motorist’s car? Why?

ROUTINES

The diagram shows a group’s result for journey times. Journey time is shorter on average, whenever the driving is economical. Of course, many factors affect journey time. Question: Are you ever in a hurry in traffic? Does your driving style change then in any way?
Various modes of transport expend different amounts of energy. The diagram shows Motiva’s estimate of energy consumption on a 30-kilometre journey for different modes.

Discuss different modes of transport with the group. Encourage people to use public transport when it is feasible and possible. A car is also necessary. Question: What do you think is unnecessary driving?

How does public transport function in the area?

Click MATKALLA SUOMESSA to play the travel game. The game helps you to compare the costs, emissions, energy consumption and journey time for different modes of transport.

Give instructions on heating the car. Question: When do you heat your car? Is it possible? A fuel heater consumes under half a litre in an hour. A person who never heats the car wastes about 60 litres a year on cold starting (driving about 20,000 km/year).

The route always affects consumption and journey time. Is it possible to use an alternative route? Which is the fastest route, which is the most sensible? The shortest route is not always the quickest? You must always be prepared for surprises en route.
It has been found that economical driving also affects servicing costs. Money is saved because many car parts (not just the brakes) are subjected to less wear in smoother driving. What experiences does the group have on servicing?

The diagram shows the results of monitoring the fuel consumption of a car in various speed zones. It is interesting to note that when average speed drops to below 30 km/h and when it rises to above 80 km/h, consumption rises sharply. At low speeds, consumption rises because of frequent stops and at road speeds because of increased air resistance.

Question: What is your driving speed on a motorway in summer conditions? Is it always the maximum speed?

Here you go over the technical aspects of driving, instructions on gear changing and utilising breaking with the engine. These instructions apply to almost all modern cars.

We all have our own driving styles. How does the driving style change when we drive in the dark? Does anything change? Press enter and night will fall, and there may be surprises (turn up the volume to hear the sound effects).

The link below the picture lets you compare the visibility of a pedestrian on a dark road. Question: How many participants have a reflector on them?
The picture shows the most typical accident today: a rear end shunt/multiple pile-up. Most accidents are avoidable. Not all accidents are avoidable. Question: What kind of an accident is unavoidable, however fit you are to drive and the conditions are good?

Time to summarise the various issues. What are the thoughts elicited by the discussion, are there questions, comments?

Who will take the driving style analysis? Who will go for a demo drive? Practical instructions.

Thank you. Direct people to visit the driving style website.

P.S. This is not a bible that should be read too narrowly. If it is useful, good. I would be very pleased to receive ideas for the content. Criticism would make me quite ecstatic. This material will be refined with your help, for which I thank you in advance.
C. Germany

The following document is the complete Ecodriving training manual in Germany developed by DVR:
Dear reader

Driving in traffic is not a simple matter like watching a television set or the movement of an eye. Driving in traffic is constant movement in a system with many emotions, feelings and regulations. It could be compared with a "social happening", similar to a football match or the Oktoberfest, or also a relationship - stimulating, exciting - and you don't know exactly what will happen.

In this case, driving a car is itself the art of understanding the "social happening" and participating in it skillfully. As beginner drivers, young persons must learn right from the beginning, faults will not be tolerated. Road traffic is not just an inflexible movement system. Car driving is more than the pure utilization of a vehicle - it is above all a system with social interactions - you deal with it and reactions result - sometimes with counterreaction as consequence. Sensitive, clever, social action must be learned and taught above all. Responsibility for your own actions should be assumed right from the beginning, whether it is with respect to other traffic participants, the car passengers, however, also the environment, which is very stressed by the diverse and increasing mobility of our times.

Young persons need the necessary equipment for their start as independent drivers, in order to be capable of accepting this responsibility. For this, stable basics must be put in place within the framework of the driving training, which cannot be changed very easily through external influences.

Modern, present-day driving technology and tactics, right from the beginning of training, are an opportunity where present-day driving culture can adapt appropriately.

This compendium should support you in providing the stable basics of modern driving methods, within the framework of the training, and in informing young persons in their actions over and beyond the driving license test.

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The world of the teenager – life in the fast lane

You would be amazed sometimes about how fast driving can change after the driving license test has been passed and how quickly certain behavior is rejected while other (also unsafe and dangerous) behavior is adopted.

But if examined in detail, there are explanations for that. Young persons are in a very difficult and eventful phase of life. They are occupied with many facets of social existence, the search for their own way, the finding of a future perspective, loving and dramatic experiences with partnerships or also dealing with influences from circles of friends. From a neurological viewpoint, this phase of life is described as follows: "Their brain is a highly connected construction site on which scaffolds are continuously being erected, new connections made and old rejected (cf. GEO 09/2003)."

Thanks to present training and testing, young persons start driving in traffic with very good basics, which enable them to continue to learn further. However, they have until then relatively little driving experience (600 – 1000 km) and they encounter diverse situations which they cannot in any practical sense be trained for or tested for – they must learn this in their own driving without having the required support.

From a neurological viewpoint, this circumstance is described as follows: "Seen from a neurological viewpoint, teenagers still resemble a full orchestra that careers down the runway with vibrating drive mechanisms, while in the cockpit the monitoring instruments and navigation systems are still being screwed in (cf. GEO 09/2003)."

Modern traffic requires that important basics must be learned and adopted so securely that they can be overthrown by external influences only with very great difficulty, therefore the monitoring instruments and navigation systems corresponding to that are already quite securely mounted.

Whoever speaks the language of youth, gets ahead

It is important to enable young persons to learn and try things out, to awaken their interest and to accompany it in their development.

For the communication (cf. Rheingold 2001) of driving behavior, both in training and in testing, the following (among other things) must be in place:

- It must be placed in central focus that mobility is in the service of ever-changing love or life questions.
- It must be signaled to young persons that their mobility development does not occur in a vacuum, rather under the attentive and participating supervision of adults.
- Mobility and personality development must be made into something perceived as a stimulating process and it must be demonstrated that through observation of regulations and the acquiring of driving styles, advances in overall development will be achieved;
- Traffic must be presented as a challenge that cannot be overcome simply;
- It must be taught that perfection in traffic is impossible and only those who have undergone an apprenticeship beforehand are capable of approaching it – with all their trials and faults.

In order to achieve the necessary awareness for certain driving behavior with young persons, terms must be selected which arouse curiosity and represent the behavior as desirable.

"Energy-saving driving" or "environmentally-protective driving" represent terms which are not only associated by young persons with "slowness" and "crawling along", and are thus rather counter-productive in assuming visible acceptance of modern behavior. Before the first hour of training, modern driving should be communicated as normal, exciting, responsible and desirable. This comprehension deals with this.
You drive as you feel: the ideal driver

The so-called GDE (Goals for Driver Education) matrix includes all significant factors and target levels, which should include the driver training according to GADGET experts from eight countries, which has been established Europewide. In this case, it can be concluded that the psychological and social influences on driving behavior must be provided with more weight. Participation in traffic is not determined primarily by regulations and conscious behavior, rather it is subject to psychological and social factors, which can massively influence and change behavior. It must be prevented by the acquisition of maximally stable basics that influence from outside offer rapid change in an undesirable direction.

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<th>GDE matrix (Hatakka, Keskinen, Glad, Gregersen, Hermettke: 2002)</th>
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<td><strong>Hierarchical levels of driving behavior</strong></td>
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Modern driving cannot be taught through practical training only, but must be brought in association with theoretical aspects of social behavior and it must be learned.

Accelerating calmly – modern driving methods in overview

Modern, present-day driving methods are characterized by calm dealing with routine driving tasks and is characterized on this level by the following driving techniques in particular:

- Swift acceleration
- Rapid change into the next higher gear at a rotation speed of approx. 2000 and 2500 rpm (diesel absolutely earlier)
- Uniform driving in the highest possible gear
- Maintenance of an increased safety margin (e.g. 3 seconds)
- Removing the foot from the accelerator at an early stage, if it is identified that a stop must be made
- Utilization of momentum (whether it is through rolling in neutral gear or with clutch disengaged or by using the cruise control) as soon as it is identified that you cannot drive further and to further depress the accelerator is therefore useless
- Switching off the engine in case of a stop which can be identified as lasting more than 20 seconds in known situations
- Correct the oil pressure, in order to keep rolling resistance low

Young persons' experience it as especially pleasant if uniformly prevails during driving, without hasty load alternations, and driving occurs as relaxation and a separation distance to traffic in front is kept which allows sufficient handling scope. This is experienced by young persons as a "social" component.

Early gear-changing in the low-speed range (under 2500 rpm) and switching off the engine in case of longer wait or stop situations, on the other hand, is observed rather as a technical component that occurs by itself as it well trained, but does not represent any special social challenge, unless it has been sufficiently trained.
Communicating the technical and social components

In experiencing their driving style, young persons differentiate very significantly between technical and social components.

The technical components serve in this case for the operation of the vehicle and represent an extremely important basis. It is valid here that the technical components have to be learned up to the point of automatic reaction, and the social aspects are to be included in the training after a time delay.

Training must therefore be carried out in stages coordinated with each other, and which are meshed with each other. The curriculum guideline “Practical Car Training” offers very good orientation for such a structure. For this reason, the training of modern driving methods is described in this compendium in accordance with the curriculum guideline.

In this case, basic and structural stages in particular serve for training the “technical” components, while the performance stage and the stage of special driving then includes and themes the area of “social” components.

The social components, on the other hand, then serve to cleverly master the demands that are associated with daily traffic and to actively organize dealing with traffic when driving. If this results in an over-fitting of the learning process, for example in case of too early introduction of social aspects, an impressive learning success can be quickly disturbed.
Environmentally-protective driving methods on a basic level

The objective of the basic level is the attainment of psychomotor basic skills and elementary basic knowledge for correct gear selection, in particular also with reference to present-day, modern driving methods.

The training of a safe, modern gear-changing sequence with the different, available gears, as well as the creation of the basics for a purposeful momentum utilization according to motor vehicle type, are the objectives of the basic level. Fuel consumption and the emissions of an engine are primarily dependent on its rotation speed. The higher the rotation speed, the greater the fuel consumption. The present engine generation makes driving possible in the low-speed ranges. This means that gear changing and driving at rotation speeds under 2500 rpm is possible without problems.

An engine reaches its operating temperature in high gear at low rotation speed faster than e.g. in low gear with higher rotation speed. If the vehicle „falls” however, the selected rotation speed is below the idle speed and thus is just below the normal speed range.

The mastering of all gears, as well as neutral, without having to look at the gear lever, is a necessary prerequisite in order to be able to safely drive a vehicle.

A swift acceleration and fast gear changing into the next higher gear should be trained. The gear-change engine speeds with a vehicle with a diesel engine is generally below the gear-change engine speeds of an ignition engine.

In case of vehicles without rev counter, the following rule of thumb can generally be a good help:

1st Gear: only for the startup
2nd Gear: (after approx. one vehicle length)
3rd Gear: above approx. 30 km/h
4th Gear: above approx. 40 km/h
5th Gear: above approx. 50 km/h
6th Gear: possible above approx. 50 km/h

Simultaneously, skilful rolling of the vehicle should also be trained in this phase. This can happen through engaging neutral, by stepping on the clutch or by using of the cruise control (if existing). The finding of the gear suitable for the speed must also be trained here, without having to look at the gear lever. The automatic lever remains always in the driving stage D.
Environmentally-protective driving methods in the structure stage

In the structure stage the techniques learned should now be combined and refined. For this, appropriate practice is required which supports young persons in getting the necessary understanding and training in handling.

Since many learners (and also experienced drivers) cannot judge how long a vehicle will actually roll in neutral or with the clutch depressed, it is recommended to engage neutral from a higher gear or simply to let the vehicle roll with depressed clutch.

Also, there is the feeling that an engine will stop running if the vehicle is allowed to roll in neutral without depressing the accelerator. In order to provide experience here, it is recommended, when the clutch is engaged, to take the foot off the accelerator at e.g. 40 km/h in 4th gear and to let the vehicle roll to the rolling limit.

In addition, the point should be referred to that on a flat road at idle speed the vehicle would keep on going until the tank was empty.

Consumption at constant driving at 50 km/h in different gears

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Environmentally-protective driving methods in the performance stage and stage of special driving

The performance stage and the stage of special driving serve now to include the social aspects, on the basis of stable competencies in the "technical" area. In this case, it is advisable to take this on too early, so that no over-fitting results. Now it involves driving with low rotation speeds and the utilization of momentum to progress to more complex traffic situations.

In these stages it is important to confirm young persons again and again in the application of techniques, but also to train for those situations in which it is necessary, for reasons of safety, to also apply higher rotation speeds in the short term, in order to achieve optimum acceleration. Associated with these situations are the following e.g.:
- Driving on the autobahn;
- Implementation of overtaking maneuvers;
- Gear changing on gradients.

In such situations, the gear must be selected which best guarantees the necessary acceleration for this driving manoeuvre.

As already suggested, the subject "use of momentum" must now be applied to more complex traffic situations and practiced. Furthermore, if not already very well marked, the correct gear selection must be supported in this case.

For those concrete situations in which the "use of momentum" should now be practised and trained, the following apply amongst others:
- Rolling up to a red traffic light or a traffic light that will change to red while driving up;
- Rolling up to a "Stop" sign or "Yield" sign;
- Rolling up to crossings or branching roads, in order to exit.

Maintenance of a higher separation distance (so-called buffer separation distance) ensures that young persons see how their handling space is significantly extended. In this way, an active influence is taken on the traffic situations, instead of reacting passively. The training of maintaining an increased separation distance is of special importance in this training phase. Young persons perceive this as a well acquired capability in social handling, since they have sufficient room and time to enable reaction to situations.

The enhancement of the safety margin has numerous advantages:
- The drive lane can be changed at an early stage before an obstacle;
- Speed variations can be balanced more uniformly;
- The danger that an aggressive following car operands you is reduced, since strong braking is seldom required.

In this phase, as well as the training, an evaluation for selection of an increased separation distance should also occur, and the advantages connected with that should be emphasized.
The environmentally-protective driving methods in the test

Training is a very important phase in educating young persons to become responsible drivers. Right from the beginning, the described driving technique should be consistently communicated. Whether the learners learn to change from 1st to 4th gear or from 1st to 6th gear is of no definable importance for them in this case. They do what is expected by them. It is important that this becomes an automatic reaction – the more intensively it is practiced the more natural the application.

The driving licence test is a further, very important phase. It represents the transition from the learner to the autonomous driver and remains (as with other tests as well) long in the memory. In the test it should be determined not only whether a learner can drive a vehicle safely and according to regulations through traffic. In the same way, safe behavior should be confirmed or weaknesses which appear should be designated as such. Thus a driver can still remember exactly what the driving licence tester communicated to them.

The role of the driving licence tester in this situation is therefore not the role of a person who dispenses driver’s licenses according to his pleasure and mood. Rather, he takes on the role an independent, neutral and competent observer, who delivers an evaluation which remains permanently remembered.

It is exactly this competence which should be used sustainably in order to give young persons support for their actions when driving, which remains fixed in the memory. With this understanding, a very important, pleasant and stimulating role can be supplied to the driving licence test. Neutral, independent and as confirmation it is stated which strengths are present and where optimization requirement still exists.

Nothing disturbs a begun, secure learning session than the “putting in question” of a modern driving technique which sustains the possibility of modern engines. In this respect, it is important to motivate the young persons through confirmation that they are on the correct path, and should further pursue this path consistently.

If, nevertheless, the situation should occur where the driving instructor and driving licence testers represent different opinions, this is only human, however, it should be discussed only between the two persons involved.

In the phase of driving licence acquisition, on the other hand, any misconception should be avoided. Rather, strengths must be promoted by praise and acknowledgement. This supports their application – an important and sustainable step to durable anchoring of environmentally-protective and modern driving methods. It is furthermore important, in case of a passed test, to emphasize this behavior as being very well applied. With this, the permanent adoption of environmentally-protective driving methods is sustainably supported and promoted through the statement of the independent, neutral and competent expert.

Environmentally-protective driving methods in case of BF 17 – an opportunity to propagate modern driving techniques

"Accompanied driving from 17" offers new opportunities to propagate a modern driving culture. Participants in the model "Accompanied driving from 17", as well as the other driving license applicants of Class B, go through the driving training without cutbacks, in order to start with the necessary basic competence.

The opportunity which results with BF 17 is that young persons are able to pass on their acquired driving style to their companions, and so an adoption of the driving style becomes possible with many practical examples and through interested observation and is a pleasant experience.

With companions, the majority of drivers will be involved who refer back to a large experience basis in traffic, however, within the framework of their driving training, were confronted only relatively with the environmentally-protective driving methods. Indeed one can assume that driving techniques may be known about in theory, however, their consistent application is rather not expected. Nevertheless, in this respect it is to be expected that the modern driving style will be a new thing for most of the companions. However, it is rather difficult to get away from old habits in driving a car. This then has the danger that the young persons could possibly get feedback about their driving technique, which has the effect of disconcerting them and not reassuring them.

If the occasion arises, the future companions should therefore be provided with initial insights into environmentally-protective driving methods in practice, as early as during driving training. However, this must be clarified, at the latest, at the start of the accompanying phase, so that no different opinions arise here between the young persons and the companions.

Initial results indicate that, after driving, very intense discussions occur between young drivers and their companions. A desirable effect: Demonstrated behavior is spoken of, exchanges occur and companions are ready to reconsider their own behavior as well.
Environmentally-protective driving methods in case of FSF – professional support and reinforcement

The "advanced training seminar for beginner drivers (FSF)" pursues the objective, on the basis of independently acquired driving experience, to train and to scrutinize behavior changes in order to educate secure strategies for the future. It must be assumed that driving behavior changes with time, since new situations are experienced and diverse influences from outside co-determine driving behavior. Unfortunately, these very natural changes are not always positive.

With the "advanced training seminar for beginner drivers (FSF)", environmentally-protective driving is dealt very consciously in several sequences, and handled in order, on the one hand, to confirm young persons in their behavior or to build up again any possible previously learned driving behavior.

The practice and monitoring drive occupies a central position in this case. It also serves for young persons receiving feedback on their driving behavior from people of the same age and, in addition, it includes purposeful training sequences with professional support. After the purely monitoring drive has been completed (approx. 20 minutes), the seminar leader becomes the coach and has the clear task of training for predetermined traffic situations, on the basis of formulated desires of the participants. The participants should be explicitly informed here in the application of environmentally-protective driving techniques and/or be encouraged in their application. Regular references serve to build up and strengthen environmentally-protective driving. This means that positive behavior must be confirmed (e.g., with the statement: "I really think that you are now using 50% gear") or encouragement is given to try things out (e.g., with the statement: "change into 5th gear now!").

Not only does the driver experience the application in real situations, but also the traveling observer associates the application with concrete traffic situations.

Environmentally-protective driving methods in case of ASF or ASP – professional support and reinforcement

Also in the structuring seminars for beginner drivers (ASF) and/or for drivers with points (ASP), the opportunity is offered to address environmentally-protective driving and to motivate the application of the driving techniques. In this case, after the observation and test drive, the participants of both structuring seminars frequently have the desire to get concrete feedback acknowledgment and hints on their driving style from the seminar leader as well.

This occasion should be used consistently for positive reinforcing of already demonstrated behavior. Generally, it is the case that these "experienced" drivers already employ some techniques, however, they do not yet fully exploit all possible potentials.

In the follow-up discussion, these aspects also serve for a positive entry into the feedback situation.

Formulations, such as "I really like it when you engaged 5th gear so early on Münsterstrasse" or "It strikes me that you took it out of gear while driving up to red traffic lights. I found that very pleasant. You could even do that earlier", confirm, on the one hand, the driver and motivate him further application, while, on the other hand, contribute to the fact than the travelling observers get stimuli to adopt.
Environmentally-protective driving methods in theory

Within the framework of theoretical instruction, the elements of environmentally-protective driving methods can be addressed. In the sense of the CDE matrix (see page 6), there is a dispute on different levels. Driving is determined by technical and social components, as already previously described. These two components should not be discussed and dealt with in common in this case, rather they should be consistently assigned to the individual project areas, considered separately from each other.

This also supports the intention to represent environmentally-protective driving methods as something normal and not as something special.

Correspondingly, transparencies are available for an explanation in the processing of the technical components, while, for the rather more social components, trigger situations and/or trigger films serve to introduce certain behavior situations in order to discuss these in common.

The technical components

The technical components of environmentally-protective driving methods should rather be assigned to the levels 1 and 2 of the CDE matrix. It is a question in this case of aspects of vehicle operation, which is a preparation for the necessary action examples, the removal of incorrect technical ideas and the explanation of certain tips (e.g. to switch off the engine where it is appropriate). The area of "Technology" in the class-specific additive for the Class B is recommended for that.

With the available content transparencies, the following (among other things) can be clarified:

- Case selection is dependent on the engine rotation speed and the vehicle speed, and only in specific cases of traffic situations where stronger acceleration is necessary.
- A desirable speed range (low-speed) exists, in order to give an orientation for the future.
- Underestimating the idle speed (idling limit) has as result that the engine does not run smoothly and a gear change or the engaging of neutral or the selection of idle running is required.
- A direct connection exists between engine rotation speed and fuel consumption.
- A direct connection exists between engine rotation speed and acoustic volume.
- There are situations where it is of benefit to switch off the engine. This also supports the intention to represent environmentally-protective driving methods as something normal and not something special.
The social components

The social components of environmentally-protective driving methods represent a special, but very desirable challenge for young persons and must be handled as such. Here, it is a question of a targeted influencing of young persons on the levels 3 and 4 of the GSE matrix. Here, it is indicated that young persons accept responsibility, not only for themselves, but also for others. The desirable objective is: “With me you should all feel good!”

This is achieved in particularly by uniform, balanced driving methods, which are sustainably supported by the selection of a correspondingly large separation distance from the vehicle in front.

At the same time, young persons must be prepared for the fact that this normal driving style is looked on as rather usual by others, and that it can lead to discussions, since this was formerly taught differently. By means of basics which are as stable as possible, it must be prevented that influences from outside allow a rapid change. Stable basics are created when young persons identify and accept the advantages by themselves, and not when they are offered on a plate.

Therefore selected trigger situations, based on short spots, are available for dealing with the social components of environmentally-protective driving. They serve as an introduction to the subject and stimulate discussions and disputes within the group and also home behavior.

Handling modern driving methods in discussion

There are three spots on the DVD which all theme modern driving methods in a different way. These spots represent a good starting point for a discussion with young persons. The objective should be that young persons identify which factors distinguish some driving methods which they experienced as pleasant.

In small groups, it can then be identified with the following “triangular method” what in fact young persons actually desire when they think about driving styles. They are currently identified as car passengers in this case. It is exactly in this role that they are specialists.

Procedure in the application the “triangular method”: Each of the three small groups gets approx. 10 minutes time to fill out a flipchart with possible descriptions. After that, a change is carried out clockwise and the small groups have to carry out the task of adding extensions in only approx. 5 minutes. After that, a change is carried out clockwise once again, and now approx. 5 minutes remain to once again carry out extensions.

If all three groups are ready, it is now simply a question of exchanging the headings of the individual flip charts as follows. Thus the proposed results represent a handling direction for future behavior.

- I will do that, so that my car passengers feel really good!
- I will avoid that, because my car passengers should feel good!
- I tell my car passengers that they should do the following if I do not drive in this way, that they feel good.
Film “Parents Visit”

A young man would like to present his girlfriend to his parents. It is a very urgent case for him. The girl must fill herself up somewhat in the car. Due to the driving style of her boyfriend, which was hectic and without any foresight, she does not succeed in this at all well, however.

Film “Mother - Daughter”

A woman is with on a shopping trip with her daughter. In the eyes of the mother, the girl is a rather inexperienced and bad driver. During the drive, however, the daughter turns out to be the one who is truly in the know because she masters modern driving methods so well that she convinces even her mother.

Film “Disco Stag”

A clique of friends travels with two cars to a disco. The “disco stag”, a cool, macho type who likes to step on the accelerator, is in one car. In the other car is a young man who masters modern driving methods. The “disco stag” drives with little regard for economy and must refuel. An aspect from which the other young man ultimately profits...
Appendix I: Legal background

Safe, economical and environmentally-protective driving techniques have been integrated into training with the new version of the driving instructor legal and driving-license legal ordinances. This section presents in abbreviated form the basic important stipulations:

§ 1 (1) FahrschAusbO.

"The objective of the training is qualification to a safe, responsible and ecology-minded traffic participant. (...)"

§ 3 (1) FahrschAusbO.

"The training has to be oriented to the objectives of this ordinance. (...)"

Thus, the objectives and the content of the training are described in § 1 (1) of the driving school training ordinance. The new weighting illustrates that the objective of the training is the qualification to a safe, responsible and ecology-minded traffic participant. The preparation for the driving license test is a further component part of the training in a secondary sense.

As a result, the FahrschAusbO is implemented in § 1 (2) such that the training has to provide for traffic behavior which also includes responsibility for the environment, as well as responsibility for lives and health, as well as property.

§ 1 (2) FahrschAusbO.

"A traffic behavior has to provide the training, that (...)"

- includes responsibility for lives and health, environment and property.

It is correspondingly clearly observed in § 3 (1) that the training of a learner driver has to be based on the previously mentioned objectives. In this case, the training contents are to be selected and handled so that the objectives are achieved.

In the description of the theoretical instruction according to § 4 FahrschAusbO, Enclosures 1 and 2 on the general plan are referred to. Some elements of economical and environmentally-protective driving methods are listed therein as examples.

Enclosures 1 and 2 to § 4 FahrschAusbO.

- Ecology-minded driving through crossings and branch roads (Enclosure 1, No. 5).
- Safety and ecology-minded behavior at level crossings (Enclosure 1, No. 6 b).
- Knowledge of the interconnections between speed and emissions of pollutants (Enclosure 1, No. 8).
- Selection of environmentally-protective speeds (Enclosure 1, No. 18).
- Noise protection (Enclosure 1, No. 3).
- Course for environmentally-protective driving methods (Enclosure 1, No. 12).
- Energy-saving driving methods (Enclosure 2.2, No. 1 d).
- Environmentally-protective driving and defensive driving strategies (Enclosure 2.2, No. 1 d).

The same also applies for the general plan of the practical instruction according to Enclosures 3 - 6 to § 5 FahrschAusbO.

Enclosures 3 - 6 to § 5 FahrschAusbO.

- Environmentally-protective adaptation of the gear changes to the traffic situation, road conditions and road type (Enclosure 3, No. 3.1).
- Changing gear on gradients and fully loaded, also with a view to environmental impact aspects (Enclosure 3, No. 3.2).
- Ecology-minded adjustment of the driving speed to road, traffic, visibility and weather conditions (Enclosure 3, No. 8.1).
Appendix II: Modern driving methods from the viewpoint of science

Since 1995 the Deutsche Verkehrsicherheitsrat e.V. (German Traffic Safety Council), with its partners “Commercial Trades Social Insurance against Occupational Accidents” and “Federal Union of the Association of Driving Instructors”, has been developing suitable concepts, in particular for influencing professional, high-volume drivers with a lot of driving experience. In business applications, not only the Commercial Trades Social Insurance against Occupational Accidents, but also the companies themselves are very interested in acquiring scientific knowledge about the effect of these measures. It is not primarily a question of fuel saving here, rather the reduction of accidents and the promotion of calm driving methods.

Therefore the Deutsche Verkehrsicherheitsrat e.V. and Commercial Trades Social Insurance against Occupational Accidents in past years have commissioned several research projects, which should provide knowledge (and in fact have provided knowledge) about the long-term effects of these measures in particular.

With Hamburg Waterworks and Bromman Public Utilities, based on the existing data records, it was possible to carry out a comparison 11 – 12 months before and after the training measure in each case, in order to obtain knowledge about fuel consumption and saving, and about increasing safety. In addition, based on psychological aspects and surveys with the employees, it could be checked which acceptance is to be determined with regard to an adoption of the driving methods.

In the following text some results are presented as examples, in order to indicate which effects can be achieved with experienced drivers who drive routinely every day. If these techniques are communicated and taught consistently right from the beginning, a higher potential can be assumed, since behavior trained over years does not have to be changed.

The effect of the training of those driving techniques leaves traces with the employees, which remain in their minds for a long time and promote change:

- Tradition
  - Old theories, regarded skeptically
- Improving
  - Undeterred intervention at the beginning “blossoms” to endeavored dynamics
- Arrangement
  - Measures of the “5 Class” – appropriate, safe, economical and true

Overview of the image 2003

- Perspective
  - Translatability to business overall context
- Change
  - Change benefit of proof verification for convertibility of social relationships
- Factuality
  - Compact training with handling approximation and plausibility
As well as the psychological effect, hard facts that clarify the advantages and sustainable effect of the driving techniques could also be determined in the above-mentioned research project:

- The difference between trained and non-trained driving 11 months after the training is indicated with fuel consumption of approx. 8.75%.

- Liability damages could be reduced by 35%, and fully comprehensive insurance damage reduced by 22%.

- The drivers had a "new form of calmness".

In a further research project with Bremen Public Utilities (BWB AG), this knowledge could be confirmed again about two years later. A direct comparison was carried out in addition between trained and non-trained drivers, as well as a data calibration adjustment between the periods before and after the training for the year 2005.

**Transit 350 H in the year 2005**

<table>
<thead>
<tr>
<th>Average consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
</tr>
<tr>
<td>12.78</td>
</tr>
<tr>
<td>Experimental group</td>
</tr>
<tr>
<td>11.83</td>
</tr>
</tbody>
</table>

-8.0
D. The Netherlands

1 Ecodriving Objectives and History

1.1 What is Eco-driving?

Ecodriving is a way of driving that reduces fuel consumption, greenhouse gas emissions and accident rates.

Ecodriving is about driving in a style suited to modern engine technology:

Smart, smooth and safe driving techniques that lead to average fuel savings of 5-10%.

Ecodriving offers benefits for drivers of cars, vans, lorries and buses: cost savings and fewer accidents as well as reductions in emissions and noise levels.

1.2 History of Eco-driving in Netherlands

Eco-driving, known in the Netherlands as “Het Nieuwe Rijden”, is performed since 1999 in by the Dutch government. Target op the program is reducing CO2 emission in traffic and transport by influencing driving and buying behavior of users of vehicles.

The program did the following activities through the last years:

Influencing of learner drivers by making Eco-driving part of driving education, influencing of experienced drivers by doing Eco-drive trainings, a mass media campaign with tv and radio commercials, disseminate information through printing and electronic media.

Characteristic of the program is the network approach, in which Eco-driving creates a basis at market parties. That is why the Eco-driving-network is cooperating with section- and consuming oranisations, who are spreading the message of Eco-driving in a reliable way to their followers.

The precursor of Eco-driving was the “Buy Economic Drive Economic”-program. This program was from 1988 till 1999 and was targeting on behavioral change. The program Eco-driving is targeting in persisting and intensifying the approach of “Buy Economic Drive Economic”-program.

The Eco-driving-program has several phases. The First phase was from 1999 till 2005 and aimed on driver education. This approach was very successful, so that the Eco-driving style became a major part of driving examination and driving education. Because of the success the government decided to do a second phase from 2003 till 2006. In this phase, the attention was now on the experienced driver who has already a driving license. An important element of this second phase was the mass media campaign to promote and spread Eco-driving wider. The repeating media attention has led to a familiarity by a lot of people. Question was whether people are showing the right behavior. To achieve the right behavior, in 2005 is written and accepted a proposal for continuing the Eco-driving-program to a third phase (2006 till 2010). The third phase is approaching target groups so a big group of people can be approached and to intensify the message of Eco-driving. These groups are governments, companies, branch organisations and other organizations. Every year the effects of Eco-driving are evaluating. As a main part of Eco-driving the effects can be seen very quickly; at the next tank stop.

Familiarity and application of Eco-driving
Figure S1 shows the familiarity of Eco-driving since the start of the program and the grade of application of it. Since 2000, the familiarity of the Eco-driving program has increased from 18% to 80%. Main part of the respondents tells spontaneously what Eco-driving is for.

![Graph showing the increase in familiarity and application of Eco-driving elements from 2000 to 2008.]

*Figure S.1: Bekendheid met HNR en toepassing van HNR-elementen*

- Pink = familiarity
- Blue = use of driving style tips
- Red = check tyre pressure
- Green = use in-car equipment

Figure S.1 shows an increasing trend in frequency of check on tyre pressure. Approximately 35% is checking in 2008 at least once per month the tyre pressure, which was 25% at the start of the program in 2000. People who know Eco-driving checks tyre pressure more often every month (45%) than people who do not know Eco-driving. The use of in-car equipment has increased between 2000 and 2008 from 15% to 40%. App. 80% of the drivers is using in-car equipment regular.

**Obtained CO2-effects**

Figure S.3 shows the realized yearly CO2-reduction by Eco-driving since the start of the program in 1999. The bars left show the CO2-reduction as a matter of changing driver behavior on specific Eco-drive-elements, the bars on the right shows the part which is directly related to the Eco-drive-program.
1.3 The “New Driving Style” / “Environmentally-aware driving” in training and testing

Category B driver training can only take place with a certified driving instructor, i.e. accompanied driving is not allowed. The average learner takes around 40 hours of practical driving lessons before taking the test. Learners generally prepare for the theory test through home-study. The pass rate in the practical driving test is around 50%.

The ‘new driving style’ is being introduced as part of the practical driving test from 2008 onwards. The Netherlands has prepared for this by providing free ½ day training for over 90% of instructors and examiners in the last few years. Some driving instructors have already started training learners on basic new driving style techniques, such as early gear shifting, letting the car roll (coasting) and early anticipation. The extent of this focus in training largely depends on the progress of each individual learner.

2008+ will constitute an experimental phase with regard to the new driving style in the test. Symbolically, energy-conscious driving has only been added in an appendix to the official category B training and testing curriculum (‘Rijprocedure’) rather than being integrated immediately into the main body of the text.

Energy-conscious driving is one of 13 criteria which can be used in reaching a pass-fail decision in the practical driving test. The current stance with regard to the relative weight of energy-conscious driving in reaching such a decision is that candidates will not fail on the basis of poor eco-driving as long as his/her safe driving behaviour is otherwise excellent. However, poor eco-driving can contribute to
failure if other (safe driving) aspects of the candidate’s performance are found to be lacking. Eco-driving has thus become an important assessment criteria because in practice very few people drive otherwise excellently.

In order to illustrate the kinds of environmentally-aware driving that the examiner will be looking for in each different part of the test, the following examples were spontaneously given during the project visit to the Netherlands (note: driving at low rpms applies to all items):

<table>
<thead>
<tr>
<th>Driving away</th>
<th>Changing quickly into 2\textsuperscript{nd} gear when moving off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving straight and around bends</td>
<td>Quickly changing up through the gears</td>
</tr>
<tr>
<td></td>
<td>Staying in a high gear around bends</td>
</tr>
<tr>
<td></td>
<td>Using built-up energy when having to stop on a straight road (coasting)</td>
</tr>
<tr>
<td></td>
<td>Use of cruise control, if present and appropriate</td>
</tr>
<tr>
<td>Intersections</td>
<td>Possibility of not stopping when having priority and if no traffic coming</td>
</tr>
<tr>
<td></td>
<td>Rolling up to the junction, taking into account traffic from the rear</td>
</tr>
<tr>
<td></td>
<td>Not changing down through the gears on deceleration (and engaging the clutch at the latest possible moment)</td>
</tr>
<tr>
<td>Entering and exiting traffic</td>
<td>Skipping some gears (e.g. 2 or 3 to 5).</td>
</tr>
<tr>
<td></td>
<td>Explosion of speed (motorway)</td>
</tr>
<tr>
<td></td>
<td>Exiting: release gas pedal at early stage (looking behind at same time for safety reasons)</td>
</tr>
<tr>
<td>Overtaking and lane changing</td>
<td>Overtaking – skipping gears (extra explosion of speed)</td>
</tr>
<tr>
<td>Behaviour next to specific traffic features, e.g. bus stops</td>
<td>Turning off the engine, e.g. at railroad crossings. Driving on roundabouts – in higher gear.</td>
</tr>
<tr>
<td></td>
<td>Driving past public transport in higher gear for noise reduction purposes…</td>
</tr>
<tr>
<td>Special manoeuvres</td>
<td>Avoiding excessive revs (noise and emission pollution).</td>
</tr>
<tr>
<td></td>
<td>Waiting so long for appropriate moment may require turning off engine.</td>
</tr>
</tbody>
</table>

Finally, it is important to note that the Netherlands has spent considerable time and resources over the last few years on developing an awareness of the new driving style amongst the broader population (namely experienced drivers). This broader awareness may facilitate the integration of the new driving style in initial training and testing.

1.4 Objectives and Advantages of Eco-driving

The objective of Eco-driving is to contribute to reducing CO2-emissions in traffic and transport. This objective of the program is reached by influencing driver behavior, stimulating of the use of in-car equipment and check of tyre pressure. To achieve the objective, the Dutch government has different projects, provide subsidies, and provide mandate to companies. There are also activities on maintaining en expanding an Eco-drive network, communication, international activities and monitoring and evaluation.
The advantages of Eco-driving:

- More safety on the road
- Less costs of maintenance
- Less charge to the environment / less emissions
- Less fuel costs
- Higher comfort for drivers (less stress)
- Less damages
- Less passivity on driving a car

1.5 Examples & Results of Ecodriving Application

Following are examples and results of VVCR Europe:

Eco-driving is reducing the costs of transport not only because of less fuel consumption, but also of less costs for maintenance and damage repair. So a saving of € 1,- on fuel is also a saving of € 1,- on costs of maintenance. Results shows after attending Eco-driving lessons, damage reduction can be made from 30 till 40%. Fuel consumption drops with ca. 6%. When even monitoring fuel consumption savings can be made till 10%. Also CO2-emissions will drop with 10%. Imagine a fleet of 40 vans and an average mileage of 30,000 km per year, Eco-driving will save yearly € 20,000.-

City government of The Hague

As part of attempting a CO2-neutral organisation, the city of The Hague trained 179 drivers of the city government. In the First year there is a CO2-reduction of 14 ton and average 9.2 ton over a period of 10 years.

Leasing Company

A big leasing company gave 673 persons a free training of Eco-driving. The leasing company selects every year a car with the most profitable exploitation basis. The results of the training were an average fuel reduction of 3,9%. This means even a reduction of CO2-emission of 3,9%.

Public Transport company

A public transport company implemented Eco-driving. This driving style measures (training, registration, feedback, communication) made a significant fuel saving. The average use was 2,61 km/liter. After training the use was improved till 2,83 km/liter, which is a saving of 8,4%. Almost 1000 employees were trained in Eco-driving.

1.6 Target Groups

Main target groups are: learner drivers of passenger cars (cat B)

Other target groups are:

- Driving instructors
- Driving examiners
- Policy makers
Target Groups for Eco-driving short training

Main target groups are: licensed drivers of passenger cars (cat B)

Other target groups are:

- Driving instructors
- Policy makers
- Energy agencies/institutes
- Fleet operators
- Leasing organizations
- Automobile clubs
- Governments like cities (locally events)

2 Contents of the Ecodriving seminars in Netherlands

Methodology Eco Driving The Netherlands

Goals, in relation to the knowledge of the candidate:

- naming of the aim of a safe, effortless, and environmental friendly way of practicing the traffic rules.
- Define approximate definition of MOT check on emission
- Define the correct tyre pressure and define when to be checked

Goals, in relation to the skills of the candidate:

- define on which moments and which circumstances which control part has to be used to, if safety allows, drive the way which is most energy aware
- define on which moments help equipment has to be turned on or off, in purpose of energy saving

Goals, in relation on action practically

- starting engine in a way that uses less fuel
- after a stop longer than 1 minute, turn off the engine
- maintain a low rev
- shifting at lowest rev
- shifting back in a smooth way
- only use help equipments when necessary
- when traffic jam stay as much as possible in the highest possible gear
Goals, in relation on responsibility

- define approximately the load of environment on traffic
- define technical supply how to reduce pollution
- define how to ecodrive
- practice the principles of ecodriving

2.1 Driving tips

Driving style

- shift up as soon as possible, between 2000 and 2500 revs.
- Drive as much as possible in a steady speed with low revs in the highest possible gear with a smooth running engine
- Drive at 80 km/h in 5th gear, drive at 50 km/h in 4th gear
- View as far as possible ahead and anticipate on traffic
- Keep sufficient distance
- Make use of roll out of the car by releasing the gas pedal when reducing speed
- Turn off the engine when possible (profit after 1 minute)
- Avoid energy wasting by unnecessary use of consumers like air-conditioning, electric equipment and rear window heating

Preparation of ride

- Choose a smart route, leave on time and avoid peak hour
- Avoid unnecessary weight in car
- Avoid air-resistance, (roof box, bike rack, roof rack, etc)
- Maintain car by prescription of the manufacturer

Tyres

- check tyre pressure every month
- Chose eco tyres
- Don’t drive too long on winter tyres

Fuel saving accessories:

- Use as much as possible fuel saving accessories like rev meter, cruise control and board computer
- Trust on rev meter on shifting up
- Cruise control saves fuel and makes driving more comfortable

Buying car

- Make use of energy label of new cars
- Choose clean, economical cars through actual information
- Inform about actual arrangements