



# ECO-DRIVING EUROPE

improves road safety, fuel efficiency and combats climate change

**A GUIDE TO PROMOTE THE SMART DRIVING STYLE**

## 01 ECO-DRIVING EUROPE

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In 2001, **ECO-DRIVING EUROPE** started aiming to accelerate the establishment of **ECO-DRIVING** in Europe. Until then, there had been rather isolated national initiatives in the Netherlands, in Germany, Finland and Switzerland. In the meantime **ECO-DRIVING** has become a priority in most EU-countries as well as in the EUROPEAN COMMISSION when energy efficiency, climate protection as well as road safety programmes are concerned. **ECO-DRIVING EUROPE** has contributed to this favourable development by:

### BUILDING A EUROPEAN NETWORK

Resources have been shared to develop new solutions as well as to evaluate results. Experience and know-how have been exchanged in workshops, demonstrations, through newsletters or in personal contact. New solutions and knowledge are the result of working together. EU-countries have benefited from each others' experience and results and could thus accelerate **ECO-DRIVING** activities and programmes.

### BUILDING A KNOWLEDGE BASIS

Facts and figures concerning **ECO-DRIVING** have been collected throughout Europe and beyond and made accessible to stake-holders and starting countries. Moreover, know-how and expertise on how to implement, market and evaluate a programme have been developed and disseminated.

### MAKING **ECO-DRIVING** A POLICY ISSUE

The convincing evidence of it's benefits has put **ECO-DRIVING** on both national and European policies' agendas and has resulted among others in an increased number of directives and calls from the EUROPEAN COMMISSION that include **ECO-DRIVING** issues.

### *project info*

- **ECO-DRIVING** is a project partly financed by the former European energy efficiency programme **SAVE**. This project is co-ordinated by the **AUSTRIAN ENERGY AGENCY (E.V.A.)** and the main actors of **ECO-DRIVING** in Europe are partners in this project.
- The demonstrations of **ECO-DRIVING EUROPE** approached different target groups:
  - **PORTUGAL** Driving schools
  - **SPAIN** Integration of **ECO-DRIVING** into the driving license curriculum
  - **BELGIUM** Commercial car fleets
  - **AUSTRIA** Public transport: More comfort, less fuel, less cost
  - **GREECE** Public transport: **ECO-DRIVING** with GPS-monitoring system
  - **NETHERLANDS** Owners of a driver's license

In the last decades, engine technology and performance of passenger cars, lorries and buses have improved rapidly, however, most drivers have not adapted their driving style. **ECO-DRIVING** is adapted to modern engine technologies and means smooth and safe driving at lower engine revolutions. **ECO-DRIVING** is easy to learn and it has been shown that written information itself has a substantial impact on driving behaviour, on safety and on fuel consumption without increasing travel time.

### — MAIN RECOMMENDATIONS

- \_1 Shift into a higher gear as soon as possible. For petrol cars, shift up before 2500 revolutions per minute (rpm), for diesel cars before 2000 rpm.
- \_2 Maintain a steady speed, using the highest gear possible. Your engine will work in the very efficient area.
- \_3 Look ahead and anticipate traffic flow. This gives you enough space to react adequately and without stress.
- \_4 Decelerate smoothly by releasing the accelerator in time, leaving the car in gear. In this case, modern engines do not need any fuel.

### — ADDITIONAL RECOMMENDATIONS

- Switch off the engine at short stops (> 1 minute).
- Check the tire pressure once a month. High tire pressure saves fuel and endures the lifetime of the tire.
- Make use of fuel saving in-car devices such as board computers, econometers, cruise control.
- Get rid of surplus weight and not used roof racks.

## 03 BENEFITS OF ECO-DRIVING

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WWW.ECODRIVE.ORG

**ECO-DRIVING** improves road safety as well as the quality of the local and global environment and saves fuel and costs. All three benefits are important for furthering **ECO-DRIVING**. Different benefits facilitate bringing **ECO-DRIVING** to different stakeholders and policy fields and their activities.

### FUEL CONSUMPTION AND CLIMATE PROTECTION

**ECO-DRIVING** trainings lead to a consumption reduction up to 20% after trainings and about 5% in the long run. The European Climate Change Programme calculated a reduction potential of **ECO-DRIVING** of at least 50 million tons of CO<sub>2</sub>-emissions in Europe by 2010, saving about 20 billion EUROS.

### LOCAL ENVIRONMENT AND HEALTH

**ECO-DRIVING** reduces noise pollution as well as local air pollution. The engine noise of one car driving with 4000 rpm (revolutions per minute) equals the engine noise of 32 cars at 2000 rpm. Thus, **ECO-DRIVING** reduces one of the main problems of traffic in urban areas.

### COSTS AND SAFETY

**ECO-DRIVING** reduces not only fuel costs, but also costs for maintenance and costs for repairing cars after accidents. The safer driving behavior results from:

- An anticipating driving style
- Maintaining a steady speed
- Less speeding
- Less overtaking
- Less stress/aggressiveness

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### *examples*

- CANON COMPANY in Switzerland trained the **ECO-DRIVING** style with 350 service car drivers in vsz VELTHEIM. The drivers reduced fuel consumption by 6.1%, had 22% more km per accident and 35% less accidents in total.
- Eleven month after **ECO-DRIVING** trainings, the German company HAMBURGER WASSERWERKE effected fuel consumption reductions of more than 6%, accidents and related costs could be deminished by more than 25%.
- In the year 2000, **ECO-DRIVING** trainings in the Austrian bus company NIGGBus reduced fuel consumption by 5% in day-to-day driving. The effect increased up to 7% in the year 2001.
- **ECO-DRIVING** programmes prove to be very cost-effective. The Dutch **ECO-DRIVING** programme results in a cost-effectiveness of about 5 EURO per avoided ton of CO<sub>2</sub>-emissions over a period of 10 years.

The most (cost-) efficient way of spreading **ECO-DRIVING** is the full integration of **ECO-DRIVING** in beginner drivers' education. Therefore all **ECO-DRIVING** programmes follow this strategy. **ECO-DRIVING** should become the standard driving style taught in driving schools. It is important to convince all organisations related to driving schools involved, also including umbrella organisations for driving schools and institutions and ministries responsible for the drivers' examination.

**ECO-DRIVING EUROPE** recommends the following strategies in order to reach this goal:

### — START WITH INNOVATIVE DRIVING INSTRUCTORS AND EXAMINERS

You can convince driving instructors more easily if you already have a pioneer group, which can show the others how it works. This group will establish a network which will support the development of **ECO-DRIVING** in your country.

### — COMBINE THE TRAINING OF INSTRUCTORS AND EXAMINERS

Joint trainings for instructors and examiners will motivate instructors because they know that the new driving style of their students will be assessed favourably by examiners.

### — PROVIDE EXCELLENT TEACHING MATERIALS FOR THE INSTRUCTORS

This will help instructors to integrate **ECO-DRIVING** into their education programme and safeguards the quality of the education.

### — INTEGRATE **ECO-DRIVING** INTO THE LEGAL FRAMEWORK

## *examples*

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— More than 90% of the Dutch driving instructors and examiners (6,500) have been trained in **ECO-DRIVING** within two years. **ECO-DRIVING** is already part of theory exams for instructors, examiners and learner drivers. Furthermore the Dutch government is planning to integrate **ECO-DRIVING** elements in the practical exams within the next years.

— **ECO-DRIVING EUROPE** has supported the development of manuals for instructors how to teach **ECO-DRIVING** to their students.

— In Germany, the full integration of **ECO-DRIVING** into the new driver's education has been implemented. Examiners, instructors and new drivers are educated and tested in **ECO-DRIVING**.

— In Switzerland and Finland **ECO-DRIVING** is one part of the second phase of new driver's education.

— The demonstration in Spain developed teaching material and convinced stakeholders to integrate **ECO-DRIVING** into the education of examiners, instructors and new drivers.

## 05 ECO-DRIVING-PROGRAMMES

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**ECO-DRIVING** programmes aim at systematically developing the market for **ECO-DRIVING**. Obstacles for dissemination are identified and overcome. Windows of opportunities have to be identified. Key elements for national programmes:

### DEVELOP THE SUPPLY OF HIGH QUALITY TRAININGS

In the starting phase of a national programme it is important to quickly develop the supply of high quality and the variety of trainings: on the road, simulators, one-hour training, half a day, day courses for different target groups.

### MARKET **ECO-DRIVING** WITH SUPPORT FROM YOUR PARTNERS

**ECO-DRIVING** should be marketed as a smart driving style which has adapted to modern engine technology. Stress all the benefits, foremost traffic safety. As the budgets of national programmes are usually limited, it is important to get your partners and multipliers to support you. For example, automobile clubs have direct access to their big stock of members, or environmental groups can access a very motivated target group. In Germany, the car industry began to support **ECO-DRIVING**. As a result an internet platform serves as a showroom for **ECO-DRIVING** trainings. The **ECO-DRIVING** message should be supported by a network of retail and consumer organisations. In the Netherlands the network consists of more than 20 partners.

### EVALUATE AND IMPROVE YOUR PROGRAMME CONTINUOUSLY

You have to demonstrate and improve the performance of your programme. Therefore periodic evaluation and monitoring is essential. This is a must in order to get public support and financing in the long run. The results of the Dutch and Swiss programme show that supporting **ECO-DRIVING** is a relatively cheap and no-regret measure to reduce CO<sub>2</sub>-emissions.

### USE WINDOWS OF OPPORTUNITIES

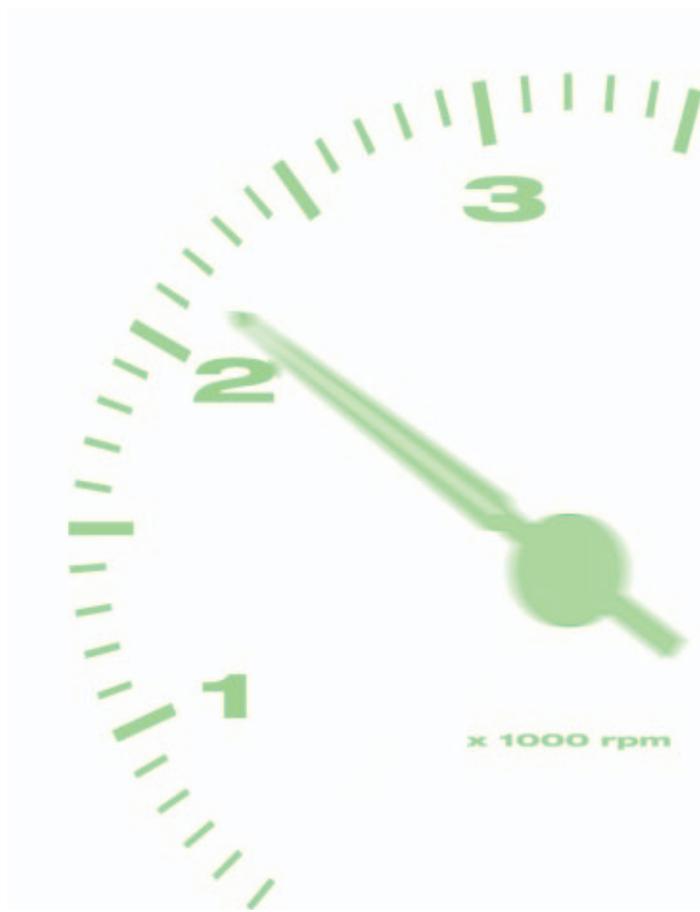
The legal, economic or social framework might change and give you new opportunities. The management of the programme should be flexible enough to take up these opportunities and integrate them. In Finland, the introduction of the second phase of the new drivers' education has been used to implement **ECO-DRIVING** in the drivers' education. The acceptance of a programme can be improved by fiscal instruments and tax exemption for e.g. fuel saving in-car devices.

### — SAFEGUARD QUALITY STANDARDS FOR THE EDUCATION OF THE TRAINERS

An important step is to get **ECO-DRIVING** into the regular further education of driving instructors. From the beginning you have to develop and safeguard the quality of this training.

### — DEVELOP BUSINESS OPPORTUNITIES FOR THE EDUCATED TRAINERS

You will get more instructors trained in **ECO-DRIVING**, if you are able to develop business opportunities for them. The Swiss **ECO-DRIVING** programme pays **ECO-DRIVING**-trainers for every person trained. Alternatively you can try to establish **ECO-DRIVING** training as a mandatory education for instructors.



Quality Standards are important for the development of the market. Confidence in the proven quality is the main reason for companies to opt for **ECO-DRIVING** as well as it is the decisive factor having **ECO-DRIVING** integrated into the driving license curriculum. Quality standards have to be adapted to the national circumstances. Nevertheless there are some common elements for quality management systems:

### CERTIFICATION OF TRAINERS AND TRAININGS

It is important to develop a quality management system to set and safeguard the standards. Most important is the safeguarding of the high quality of the trainers.

### TRAINERS' EDUCATION

Trainers are only certified if they have gone through standard education. They have to learn **ECO-DRIVING** techniques as well as the best way to teach **ECO-DRIVING**. Therefore, driving instructors usually have the best basis to become **ECO-DRIVING** trainers. It is important to monitor their performance periodically in order to assure continuous quality.

### CONTENTS OF THE TRAININGS

The main points of **ECO-DRIVING** have to be taught in an adequate manner. The teaching materials have to meet quality criteria. Often, the national programmes develop and disseminate these materials. The trainings can be evaluated by mandatory and anonymous feedback questionnaires given to the quality management institution.

## *quality management by GERMAN ROAD SAFETY BOARD (DVR) in Germany*

- Besides mastery of **ECO-DRIVING**, the profile of an **ECO-DRIVING** trainer includes steering competence of group dynamics, steering competence of feedback discussions, coaching competence in real traffic situations, the power to motivate as well as teaching and media competence.
- As formal qualifications, **ECO-DRIVING** trainers require a Driving Instructors Licence, a permission for Driving Intervention Courses, training courses on **ECO-DRIVING**, specific Train-the-Trainer-Instructions as well as a certification according to DIN EN 45013.
- The quality control system includes a certificate valid for four years, a recertification on the basis of further training, supervision of trainings, interviews with trainers and trainees as well as accompanying scientific research.

Simulators and Computer Games with **ECO-DRIVING** software make it easier to get started with **ECO-DRIVING**. Therefore, these instruments are important means to access new target groups and accelerate the dissemination of **ECO-DRIVING**.

Computer Games on-line or installed on a personal computer serve as an appetizer, especially attractive to the target group "Youths". Young people can thus find out about **ECO-DRIVING** even before they reach driving age. Games can serve as an image building instrument for **ECO-DRIVING**. They can also be used as give aways in order to market and disseminate **ECO-DRIVING**. You can find the link to download the game developed within the Dutch **ECO-DRIVING** programme on [WWW.ECODRIVE.ORG](http://WWW.ECODRIVE.ORG)

In addition, modern low cost simulators used under the guidance of an instructor can also play an essential role in **ECO-DRIVING** training complementing on-road trainings. So far **ECO-DRIVING** simulators have been used foremost as an interest catcher at events, as a tool for refreshment trainings and to train drivers in large vehicle fleets (e.g. City of Vienna). More and more, these simulators are integrated in the normal driver education.

The transfer from the training to day-to-day driving is easier when trained on-road, but simulators have some convincing advantages:

- One instructor can supervise several persons at once
- Risk-free accidents and no emissions
- The performance can be analysed more easily and repeatedly

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### *evaluation of simulators in Switzerland*

— Evaluation done in Switzerland shows that the impact on fuel saving as well as the number of gear shifts in simulated situations is comparable to on-road trainings. The difference in fuel consumption before and after training was measured with -17%

in average. Although half of the trained persons thought that the simulators would not offer a realistic driving environment, more than 80% acknowledged that it was an adequate means of training **ECO-DRIVING**.

Fuel saving in-car devices are already commonly used in **ECO-DRIVING** trainings. They show immediately that **ECO-DRIVING** really works and help analysing driving styles before and after training.

In-car devices can increase the impact of **ECO-DRIVING** trainings on fuel saving by giving immediate feedback to the drivers. They support applying **ECO-DRIVING** to day-to-day driving practice. Thus, they improve the long term effect of trainings. Several demonstrations have shown the CO<sub>2</sub>-reduction potential.

The interest for **ECO-DRIVING** courses is limited, even with large national programmes only a small percentage of advanced drivers is willing to pay for **ECO-DRIVING** courses. Therefore the equipment of cars with in-car devices plays a strategic role in the diffusion of a fuel-saving driving style. It is the only way to reach the substantial number of drivers who are not in driver training programmes.

**ECO-DRIVING EUROPE** therefore recommends that within a few years, all new cars should be equipped with fuel-saving in-car devices. This measure has to be addressed on a European policy level.

### *demonstrations in the Netherlands*

A large number of demonstration projects and field tests with fuel-saving in-car devices have been carried out in the Netherlands since 1990. They include tests with econometers, eco-revolution meters, on-board computers, cruise controls, diesel consumption meters and speed and revolution limiters. Three conclusions can be drawn from the results:

**\_1** Equipping a fleet of cars with fuel-saving in-car devices reduces their fuel consumption

by around 5% on average and this is before any kind of **ECO-DRIVING** training for drivers has taken place.

- \_2** Fuel-savings with in-car devices are substantially higher in combination with **ECO-DRIVING** courses, about 10% on average.
- \_3** In order to be efficacious the functionality of the in-car device has to meet certain criteria in regards to display and operability.

## 09 PROJECT PARTNERS OF ECO-DRIVING EUROPE

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WWW.ECODRIVE.ORG

— SAVE (The Community's energy efficiency programme)



— THE AUSTRIAN ENERGY AGENCY E.V.A. | A



— QUALITY ALLIANCE ECODRIVE QAED | CH, D



— NEDERLANDSE ONDERNEMING VOOR ENERGIE EN MILIEU NOVEM | NL



— MOTIVA OY | SF



— DEUTSCHER VERKEHRSSICHERHEITSRAT DVR | D



— INSTITUTO PARA LA DIVERSIFICACION Y AHORRO DE LA ENERGIA IDAE | E



— FORSCHUNGSGESELLSCHAFT MOBILITÄT FGM-AMOR | A



— CENTRE FOR RENEWABLE ENERGY SOURCES CRES | GR



— VLAAMSE INSTELLING VOOR TECHNOLOGISCH ONDERZOEK VITO | B



— AGENCIAL PARA A ENERGIA AGEN | P



— EUROPEAN UNION



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