IDENTIFICATION OF POTENTIAL BENEFITS FOR RELEVANT TARGET GROUPS

&

RECOMMENDATIONS HOW TO INFLUENCE TARGET GROUPS BEHAVIOURAL CHANGE IN ORDER TO ENHANCE ECODRIVING ACTIVITY

WP2. Investigation and Preparations
Public version of Deliverables D2.2 & D2.3

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Summary

The goal of this report is to identify potential obstacles preventing integration of ecodriving into drivers’ education, benefits of ecodriving for different stakeholders and to provide recommendations on how to influence target groups behavioural change in order to enhance the ecodriving activity in 13 project partner countries.

To achieve this goal, 257 interviews with relevant stakeholders have been conducted in the project partner countries. These target groups have been addressed during the interviews:

1. Driving school instructors and members of the respective national associations;
2. Driving examiners and members of the respective national associations;
3. Fleet operators;
4. Energy agencies / environmental research institutes / universities / academies;
5. Car manufacturers and members of the respective national associations;
6. Car dealers and members of the respective national associations / leasing organisations;
7. Insurance companies and members of the respective national associations;
8. Tyre companies;
9. Policy makers responsible for national driving school curriculum and for driving examination (from the ministries of traffic, environment and (or) energy);
10. Automobile clubs and training organisations.

Target groups and number of stakeholders addressed in each country are presented in the table below.

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Summary of the main benefits of ecodriving and obstacles of ecodriving integration are presented in the tables below.
In all partner countries ecodriving is seen as a useful and relevant measure. The most important 5 ecodriving benefits identified by the majority of countries included:

1. Environmental (reduction of pollution);
2. Increase of traffic (road) safety;
3. Financial (reduction of fuel and vehicle maintenance costs);
4. Fuel savings;
5. Tool to show a company's social responsibility and a measure to use for green marketing.

In addition to the above mentioned benefits, an application of ecodriving in practice helps to reduce urban traffic congestion and noise, improves air quality in cities and health of the society.

Ecodriving is seen as business opportunity for driving schools and car dealers.

Wider application of ecodriving principles promotes the development of ecological vehicles.

Ecodriving improves driving culture and comfort of driving.

Finally, ecodriving is a measure which can contribute to implementation of the national climate change (energy efficiency) policies and achievement of compliance with the related obligations.

### Benefits of ecodriving

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<td>9. Driving culture</td>
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<td>10. Health of society</td>
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<td>11. Comfort of driving</td>
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<td>12. Development of ecological vehicles</td>
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### Obstacles of ecodriving integration

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<td>2. Public prejudice / low awareness / low motivation</td>
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<td>3. Driving culture / habits / lifestyle</td>
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<td>5. Lack of governmental initiatives</td>
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<td>6. Know-how of trainers, instructors, examiners / quality of education</td>
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<td>7. Lack of environmental awareness</td>
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<td>8. Difficulties with assessment of ecodriving skills in examination</td>
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<td>11. Lack of time for learner drivers education</td>
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<td>12. Insufficient attention from media</td>
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<td>13. Attitude of learner drivers</td>
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<td>18. Increase of CO, CxHy and PM emissions / reduction only of CO\textsubscript{2} emissions</td>
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Despite the acceptance of benefits of ecodriving, a lot of obstacles of ecodriving integration have been identified. The most important 6 ecodriving obstacles identified by the majority of the countries are:

1. **Legal.** Insufficient legal regulation to ensure high quality education of ecodriving is an obstacle identified by 9 of the 13 countries. One of the most common problems is that ecodriving is not
a part (or is integrated insufficiently) of examination of learner drivers. There is a lack of harmonisation or completeness of the legislation concerned.

2. Public prejudice / low awareness / low motivation. People lack knowledge about ecodriving and about its benefits. In some countries people lack motivation to practise ecodriving. E.g. there is a low demand for ecodriving trainings in UK even if subsidies or trainings for free are available.

3. Driving culture / habits / lifestyle is something that people are not eager to change and it is difficult to influence and convince the drivers that ecodriving won’t change comfort of driving.

4. Financial. People are not willing to pay for ecodriving courses. Moreover, it is assumed that integration of ecodriving into the learner drivers’ education system will increase the cost of the driving courses, which further prevents from the ecodriving integration.

5. Lack of governmental initiatives. The Government can play an important role in the integration and promotion of ecodriving. It is very important to increase the awareness of the society at the state level. In many countries there is a need for financial support in order to promote and increase the application scale of ecodriving.

6. Know-how of trainers, instructors, examiners and quality of education in general is considered insufficient in many countries.

Besides the above-mentioned obstacles there are a number of other impediments identified in different countries. These are: the lack of environmental awareness of the society, and insufficiency of relevant and comprehensive information about ecodriving. It has been identified by a couple of countries that media could play an important role in the increase of awareness of the society and motivation to practise ecodriving.

The existence of obstacles related with the system of education and infrastructure. Negative attitude or insufficient attention of driving instructors to ecodriving prevents from effective education of learner drivers. On the other hand, the learner drivers are solely interested in getting the licence rather than practising the ecodriving. Furthermore it is assumed that there is a lack of time in the learner drivers’ courses to teach ecodriving. Some difficulties are also faced in regard to proper assessment of ecodriving skills of drivers during their examination. Non-existent teaching / insufficient infrastructure in some countries is considered an obstacle in teaching of ecodriving.

Practical obstacles are also pending. Some people / companies lack time to practise ecodriving. On the other hand, in some countries people think that short duration trainings are insufficient to acquire good knowledge (practise) of ecodriving. Not all traditional ecodriving tips can be applied in the newest technologies. Inter alia, an old car fleet prevents from practising ecodriving as it is difficult to prove and monitor the effect.

The presence of unfavourable/negative data/information in regard to ecodriving. Some data reveal data that application of ecodriving leads to reduction of CO₂ emissions alone and has no impact on other emissions (CO, CxHy, PM) from transport.

While seeking to enhance ecodriving activities, demand side and supply side should be considered. The supply side should ensure high quality ecodriving trainings. However, with a low demand for the trainings no substantial results can be achieved.

The demand side. In order to attract drivers to learn and practise ecodriving, it is very important to communicate properly the benefits of ecodriving taking into account the peculiarities of different target groups of drivers. Information campaigns and financial incentives on the national/state level, availability of comprehensive information and learning material and tools are the important issues to be considered while seeking to increase the demand for ecodriving trainings.

The same should apply to those undertaking the training of drivers, i.e. driving instructors. Driving instructors are among the most important target groups for ECOWILL project. The main recommendations on how to influence this target group could be summarized as follows:

1. Legal regulation and quality control. This is one of the most important prerequisites to ensure the development of ecodriving activities. As of learner drivers, it is important to include ecodriving not just into driving education but also into driving examination system while setting clear assessment criteria and ensuring harmonisation of learner drivers’ education and examination systems.
2. Qualification and experience of driving instructors. Infrastructure for highly qualified and experienced driving instructors has to be established.

3. Standardisation of trainings. Standards for ecodriving trainings and curriculum of the training courses are required.

4. Driving instructors’ motivation to teach (train). Driving instructors play an important role in the ensuring of quality of education. Therefore it is important to secure that they recognize benefits of ecodriving and are motivated to teach (train) drivers properly.

5. Driving instructors’ motivation to improve their qualification. The aspects which should be considered while motivating the driving instructors to participate in ecodriving courses are as follows: ecodriving courses should be short, effective (added value for instructors) and for a reasonable price.

6. New technologies’ development. Modern vehicles (electrical, hybrid technologies) require a different way of driving. These issues should be taken into account in developing of ecodriving education programmes.

Comprehensive information from each country is presented in Sections 1–13 of this report.
1. Austria

For the majority of the interviewed stakeholders, Ecodriving is seen as a key element for climate protection.

In order to be successful it is most important to motivate drivers. There is a number of different arguments of which the suitable motivation for each driver has to be found (costs, environment, etc.). In Austria Ecodriving is connected very much with the argument of feeling better – i.e. the wellness factor when driving eco-style.

In the driving school education in Austria, Ecodriving is taught as stand-alone issue in a 2nd phase, which takes place 6 months after the driving exam. Experiences with this system are good. In order to increase Ecodriving contents in the 1st phase of driving education, more compulsory driving lessons and a more efficient curriculum (update of existing curricula) would be needed.

Potentials for Ecodriving are seen also for the parents of learner drivers. When their kids learn how to drive, this would serve as a good opportunity to motivate their parents for Ecodriving as well.

The concept of short-duration trainings is assessed very positive by the experts. An advantage is that participants don’t have to be off work for a whole day. A disadvantage in comparison to conventional trainings is that there would be no group discussion. Discussions in larger groups are seen as the basis for a dynamic group effect.

Regarding Ecodriving trainings for licensed drivers it’s considered important that the drivers can practice the Ecodriving rules during the training by using their own car.

In case of Ecodriving trainings for fleets it is very helpful when also the management and all personnel related with fleet topics in the company joins the trainings.

There is a demand to update the rules for Ecodriving towards fuel efficient car concepts (e.g. Blue Motion (VW), Efficient Dynamics (BMW) etc.) and hybrid and electric vehicles.

In order to convince people and companies of Ecodriving, monitoring of the long term effects is very important. Incentives for Ecodrivers are an appropriate tool to reach sustainable long term effects.

The arguments which promise to be useful for a successful approach towards the most important stakeholders can be classified into the following category groups:

- Benefits of Ecodriving regarding environment and climate protection (especially towards policy makers, energy agencies).
- Possibility to advertise environmental activities (especially towards fleet managers, automobile clubs, car dealers, policy makers).
- Benefits of Ecodriving regarding cost savings (especially towards fleet managers, automobile clubs, car dealers and leasing companies).
- Benefits of Ecodriving regarding traffic safety (especially towards policy makers, energy agencies).
- Ecodriving as a business opportunity (especially towards driving instructors, driving examiners and automobile clubs).
- Ecodriving as part of a modern driving style of modern vehicles (especially towards driving instructors, driving examiners and automobile clubs).
- The legal situation in an increasing number of countries regulates that ecodriving measures are incorporated into driving curricula and also driving tests. Ecodriving is also supported by the EU, e.g. directive concerning the further training of professional drivers. (especially towards policy makers, driving instructors and examiners.)
1.1. Driving instructors

Benefits
- Less emissions;
- Less money;
- More wellness.

Obstacles
- Ecodriving often has the image of driving slowly.
- Participants of an Ecodriving training have to be off work for one day.

Part A: Fundamentals concerning Ecodriving
- Most relevant tips:
  1. Shift gears correctly;
  2. Anticipate traffic flow;
  3. Use correct tyre pressure.
- Ecodriving often has the image of driving slowly.
- It’s very difficult to motivate private drivers for Ecodriving.

Part B: Ecodriving for learner drivers / driving schools
- Motivation for Ecodriving depends very much on the instructor.
- Some contents of Ecodriving can be taught from the very beginning. For more sophisticated tips the 2nd phase is a good opportunity to teach them.

Part C: Ecodriving for licensed drivers
- In some driving schools, there is little capacity for licensed drivers’ courses.
- The main target group is large passenger car fleets.
- Short-duration trainings are a new, but very interesting and promising approach.
- After the short-duration trainings a group discussion is important.

Part D: Future Outlook
- Adapted Ecodriving tips and rules directed at fuel efficient and hybrid cars will be necessary.

RECOMMENDATIONS
1. Ecodriving trainings will be a future business opportunity for driving instructors and driving schools, in particular with regard to trainings for fleet drivers. This especially applies to short-duration trainings. The ECOWILL project, together with the national initiatives, will establish a market for ecodriving trainings. The trend for drivers is to have personal coaching.
2. Modern vehicles require a different way of driving, that’s why further education in modern driving (i.e. ecodriving) for driving instructors, is important.
3. Driving instructors are the most valuable multipliers when it comes to introducing energy efficiency and climate protection to driving. They can encourage learner drivers to employ a different driving style for future decades.
4. The legal situation in an increasing number of countries regulates that ecodriving measures are incorporated into driving curricula. In addition, the EU directive concerning the further training of professional drivers also includes ecodriving.
5. Driving instructors can expect several benefits from taking part in the ECOWILL initiative (support, handbook, network, certificates).

1.2. Driving examiners

Benefits
- Ecodriving works well in the 2nd phase of education for learner drivers in Austria.

Obstacles
- More driving lessons are needed. The education period should become longer.
- Examiners are not educated in Ecodriving.

Part A: Fundamentals concerning Ecodriving
- For most of the driving examiners Ecodriving is not a top level priority.

Part B: Ecodriving for learner drivers / driving schools
- Ecodriving is not a fail/pass-criteria.
- To integrate Ecodriving even more into the education, a higher number of compulsory driving lessons would be necessary.
- The integration of Ecodriving in the second phase of the driver education turned out to be positive.

Part C: Ecodriving in driving examination
- Ecodriving is compulsory only for driving licence exams for truck and bus drivers, but not for the examinations of passenger car drivers.
- In order to further integrate Ecodriving into driving examination, more time would be needed. However, learner drivers try to limit the duration of the driving education as short as possible. 14 day courses are very popular, but in such courses there is no time for a in-depth Ecodriving education. Also the time period for the education should be longer in general – as new knowledge needs time to settle.
- Anyway, the basic issue how to use the technique of a car efficient in terms of fuel consumption would be an important topic for the education of learner drivers.
- If Ecodriving is part of the exam, also the examiners have to be familiar with the rules of Ecodriving.
- Teachers and examiners should be educated in Ecodriving together.

Part D: Future Outlook
- More attention is needed for motivation topics (i.e. What is the motivation of a fleet driver to save fuel?).
- Ecodriving should also consider alternative drives and fuels.
- Ecodriving has to obtain the acceptance of private drivers, fleet drivers and professional drivers.

RECOMMENDATIONS
1. An opportunity to have state-of-the-art knowledge about modern driving styles that are taught in driving schools. This way, driving examiners stay ahead of trends.
2. The legal situation in an increasing number of countries regulates that ecodriving measures are incorporated into driving curricula and also driving tests.
3. The national competent ministry and the federal provinces support ecodriving. As most driving
examiners are employed by national and federal authorities, they should be familiar with
ecodriving.

4. Ecodriving plays an important role in environmental and climate protection.

5. Ecodriving increases road safety.

### 1.3. Policy makers

**Benefits**
- Ecodriving is a key issue for climate protection.
- Ecodriving is an integral part of national programs for energy and climate protection.

**Obstacles**
- The general public has other priorities than energy efficiency and climate protection.
- Ecodriving concepts will only succeed if there is a sustainable effect.
- The present curriculum for driving education offers little space for new contents.
- People are not aware that resources are limited.

**Part A: Fundamentals concerning Ecodriving**
- Ecodriving reduces CO₂-emissions of vehicles up to 20%. Ecodriving is therefore a key element for
climate protection.
- The problem is that people have other priorities.
- Ecodriving is part of the national Energy Strategy and also Climate Strategy.

**Part B: Ecodriving for learner drivers / driving schools**
- Ecodriving should be an integral part in the drivers education. Therefore the curriculum should be
updated. Parts that are not relevant any more shall be removed and so gain space for more
Ecodriving contents.
- The parents of novice drivers should get an Ecodriving education as well.

**Part C: Ecodriving for licensed drivers**
- Concerning a mass roll out of Ecodriving-trainings it’s important to focus on how to achieve a
sustainable effect.
- The full potential of Ecodriving is not used by far.
- For making Ecodriving a mass phenomena people have to change their driving behaviour
completely – but also their attitude towards life in general.
- The concept will eventually only succeed if the trainings are conducted on a high quality level.

**Part D: Future Outlook**
- As the oil price will raise in future, the importance of Ecodriving will also increase.
- More efforts have to be put in awareness raising (financial resources are limited).

**RECOMMENDATIONS**

*no classification is done due to the similar importance of the arguments*

- Ecodriving plays an important role in environmental and climate protection.
- Ecodriving increases road safety.
From an economic point of view, ecodriving is also important with regard to security of energy supplies (peak oil).

The EU supports ecodriving.

By introducing ecodriving, policymakers can improve their environmental image.

Establishing a framework for ecodriving activities can have comparably strong results.

Good efficiency of subsidies (t CO₂ per euro).

“No regret” measure (win-win situations for policymakers, business and environment)

Promotion of “green jobs”.

1.4. Energy agencies / environmental research institutes / universities / academies

Benefits

- In the future, vehicle technology will reduce fuel consumption even more.
- Ecodriving is fun for the driver.

Obstacles

- Private drivers won’t pay for a short-duration training.
- Ecodriving does not solve actual traffic problems (e.g. congestion).

Part A: Fundamentals concerning Ecodriving

- Ecodriving saves emissions, money and increases wellness of the driver.
- Ecodriving is fun for the driver.
- Saving fuel is only the first part. Reducing the kilometres p.a. and the use of public transport is the other part.
- Awareness raising campaigns should also include lower driving speeds, as cars turn out to be extremely inefficient over 80 km/h.
- The development of new fuel saving cars makes it necessary to update some of the rules for Ecodriving.

Part B: Ecodriving as business case

- Ecodriving is not a business case. In the future, vehicle technology will more and more optimise the fuel consumption.
- Ecodriving does not solve the general problems of traffic.
- The price of a short-duration training should not be higher than the worth of one fuel tank filling.
- To be successful, especially fleet drivers have to be motivated for Ecodriving.
- Ecodriving needs more financial support and a broad campaign for awareness raising.
- Private drivers will not pay money for a short-duration training.
- For drivers who have attended a short-duration training, also a 1 day group training shall be offered in the following.

Part C: Future Outlook

- To be successful with the topic, a sustainable program over a long period of time is necessary.
- How does Ecodriving work with automatic cars and alternative vehicles?
RECOMMENDATIONS

1. Ecodriving will be an issue that will play a key role in the future (peak oil) both for private drivers (costs) and the public (energy efficiency).
2. Ecodriving plays an important role in environmental and climate protection.
3. Big effects but only few evaluations so far → business opportunities.
4. Compared to the fields of engine development and transport planning, the potential for energy savings is very high in ecodriving.
5. The question how to motivate licensed drivers to employ ecodriving would be an interesting field of research and business opportunity.

1.5. Fleet operators

Benefits
- 5% fuel reduction as a long term effect is possible.
- Ecodriving is good for the environment, good for the companies.
- Participants of the fleets commented the training very positively.

Obstacles
- Participants have to be off work for one day.
- Monitoring of the effects is very important, but proved to be difficult.
- Managers and directors should join the training as well.

Part A: Fundamentals concerning Ecodriving
- It’s difficult to get the participants for an Ecodriving training off work for a full day.
- Monitoring of the effects is very important but needs a lot of effort. Vehicles in a fleet change frequently which makes monitoring even more difficult.
- Subsidies are helpful.

Part B: Ecodriving as business case
- Managers and directors should take part as well.
- Incentives for drivers for saving fuel are helpful.
- A motivation for drivers can be that they can use the Ecodriving tips for private trips also and so save fuel costs in their private life.
- It’s important to teach also sustainable mobility, not only Ecodriving.
- Group trainings are better, as they include also group discussions.
- After some time an Ecodriving refreshment training is useful.

RECOMMENDATIONS

1. Reduction in fuel consumption and, consequently, costs.
2. Reduction in accidents and vehicle maintenance costs.
3. The legal situation in an increasing number of countries regulates that ecodriving measures are incorporated into driving curricula and also driving tests.
4. Drivers experience less stress.
5. Opportunity to advertise the environmental actions taken.
6. Useful further training measure as part of further education programmes.
7. Opportunity to get funding (subsidies).
8. Opportunity to have some public reward (e.g. awarding of a certificate by the minister, etc.)

1.6. Leasing Organisations

Benefits
- Good for environment, good for the company.

Obstacles
- Participants have to be off work for one day.
- Monitoring of effects is important.

Part A: Fundamentals concerning Ecodriving
- Ecodriving is part of every fleet consultancy of the leasing organisation.
- Good for environment, good for the company.

Part B: Ecodriving as business case
- Participants have to be off work for a full day.
- Trainings on the job (business trips) would be a good solution for this problem.
- Monitoring of effects is important.
- For sustainable effects competitions, refreshments and reporting is important.

Part C: Future Outlook
- The situation regarding Ecodriving for vehicles with diesel particulate filters is unclear.
- It is important to offer incentives to Ecodrivers.

RECOMMENDATIONS

1. Information about ecodriving and ecodriving training opportunities as a service for corporate customers.
2. Opportunity to advertise the environmental actions taken.
3. By advertising ecodriving trainings/competitions, the car dealers/leasing organisations develop an image of selling economical cars.
4. Special marketing tool for fuel-efficient car types (VW Blue Motion, Opel EcoFlex, BMW Efficient Dynamics, etc.)
5. The issue will be very important in the future (peak oil).
1.7. Automobile clubs

Benefits
- For each driver there can be found a suitable way of motivation for Ecodriving.
- Personal coaching is a subject relevant for the future.

Obstacles
- People think Ecodriving means driving slowly.
- All fleet personnel should join an Ecodriving training.
- Long term effects are essential, not the effects (savings) on the training day.

Part A: Fundamentals concerning Ecodriving
- There are a number of different motivations for Ecodriving (environment, safety, noise, costs etc.). The target is to find the appropriate motivation for each driver.
- A common misunderstanding is that drivers think Ecodriving means to drive slowly.
- If fleet drivers are trained, it is essential, that the entire personnel that has to deal with fleet-topics takes part.

Part B: Ecodriving as business case
- Truck and bus operators see the necessity for saving fuel, passenger car fleet managers do not.
- Practical training is crucial for a sustainable training.
- Customers still think that Ecodriving means to drive slowly.

Part C: Future Outlook
- Personal coaching is a subject relevant for the future.
- Customers want an intensive coaching in a short period of time.
- Customers want to learn the tips in reference to their own car.
- Practical training is the key element.
- It would be better to focus not so much on the savings on the training day, but on the long term savings.
- High qualification of trainers is very important.

RECOMMENDATIONS
1. Service for members.
2. Business opportunity (better capacity utilisation of driver safety training centres).
3. Opportunity to advertise the environmental actions taken.
4. By supporting ecodriving, automobile clubs can improve their environmental image.
5. Modern vehicles require a different way of driving, that's why Ecodriving trainings will become more important in the future.
1.8. Summary

Table 1.1. Classification of obstacles.

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Priorities</td>
<td>People have other priorities than saving fuel. People are not aware that resources are limited.</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Off work</td>
<td>Participants of Ecodriving trainings have to be off work often for a whole day.</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Quick courses</td>
<td>Learner drivers prefer more and more quick courses. There is not enough time to practice Ecodriving.</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Examiners</td>
<td>Examiners sometimes don’t know the rules of Ecodriving.</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Alternative vehicles</td>
<td>Some of the Ecodriving rules are not appropriate for fuel efficient vehicles and also alternative vehicles.</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 1.2. Classification of benefits.

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Climate protection</td>
<td>Ecodriving is a key issue for climate protection and can contribute to save the emissions significantly.</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>5% reduction</td>
<td>At least 5% fuel reduction can be reached in the long term.</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Fun</td>
<td>People who visited a training report that they liked the training and it is fun to drive eco-style.</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Wellness</td>
<td>There is a number of motivations to drive eco-style. Besides money and environment feeling well when driving is an important motivation.</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Personal coaching</td>
<td>Personal coaching in short lessons is a future theme.</td>
<td>1</td>
</tr>
</tbody>
</table>
2. Czech Republic

In the framework of the WP2 task 2.2, the Partner conducted interviews with relevant target groups in order to identify their opinions about ecodriving and possible obstacles and prospective benefits they may see in its (mass-scale) introduction into education of learner as well as experienced drivers.

Each stakeholder representative interviewed tried to "look for" arguments in an unbiased way why his or her organization could benefit from that (policy) measure and obstacles which would hamper or even prevent its implementation.

Driving instructors see targeted education of ecodriving among learner drivers as viable only after drivers took up sufficient skills to drive their car safely in daily traffic. The current examination system, however, is based on a "one-time" examination which is undertaken after a certain number of driving lessons.

Ideally, ecodriving should be educated and examined only after some time from the moment the driver gets his or her driving licence (one or two years would be optimal).

Driving examiners agree with this concept. And warns that if the ecodriving rules were to be integrated into the curriculum under the existing system, then, there is a real threat their education will be only a formality and have no major impact on the novice drivers' driving style.

Policy makers accept the usefulness of ecodriving and remind that in the recent past, there has been considered a two-phase system of education of learner drivers. While the former phase was to learn the future drivers about the basic rules and driving skills, the latter was to extend the knowledge to include also aspects of the safety (defensive driving style).

The proposal ultimately did not find enough supporters among the politicians to be approved. Due to prevailing problems with miserable road safety on Czech roads, that measure could be again put on the table and, in line with this concept, rules of safe and economic driving could form the second phase of education of learner drivers.

On the other hand ecodriving does not necessarily bring only benefits. Academic representatives argue that there is evidence that emissions of pollutants like CO, CxHy and PM may be higher when the driver obeys the rules of ecodriving. And that such a driving style can make brakes less functional (due to their less intensive use). Therefore, they recommend that rules of ecodriving should be used moderately to minimize these negative effects.

Among interested parties in ecodriving can be beside energy agencies, touring clubs, car dealers, leasing companies and fleet operators also included insurance companies and car manufacturers. While the former may benefit from potentially lower number of accidents (and thus damages paid out to the insured and/or affected parties), the latter may utilize ecodriving as the way how to achieve the fuel economy in daily traffic which is declared based on the testing carried out before the cars are introduced on the market.

From the answers which were provided by the stakeholders, there were formulated recommendations how to positively influence or motivate these individual stakeholders in order to be willing to actively promote the idea of ecodriving (not only in the framework of the ECOWILL project).

Below, results of the interviews are summarized for each stakeholder group identified and interviewed.

2.1. Driving instructors

Benefits

- By introduction of education of ecodriving into curriculum of learner drivers, driving schools may benefit from the possibility to offer on the market services with a higher added value (at corresponding price).
- If novice drivers were to be educated about rules of ecodriving specifically on a compulsory basis, then the driving schools could extend their scope of services offering this education also to experienced drivers on a voluntary basis thus enlarging prospective benefits.
Obstacles

- The drivers which shall be educated about ecodriving rules should possess certain minimum driving skills that allow them drive their car in daily traffic passably respecting the signs and traffic rules – of that, however, learner drivers which aspire for getting his/her driving license are not usually able to.
- The volume of curriculum for novice drivers is already extensive and to add further specific topics would enlarge it further; that may increase complexity and costs to the potentially unacceptable level from the side of “clients”.
- To make the ecodriving courses appealing also to experienced drivers, there should be in place further stimuli then the prospective better fuel economy which may be achieved consequently.

The current curriculum for learner drivers would have to be extended and, if necessary, also the underlying legislation would have to be amended to allow for ecodriving rules education which may be difficult.

Part A: Fundamentals concerning Ecodriving

- Majority of driving instructors does not consider ecodriving as something which shall need a special attention during lessons for learner drivers. If so, then, as part of more complex (complementary) education which would also include safety aspects.
- Furthermore, most of driving instructors see themselves as experienced enough for provision of education on ecodriving principals without necessity to undergo some specific education on it.

Part B: Ecodriving for learner drivers / driving schools

- Ecodriving for learner drivers seems as no appropriate, at least until the time they are able to drive their car in daily traffic respecting signs and rules; prospective benefits like better fuel economy, higher traffic safety or lower outage of some automotive components are thus seen as achievable only after this period.

Part C: Ecodriving for licensed drivers

- Ecodriving for licensed drivers may seem to be more suitable and also attractive under condition further stimuli were to be introduced to motivate to undertake such courses; only then the “basic” benefits mentioned above seem to outweigh costs of such courses.

Part D: Future Outlook

- Integrate ecodriving into second-phase of education of learner drivers and motivate experienced ones to undertake a dedicated course; to make it happen changes in legislation are, however, necessary.

RECOMMENDATIONS

- Driving instructors must be persuaded that ecodriving is reasonable and beneficial otherwise any compulsory education of it may end up only as a formality.
- As a help would be seen therefore a special education (to have the chance to see personally the importance of ecodriving) combined also with the corresponding number of hours additionally allocated for it (both for the theory and also practice).
- The quality of education should have the precedence before the quantity otherwise real effects may be significantly lowered – therefore, it should be also tested properly especially in the practical part of examination.
- ECOWILL project can therefore help significantly in establishing the necessary basic educational framework and its minimum quality standards.
2.2. Driving examiners

Benefits
- More skilful learner drivers may appear on the roads due to integration of education of ecodriving into existing curriculum for learner drivers.

Obstacles
- The current examination procedure for learner drivers would have to be updated (both in the theoretical and also practical part), and, recommendably, divided into two parts to allow for proper testing of ecodriving rules.

Part A: Fundamentals concerning Ecodriving
In order the fundamentals of ecodriving were to be tested, then, they have to be learnt by driving instructors in a proper way. Examiners may only “verify” the knowledge and skills gained, ideally using the tools and procedures which is consistent with the curriculum.

Part B: Ecodriving for learner drivers / driving schools
Driving examiners interviewed agrees with the opinion of driving instructors, and that is ecodriving is more suitable to be learnt and tested after the driver gains the basic knowledge of driving a car in a normal traffic.

Part C: Ecodriving in driving examination
Ecodriving rules shall be tested both in the form of questions included in the theoretical part but also in the consequent driving test procedure by verifying the driver’s ability to apply and obey the rules in the standard traffic.

Part D: Future Outlook
In order to happen so, concerted action must be taken on the side of the relevant state authorities responsible for general legislative framework, supervision of operation of driving schools and driving license awarding.

RECOMMENDATIONS
- Driving examiners should be also familiar with the principles of ecodriving and understand its benefits; as a result, some form of education of them would be appropriate as well (ideally during re-examination of driving examiners).
- Furthermore, driving examiners would prefer to have ecodriving capabilities tested in the separate phase only after learner drivers attain basic driving skills; however, that would require introduction of two-phase examination (which is not currently in place).
- It would be good to see the importance of ecodriving increased/confirmed by some sort of regulation published by the state authorities.

2.3. Policy makers

Benefits
- Reduced emissions (especially of CO$_2$) due to better fuel economy.
- Potential contribution to higher road safety.

Obstacles
- Lack of sufficient (scientific) evidence that specific education of ecodriving may lead to the long-term behavioural changes among learner drivers (it must rely on assumptions).
• Possible opposition/reluctance from side of driving schools if ecodriving rules is integrated into basic education of learner drivers with no change in the minimum number of lesson hours prescribed by legislation.
• Increased costs of courses which will have to be financed by (learner/experienced) drivers unless state support were to be provided.

Part A: Fundamentals concerning Ecodriving
Ecodriving is seen by policy makers interviewed in the CR as a “win-win” measure – to the drivers themselves may bring financial benefits thanks to the better fuel economy primarily and to the public increased road safety if the rules were practised and obeyed by substantial number of drivers.

Part B: Ecodriving for learner drivers / driving schools
From the Czech state administration point of view, the long-term primary attention is on road safety. If ecodriving may contribute to it, it would see the „green light“. Experience of other countries with integration of ecodriving into the curriculum for learner drivers would be most welcome.

Part C: Ecodriving for licensed drivers
Licensed drivers are nowadays required to be educated about any updates in the traffic rules only under the labour code (i.e. when to their working tasks also belong driving a corporate car). Therefore, that requirement could be a starting point for eventual expansion of ecodriving education into the short-term courses for licensed drivers (of corporate cars).

The curriculum of these courses is not, however, defined by any legislation and would have to rely on an approach of a given driving instructor.

Part D: Future Outlook
Couple of years ago, there has been in the country considered a two-phase system of education of learner drivers. While the former phase was to learn the future drivers about the basic rules and driving skills, the latter was to extend the knowledge to include also aspects of the safety (defensive driving style). The proposal ultimately did not find enough supporters among policy representatives to be approved. Due to prevailing problems with miserable road safety on Czech roads, that measure could be again put on the table and, in line with this concept, rules of safe and economic driving could form the second phase of education of learner drivers.

RECOMMENDATIONS
• Policy makers should see that expected ecodriving benefits are achievable and significantly overshadow eventual drawbacks.
• As a critical argument for promotion of ecodriving in the CR (and its introduction into education of learner drivers) is seen its potential contribution to higher road safety; that aspect, if ideally proved by some evidence, would lead to the desired action by Czech state authorities to “institutionalize” ecodriving education.
• Both “preconditions” can be fulfilled by provision of good practice examples and intensive networking with the relevant authorities (planned to be done in the framework of ECOWILL).
• Better fuel economy and lower emissions of CO2 can then justify the active promotion of ecodriving as a measure includable into the policies aimed at combating climate change and improving energy efficiency.
2.4. **Energy agencies / environmental research institutes / universities / academies**

**Benefits**
- Better fuel economy and thus energy savings.
- Lower emissions of CO₂.

**Obstacles**
- General opinion of the majority of drivers that their driving style does not give much opportunity for better efficiency (and reluctance to change it for better fuel economy).
- Ecodriving does not necessarily bring only benefits; there is evidence that emissions of pollutants like CO, CₓHᵧ and particles may be higher when the driver obeys the rules of ecodriving. And that such a driving style may result into a less reliable breaking system (due to their less intensive use).

**Part A: Fundamentals concerning Ecodriving**

Ecodriving has a potential to lower the energy consumption in the transport sector. As a good example can be served hauliers which have nowadays capabilities to monitor fuel economy of their fleet (and some do utilize it to foster lower transportation costs). Promoters of energy efficiency see it therefore as a highly recommended measure since one can achieve lower fuel/energy consumption at negative costs (i.e. and may earn on it).

Academic representatives, however, points out that to change behaviour and habits, persuasive personal experience and proper stimuli must be put into play.

For some, there would be enough to undertake a driving lesson with a lecturer. The only reward would be then lower fuel costs, if new knowledge how to drive with a better fuel economy would be applied in daily traffic. For (majority of) others, however, it would not be enough and there should be found proper incentives which would motivate drivers change his/her driving style permanently (ideally).

**Part B: Ecodriving as business case**

Ecodriving is an economic effective measure which is successfully utilized currently in the CR voluntarily by hauliers having in their fleet trucks with high annual mileage. Here the employer has instruments how to make the driver adjust his/her driving style for better fuel economy. Similar concept may be applied generally among fleet operators of also other vehicles (buses, vans, passenger cars) which cautiously follow fuel costs.

In case of drivers who drive a passenger car only for private purposes, better fuel economy does not have to be necessarily enough and, in business case, only few would be willing to voluntarily undergo a course of ecodriving (and pay for it). As a result, some incentives (or regulation) should come into play to achieve the desired outcome.

**Part C: Future Outlook**

A higher penetration of application of ecodriving among Czech drivers is conditioned by the introduction of effective incentives and proper regulation. If not, ecodriving would be like today limited to (the minority of) drivers which are directly or rather indirectly (by his/her employer) sensitive to fuel costs.

**RECOMMENDATIONS**
- The academic institutions as well as universities could be engaged in promotion of ecodriving via initiation of independent research into some of the aspects of ecodriving (i.e. its contribution to higher road safety or negative effects on higher emissions of pollutants).
As for energy agencies, there is no need to persuade them to enhance ecodriving activity; there is clear understanding of its benefits which make ecodriving cost effective measure improving fuel economy at negative costs.

2.5. Fleet operators

Benefits
- Financial savings which may arise from better fuel economy.
- Possibility to utilize ecodriving as one of “green” measures taken by a company to minimize negative impacts onto environment.

Obstacles
- Long-term effectiveness only achievable if proper monitoring (of fuel consumption) is in place.
- Initial costs for organizing ecodriving courses which may be seen as not reasonable (e.g. due to fluctuations among company staff).
- Daily traffic which may minimize the effects of application of ecodriving rules.
- Prejudice that when practising ecodriving, the journey takes longer (and results into working time losses).

Part A: Fundamentals concerning Ecodriving
Ecodriving seems to be potentially attractive, especially for those fleet operators, who are sensitive to fuel costs and want to minimize negative impacts of their business activities onto the environment.

Part B: Ecodriving as business case
So far, however, to obey the rules of ecodriving by its personnel it is required from by a very small minority of fleet operators. There are multiple reasons for it; from indifferent management towards energy efficiency and protection of the environment to reluctance of corporate drivers to adjust his or her behaviour in favour of better fuel economy on the grounds that it would result into longer times spent on driving.

Part C: Future Outlook
If there were implemented some further stimuli (e.g. in the form of reductions of insurance premiums paid), that would enlarge the interest from the side fleet operators to have their personnel educated on ecodriving and motivate to its application in daily work.

RECOMMENDATIONS
- Fleet operators should clearly see that if drivers obey the rules of ecodriving, quantifiable benefits may be achievable; for this purpose, appropriate monitoring systems should be available on the market (to be implemented along with necessary initial education).
- As a further impetus, then, the possibility of lowering frequency of accidents may make the introduction of ecodriving even more attractive; the prospective willingness of insurance companies to provide reductions in premiums paid by car owners for their car fleet insurance if their personnel undertake ecodriving course can leverage the interest of fleet operators in ecodriving substantially.
2.6. Car Dealers / Leasing Organisations

Benefits
- Economic efficient measure how to reduce fuel consumption and emissions of CO₂ - if ecodriving is applied, than one may afford to purchase a bigger car (with higher normative fuel consumption and emissions) while achieving fuel consumption of a smaller one.
- Instrument applicable on any car and usable as a marketing tool (with a slogan "you are the one who determines fuel consumption ultimately").

Obstacles
- It requires active approach from the side of customers (which is not usual).
- There must be driving instructors which may offer ecodriving courses on a professional basis.

Part A: Fundamentals concerning Ecodriving
Ecodriving offers the unique possibility to allow drivers to purchase a bigger car while achieving fuel consumption of a smaller one, if they want to. However, it is this aspect ("they must want") that determines that the prospective benefits will materialize finally.

Part B: Ecodriving as business case
For Czech drivers, there have been so far other parameters of cars more important than fuel consumption (like the selling price, existence of AC, airbags, usable space etc.). Utilization of ecodriving as a marketing tool would not thus make any much difference in purchasing decision.

Part C: Future Outlook
In the future, however, that may change. A great help would be to have passenger cars classified according to fuel consumption using energy labels (which is considered).

RECOMMENDATIONS
Car dealers or leasing organizations would be willing to be engaged in active promotion of ecodriving if they see it as the opportunity to increase the customer satisfaction; it may be expected, however, that the primary impetus would rather come from the customers and/or given car manufacturer(s) whose models have on the offer. As a result, these stakeholders should be somehow engaged into it as well by an appropriate way.

2.7. Automobile clubs

Benefits
- Lower fuel consumption.
- Prospective contribution to higher road safety.

Obstacles
- Absence of legislation which would support ecodriving education.
- General indifference to the application of ecodriving among state authorities and other stakeholders currently in the CR.
- Absence of knowledgeable lecturers which would be able to provide education on a professional basis.
Part A: Fundamentals concerning Ecodriving

Ecodriving is definitely positive – for the drivers themselves but also for the general public. The evidence of its positive effects is for many years seen in the contest “Economy Run” organized by the Skoda Auto touring club.

Part B: Ecodriving as business case

Ecodriving is nowadays ignored by many stakeholders in the CR for numerous reasons (partly be the bigger focus on road safety and other prevailing problems of the transport sector). Definitely it would be a help if the given state authorities would approve its usefulness by integrating its rules into legislation which regulates education of learner drivers as well as licensed ones.

Part C: Future Outlook

The experience has that experienced and committed lecturers are needed in order to be able to educate correctly rules of ecodriving. A special course for driving instructors to be certified for provision of ecodriving education would be therefore most welcome.

RECOMMENDATIONS

Automobile clubs have played, so far, in the country the role of foremost proponents of ecodriving; to secure or even enlarge their interest in it further could be achieved by some sort of (financial) support and participation in the targeted activities (e.g. those, be developed and undertaken within the framework of ECOWILL project).

2.8. Other stakeholders

Among other stakeholders may be named for example insurance companies. If more drivers adjust their driving style in favour of better fuel economy and higher road safety, then lower number of accidents and compensations may be expected.

Representatives of insurance companies interviewed see it as potentially attractive, however, they express some doubts due to the lack of sufficient evidence of its application in domestic conditions (and positive effects onto frequency of accidents).

Those who undergo such a course may be rewarded by reductions of insurance premiums paid for (compulsory) third party vehicle insurance and/or (voluntary) insurance of the physical damage or loss of the insured vehicle and of the insured party.

As another interested party were identified car manufacturers. Even though they usually offer on the market models which have lower fuel consumption (like e.g. VW with its Blue Motion edition of Skoda Auto with GreenLine models), it happens that when tested by independent journalists their fuel economy is worse than declared by the manufacturer. As one of the major reasons is blamed the improper driving style. Therefore, they have an interest in improving driving style of their customers in order not to feel them “deceived”. This may be a strong argument for promotion of ecodriving by car manufacturers.

RECOMMENDATIONS

- Insurance companies see ecodriving as a potentially attractive way how to lower the number of accidents and increase the road safety; in order to be willing to actively promote ecodriving education and its practicing in real traffic via reductions in premiums paid for car insurance, they should be provided with some scientific evidence, ideally from local conditions.
- Car manufacturers may be engaged into promotion of ecodriving on the grounds that by a proper driving style you may achieve or get below the fuel consumption which is being set for new passenger cars in the standardized testing conditions. Thus, achieving the same or even better fuel economy for a given car, than projected by its manufacturer originally.
2.9. Summary

Table 2.1. Classification of obstacles.

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Need for legislation amendment (to educate learner drivers on ecodriving)</td>
<td>To make education of ecodriving functional for learner drivers, there is a consensus among the stakeholders that a two-phase examination for getting driving license would be the best solution. That would, however, require changes in legislation which is not easy to be negotiated</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>No need for driving style improvement by licensed drivers</td>
<td>Most of licensed drivers consider their driving style as a good one with little space for improvement</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Insufficient incentives for practising ecodriving</td>
<td>For large majority of Czech drivers prospective energy savings which may be secured by ecodriving may not be a sufficiently persuasive argument for doing so (on a long-term basis). Further stimuli are seen as needed</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Higher emissions of CO, CxHy, and PM pollutants</td>
<td>There is evidence that by ecodriving higher emissions of pollutants regulated by EURO standards may result. This should thus lead to the recommendation to use rules of ecodriving moderately</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 2.2. Classification of benefits.

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Better fuel economy</td>
<td>Ecodriving helps to lower fuel consumption – thus having a direct positive effect which may function as a basic incentive</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Lower CO2 emissions</td>
<td>Lower fuel consumption – lower emissions of carbon dioxide; the critical component of today’s policy in the transport sector also</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Contribution to higher road safety</td>
<td>Practising of ecodriving may contribute to higher road safety – important argument for its promotion in Czech conditions</td>
<td>1</td>
</tr>
</tbody>
</table>
3. Croatia

During the market investigation and preparation stage of the ECOWILL project, several key stakeholders have been surveyed in Croatia. Survey analysis captured following sector representatives and institutions/companies:

- Driving Examiners from Croatian Car Club;
- Policy Makers from Ministry of Interior;
- Energy research institute – Energy Institute Hrvoje Pozar;
- Faculty of Mechanical Engineering and Naval Architecture;
- Fleet operators: Public Transportation Company ZET, Waste Management Company Čistoća and Croatian largest retail stores company Konzum d.d.;
- Car dealer – Toyota Croatia d.o.o.;
- Hypo-Leasing Kroatien d.o.o.;
- Automobile Club – Croatian Car Club.

In total 15 persons from 10 companies/institutions were surveyed. In general could be concluded that attitude toward Ecodriving is highly positive from all of the surveyed persons and institutions/companies.

Even though ecodriving is already binding element in candidate driver’s education since 2008, obstacles that could prevent further integration of Ecodriving for the licensed drivers are as follows:

- Non existing teaching infrastructure for the short duration trainings;
- Non existing legal obligations for the licensed drivers to attend ecodriving course;
- Resistance toward extra financial burden for ecodriving lessons;
- Ecodriving is in contradiction with current life style;
- Young people likes to show up and to be cool on the road.

On the other hand, all of the surveyed stakeholders have agreed that Ecodriving brings a bulk of the benefits for different types of the stakeholders. These benefits could be summed up in following bullets:

- Financial;
- Ecological;
- Safety;
- Green Marketing;
- Business opportunity.

Croatian Car Club which is the key stakeholder responsible for improving educational level of existing and new coming drivers, including stronger ecodriving promotion, is planning to establish a long lasting national ecodriving campaign based on the ECOWILL suggestions and their own experience. Campaign is planned to be launched next year.

General conclusion which could be pointed out and which derives from the stakeholder’s survey results is that ecodriving is technique and the life style which has been intensively promoted within candidate drivers in Croatia for a last two years.
In the context of ecodriving for the candidate drivers, it has to be stressed out that standard of ecodriving is highly in line with CIECA’s best practices and therefore, there is no need for further harmonization of the Croatian candidate driver’s curriculum with potential European (if CIECA’s standard will be considered as common European). Nevertheless, significant potential is still available on the market in execution of ecodriving campaign for the licensed drivers.

On the other hand, licensed drivers are aware of the benefits which could derive from the adoption of ecodriving principles in their daily commuting practice.

In order to make ecodriving a success in Croatia, particularly in the sector of licensed drivers, infrastructure of the trainers, qualified for the short duration trainings education, should be primarily established. In this respect, Croatian Car Club HAK, which is the largest and most influential club in Croatia, has shown great interest to set up and launch a long lasting national campaign, which will be based on the ECOWILL principles and guidelines.

However, several issues have to be further clarified in order to facilitate a mass roll out of the dedicated ecodriving for the licensed drivers in Croatia. It is important to define minimal standards for the short duration ecodriving training course, unique curriculum of the training course, way of the training execution, dynamics of the execution, trainer’s infrastructure and price of the training course.

It is also of crucial significance to introduce a common European certification procedure for both trainers and drivers, as well as certification system and to additionally endeavour ecodriving as a business case.

3.1. Driving instructors

Part A: Fundamentals concerning Ecodriving

Around 50 learner drivers are taught per instructor on yearly basis in Croatia.

Instructors consider ecodriving as technical and philosophical matter. Ecodriving is not jet mainstream in Croatia, but there is very big interest for this subject from instructor’s perspectives.

There is no Quality Control and Certification system for Ecodriving instructors in Croatia. Quality control and Certification should be certainly developed because a common standard is what instructors are looking for.

Instructors are already involved in ecodriving for 2 years and they see anticipated driving, on time gear shifting, trip planning and tyre pressure check, engine break and smart use of vehicle devices such as; on board computer, air condition system, etc as the most relevant Ecodriving tips.

Instructors believe that ecodriving is very useful because increase traffic safety, protects the environment and engine and in general increases the quality of living, particularly in urban areas.

Instructors anticipate problems with Ecodriving related to training execution dedicated for the licensed drivers.

In general, there are no prejudices against ecodriving.

Part B: Ecodriving for learner drivers/ driving schools

Ecodriving is a part of the driving school curriculum in Croatia and it is a part of driver’s test. Driver can’t fail just for bad ecodriving.

It is necessary to make ecodriving more “popular” by revealing the principles to the public, increasing general population awareness of the benefits.

All of the Ecodriving aspects are currently taught in Croatia already for 2 years. Unused potentials of Ecodriving for driving schools are: education of driving school instructors to learn how to provide short term trainings for the licensed drivers and further commercialization of ecodriving trainings for the licensed drivers.

Instructors consider both theoretical and practical part as relevant for the education of learner drivers.

So far, there weren’t any problems identified in teaching Ecodriving to learners. Biggest restraints for learners to practice Ecodriving are identified in perception that ecodriving is sometimes perceived as
boring and contradictory style of driving comparing to the modern urban life style, which is rather dynamical.

Necessary requirements for trainers teaching Ecodriving are: definition of the Quality standards and Certification.

There are no problems with the integration of Ecodriving in the education of learner drivers in Croatia.

Ecodriving should be integrated into the education and testing of learner drivers both in theoretical and practical way.

Modular approach would mean less resistance and easier step-by-step implementation, but raises the question of motivation to even take an extra-course.

Main advantage of integrated ecodriving education is that you can be sure that every future driver is served with all the needed information on the subject on one place.

Instructors prefer both modular and integrated approach. Each of the approaches have it’s on target group of the drivers. Modular is more applicable for the licensed – professional drivers, while integrated is more applicable for the learner drivers.

In general, there should never be a conflict between education and examination, because education and examination should be based on the same basic learning programme. Today, we have those issues, conflicts based on old vs. new driving style problem.

Practical way is considered as the best to communicate Ecodriving.

**Part C: Ecodriving for licensed drivers**

Ecodriving for licensed drivers is considered as a potential business case. For the extension of Ecodriving for licensed drivers as a business case it is necessary to define common methodology for the short duration trainings, quality control and to define reasonable prices of the course.

Ecodriving marketing should be definitively targeted toward larger fleet operators/owners, public transportation companies, and so on.

Promoting Ecodriving at the events such as Energy Weeks, Fairs, Eco-Campaigns could further facilitate commercialization of Ecodriving.

Major restraints for different target groups of licensed drivers to practice Ecodriving should be further researched. There are no many experiences with this group of consumers so far. Due to the lower economy standard of Croatian citizens, consumers firstly anticipate economical benefits of Ecodriving.

According to the survey results, instructors see need for the ecodriving training course implementation in driving schools. However, operative part of the education should be provided on site. There is certainly demand for such Ecodriving training courses, particularly within the group of professional heavy duty drivers.

There was only one campaign provided in Croatia dedicated for the licensed driver of the personal cars. Campaign was conducted in the following way: occasionally passenger at the Zagreb’s City lake Jarun was asked to sit in the car and firstly to drive one round around the lake in free style. Afterwards, short theory of on ecodriving was orally presented to the driver and ultimately, driver was asked to repeat the round around the lake by practicing ecodriving. At the end, driver was familiarized with the difference in fuel consumption according to the data gathered from the vehicle on-board computer.

The problem with selling Ecodriving courses to licensed drivers on the market is seen in non existence of the legal obligation to force drivers’ participation in such.

Price of 150 kn (20 EUR) is considered as reasonable for 1-to-1 one-hour-training. Public companies are generally not willing to pay any cost for ecodriving training. This could be addressed as a problem for licensed drivers’ trainings.

Ecodriving should be additionally popularized on national level prior to driving schools decides to pick up such activities in their commercial offer.
Part D: Future Outlook

Further clarifications on Ecodriving that needs to be provided relates to minimum standard of Ecodriving that is supposed to be provided at European level and moreover it has to be clarified whether there will be obligation for continuous specialization of the licensed drivers in Ecodriving.

Ecodriving will certainly face with new technologies and tremendously mobility demand in the future. Ecodriving should didactically evolve in the future.

The advantages of Ecodriving certification procedures are definitively sensibility increase of the driver and remainder on training issues and outcomes. Instructors don’t see any disadvantages with certification.

Apart of the conducted surveys within instructors, tremendous interest has been achieved in proposed instructor qualification training on Ecodriving in Croatia and certainly to the project board is sent very clear message that such training should be organized in Croatia.

Organization of the one/two day workshop on specialization in ecodriving train the trainer programme would definitively encourage instructors in their further evolvement in ecodriving activities. It could be generally concluded that instructors prefer to attend workshops which are free of charge.

RECOMMENDATIONS

Since all of the driving instructors are already educated to execute and perform Ecodriving education and trainings, influence should be focus toward licensed drivers’ short duration education training qualification.

In this regard, it is highly recommended to the project board firstly to provide standardize curriculum of the short duration training and to share common practice with Croatian instructors, through the one or two day workshop that will be organized in Zagreb.

These master trainers will lately disseminate the knowledge on Ecodriving through the network of driving instructors in Croatia. The master trainers are already chosen in cooperation with Croatian Car Club.

Additionally, quality standard and certification procedures are highly recommended to be developed and launched on the market.

3.2. Driving examiners

Part A: Fundamentals concerning Ecodriving

About 2000 learner drivers per year are tested per one examiner.

From the examiner’s perspective, ecodriving is considered more as a philosophy than just as a driving technique. It is considered as essential part of general environment-saving idea, of global awareness of the current state our planet is in, and in what condition are we going to leave it to our children.

Ecodriving is just starting to become a relevant subject. Examiners are already few years involved in Ecodriving.

Examiners believe that ecodriving is very useful. Benefits of ecodriving are wide. Main things that can be accomplished by implementing ecodriving principles are: reducing the local air pollution and global greenhouse gasses pollution by fuel saving, reducing car repairing costs, reducing noise pollution, reducing stress, making driving more comfortable, reducing accident rates, increasing traffic safety.

Money savings, increased safety, good feeling of contributing to preserve our planet resources are considered as potential incentives for drivers to practice Ecodriving.

General problem concerning Ecodriving is to get ecodriving concept widely recognized as modern, effective and necessary.

Some of examiners still believe that driving at low engine revs can damage the engine, that engine braking consumes fuel, that ecodriving takes too much gear changing, and things like that. These are most relevant prejudice.
Part B: Ecodriving for learner drivers/ driving schools

Ecodriving is part of the driving school curriculum and part of drivers’ test in Croatia. It’s essential that learner drivers get that kind of education from the very beginning of their educational process. Modern cars need modern style of driving, and that should be clear to everyone that wants to become a competent driver.

Even though ecodriving is a part of drivers’ test in Croatia, drivers can not fail for bad ecodriving. Implementation of this issue would make instructors and learner drivers more aware of the problem. It is necessary to make ecodriving more “popular” by revealing the principles to the public, making the general population aware of the benefits, in order to implement these standards.

Just basic principles of Ecodriving are currently taught in Croatia. Modern cars driving technique, proper usage of on board fuel-saving devices are consider as relevant for the education of learner drivers.

Ecodriving should be integrated into the education and testing of learner drivers throughout the whole educational process. Every aspect of ecodriving should be incorporated: from driving technique to safety and defensive driving issues, in order to make that kind of driving style the only acceptable one. Theory test should have more questions on ecodriving, and bad ecodriving at the practical exam should result in failing the test, even if that was the only serious mistake.

Modular approach of Ecodriving integration would mean less resistance and easier step-by-step implementation, but raises the question of motivation to even take an extra-course. Main advantage of integrated ecodriving education would be that you can be sure that every future driver is given all the needed information on the subject.

It would be best to start with modular approach, with strong marketing, promotional support, and in the meantime to prepare the introduction of an integrated version, leaving modular courses for experienced drivers and specific, higher, vehicle categories (trucks, buses, ...)

Part C: Ecodriving in driving examination

The examinees in Croatia are much better in theory of ecodriving, and they have problems in connecting that with practice of ecodriving.

Ecodriving is literally translated and adopted in Croatian terminology; translation in Croatian is “Eko vožnja”.

There are some regulations how to examine eco-friendly driving, but these don’t cover too many details, they are more of a general kind.

Since those aspects do not affect the final exam result, there are not strict instructions on how to do that, it depends, more or less, on the examiner’s own decision and creativity.

All the elements of defensive driving, keeping the speed constant, avoiding sudden braking and unnecessary speeding up, changing gears on time at low engine speed, applying engine braking are part of drivers’ test.

Ecodriving aspects are not strictly specified, there are no conflicts with other examination issues. The only conflict may occur with the matter of safety in some traffic situations, but if that is the case, safety comes first.

It is possible at all to assess Ecodriving abilities in the drivers’ test. Croatian examiners are examining all general aspects, but it doesn’t affect the final test result in the way it should.

For some of the learner drivers, it is just too much information in a short time, that they are expected to remember and implement, so they decide to think just about the traffic rules and safety issues and they leave the eco issues for later. These are seen as potential problems concerning the integration of Ecodriving in the education and examination of learner drivers.

In general, there should never be a conflict between theoretical and practical contents, because education and examination should be based on the same basic learning programme. Today, we have those issues, conflicts based on old vs. new driving style problem.
Principal suggestion for a harmonisation of driving education and testing is to keep educating examiners.

**Part D: Future Outlook**

Further clarifications on Ecodriving that needs to be provided relates to minimum standard of Ecodriving that is supposed to be provided at European level and moreover it has to be clarified whether there will be obligation for continuous specialization of the licensed drivers in Ecodriving?

Ecodriving will certainly face with new technologies and tremendously mobility demand in the future. Ecodriving should evolve in the future in technical, didactical and thematic manner.

The advantages of Ecodriving certification procedures are definitively sensibility increase of the driver and remainder on training issues and outcomes. Examiners don’t see any disadvantages with certification.

Quality standard definitively has to be transparent and European wide adopted in unique form.

From the conducted surveys within HAK examiners, tremendous interest has been achieved in proposed examiners qualification training on Ecodriving in Croatia. Thus, to the project board is sent very clear message that such training should be organized in Croatia.

Organization of the one/two day workshop on specialization in ecodriving train the examiner programme would definitively encourage examiners in their further evolvement in ecodriving activities. It could be generally concluded that examiners prefer to attend workshops which are free of charge.

**RECOMMENDATIONS**

Similar to recommendations from instructors, influence should be focus toward licensed drivers’ short duration education training qualification.

Driving Examiners in Croatia operates under the umbrella of Croatian Car Club (HAK) who is the principal partner of ECOWILL project for Croatia. Since, management of HAK is already deeply familiarized with ECOWILL objectives; HAK became committed to support development of examiners infrastructure development procedures. Thus, it is expected that involvement of driving examiners in and beyond ECOWILL project will not present any problem.

However, it is highly recommended to the project board firstly to provide standardize curriculum of the short duration training and to share common practice with Croatian examiners, through the one or two day workshop that will be organized in Zagreb.

Additionally, quality standard and certification procedures are highly recommended to be developed and launched on the market.

### 3.3. Policy makers

Ministry of Interior of the Republic of Croatia is responsible for the legal issues and policy making related to definition and obligations of drivers’ education curriculum. Major Counsellor of the Ministry is Croatia Car Club, and in general, Ministry adopts proposals on curriculum modifications received from the Club.

**Part A: Fundamentals concerning Ecodriving**

Ecodriving could be defined as technical and philosophical matter. Ecodriving is becoming more and more relevant subject in Ministries’ profession.

All of the employees of Ministry of Interior, particularly police officers are already familiarised with the Ecodriving techniques and benefits that derives from it.

Most relevant ecodriving tips are anticipated traffic flow, early gear shifting, breaking with the engine, maintenance of the steady vehicle speed, etc. Ecodriving is very useful because it helps to enhance environmental protection and traffic safety.
There are no problems with Ecodriving, at least for the learner drivers. However, licensed drivers that acquired driving license prior to 2008 should be additionally trained.

Ecodriving is already political subject in way that it is compulsory technique which should be practiced during the learner driver education.

From soft measures, like Ecodriving, intervention in driving behaviour could significantly increase climate protection and traffic safety.

Ecodriving is referred as one of the priority soft energy efficiency measures in transport, according to the Energy Strategy, and it is already a part of the National Energy Efficiency Action Plan (NEEAP). In the NEEAP, Ecodriving is addressed as the EE measure which is supposed to be implemented until 2014.

**Part B: Ecodriving for learner drivers/ driving schools**

Benefits that derive from the Ecodriving integration into the education of learner drivers are: systematic transfer of the knowledge regarding environmentally friendly driving style at one place, increased sensitivity toward ecologic, economic and safety benefits.

Ecodriving is already integrated in Croatian education system as an integral whole and there were no any obstacles recorded in the implementation process.

**Part C: Ecodriving for licensed drivers**

For the purpose of mass roll-out of Ecodriving trainings it is important to develop a national campaign which will be branded and recognized within costumers. For this purpose already exist strong incentive from Croatian Car Club.

By rolling out Ecodriving toward the masses, society will benefit from the increased air quality and traffic safety, while policy will benefit from the recognition of mobility harmonisation with the sustainable concept from the citizens.

Ecodriving is currently underrepresented and for the purpose of making it mass phenomena, national campaign should be defined. Ministry of Interior is eager to help to the future Ecodriving national campaign carrier with the execution of Ecodriving trainings.

As for the quality requirements, it is addressed that network of competent professionals is to be developed for the successful real world training course.

**Part D: Future Outlook**

There are still some uncertainties regarding who will be the carrier of the national ecodriving campaign, how often short duration trainings will be provided, where will be the venues, which target groups will be affected and so on.

Ecodriving will certainly have to face with rapidly growing demand from the costumers side as oil prices will go up, new technologies, and considerations regarding extra financial burden for the campaign carrier and ultimately for the costumers.

Ecodriving is certainly a measure that has a bright future in Croatia.

Basic precondition which has to be fulfilled prior to mass rollout of the Ecodriving is definitively establishment of the short duration ecodriving training infrastructure.

**RECOMMENDATIONS**

Ministry of Interior of the Republic of Croatia is responsible for the legal issues and policy making related to definition and obligations of drivers’ education curriculum. Major Counsellor of the Ministry is Croatia Car Club (HAK), and in general, Ministry adopts proposals on curriculum modifications received from the Club.

Certainly, HAK could suggest to the Ministry to issue a resolution by which certain groups of the drivers should be mandatory to pass ecodriving training lessons (like professional heavy duty fleet drivers, bus drivers, etc). Motivational factor would be certainly best practice examples from the EU countries.
Considering above mentioned circumstances, please look for a further clarifications in section 3.7.

3.4. **Energy agencies / environmental research institutes / universities / academies**

For the purpose of gathering opinions regarding ecodriving, surveys took a place within two institutions:

1. Energy Institute Hrvoje Požar, as representative of research institute stakeholder category
2. Faculty of Mechanical Engineering and Naval Architecture (FAMENA), University of Zagreb, as representative of University/Academy

*Opinions gathered from Energy Institute Hrvoje Požar (EIHP) are presented below.*

**Part A: Fundamentals concerning Ecodriving**

For the EIHP Ecodriving is concerned as technical and philosophical matter. At the moment, there was conveyed only one ecodriving training so far and public awareness of the benefits coming from this “new driving” style is still very low. First contact of the EIHP with ecodriving was established during a partnership on ECOWILL project. So far, EIHP is engaged in Ecodriving popularization for 4 months. Most relevant ecodriving tips anticipated from the EIHP’s perspective are: gear shifting as early as possible, constant velocity maintenance, regular tyre pressure check, etc.

EIHP sees Ecodriving as a very useful and cheap measure dedicated toward transport sector decarbonisation and energy efficiency increase. One of the major problems concerning Ecodriving adoption is and will be present within utilization of the company cars.

**Part B: Ecodriving as business case**

Certainly that special benefit for different target groups can be identified. For instance, driving schools could extend commercial portfolio of the services, fleet owners/operators could become more competitive on the market due to lower fuel costs, city safety would increase and so on.

Ecodriving could be for sure observed as a business case: fleet owners can significantly reduce margin operative costs; instructors, examiners and owners of the driving schools have a new product to launch on the market, etc.

There is only ECOWILL project related to ecodriving activities in process within EIHP business field. So far, there weren’t any obstacles related to ecodriving implementation activities.

EIHP believes that Ecodriving is one of the best soft measures on the CO2 battle field. There are no any political initiatives or restraints concerning Ecodriving as well as there are no latest results/insights on the Ecodriving subject.

Environmental protection is slightly becoming motivational factor in Croatia. Generally speaking, state of the awareness of environmental issues is very well developed particularly for households, tertiary and industry sector, while awareness for transport sector is at beginning stage.

Citizens of Croatia are becoming more and more affected by the environment because different green campaigns are conveyed, eco taxes are also becoming part of compulsory liabilities and so on.

Depends on the region, but it could be concluded in general that environmental protection is quite pressing in Croatian cultural context.

Even though it varies between the groups of drivers, all day experiences of the drivers are quite different from the standard ecodriving techniques and there is a significant gap. Therefore, Ecodriving is certainly a solution for current driver’s challenges in Croatia.

In house trainings and trainers, competent driving school instructors and national campaign we see as necessary didactical factors when it comes to consideration of sustainable intervention into driving behaviour.
In general, Ecodriving is very positively accepted by consumers. Potential consumer benefits that were already identified are: less expensive, stress and dangerous mobility.

It would be very hard to force the licensed drivers of the private cars to pay extra for the Ecodriving techniques specialization if there is no any legal obligation. However, owners and operators of the large fleets are positive about the extra payment for Ecodriving education of their drivers.

For an one-hour 1:1 training we would suggest price that doesn’t exceed 70 €. Mass roll-out of Ecodriving definitely requires a national ecodriving campaign.

A quality standard for real-world Ecodriving training should comprises of simple, straight, and efficient training elements.

Further clarifications on Ecodriving should be definitively focused on whether Ecodriving will become compulsory issue for licensed drivers on EU level and in that case, how often will have to be retrained if even should be considered in that way.

Ecodriving will certainly have to face with adaptation to the new technologies which will be soon placed on the market like EVs, Dual – Fuel Engines and so on.

**Part C: Future Outlook**

EIHP considers evolvement of Ecodriving in the future through technically, didactically and thematically mechanisms.

Ecodriving infrastructure definitely has to have qualifications and certification procedure is necessary at least at the beginning stage of the Ecodriving mass roll out.

Marketing strategy should be primarily focused on key stakeholders on the market.

We believe that Ecodriving has definitively a bright future in Croatia, particularly in professional driving segment.

*Survey results gathered from University of Zagreb are presented in addition.*

**Part A: Fundamentals concerning Ecodriving**

Ecodriving is considered solely as a technical matter. In relevant University teaching profession ecodriving is very rarely presented. Professors during the lectures use every opportunity to explain what is the role of ecodriving, at least at FAMENA. Indirectly, professors are engaged more than 10 years in ecodriving. When it comes to ecodriving tips evaluation, it is considered that up to 50% of fuel consumption can be reduced.

Ecodriving is considered as a very useful technique because it significantly reduces mobility costs and extends lifetime of the vehicles. Problems regarding ecodriving are anticipated in terms of very low awareness of the licensed drivers with the ecodriving.

**Part B: Ecodriving as business case**

Benefits are practically always the same - lower fuel consumption and less emission. Rest is only the interpretation as quoted by Professor Zoran Lulić. The answer is considered as a relevant for the question on benefits differentiation for different target groups. Ecodriving is also considered as a potential business case.

Reduction of CO₂ emission is directly (linear) conducted to the fuel consumption and therefore Ecodriving is treated as a very useful soft measure. Academic sector is aware that there are neither any political initiatives nor restraints concerning Ecodriving.

According to FAMENA awareness of environmental issues in Croatia is continuously increasing. Because of relatively low standard of citizens first motivation will be reduction of driving costs.

People in Croatia are already affected by the environment through special taxes, like a yearly eco fee which is charged during the registration of the vehicles. Environmental protection is moderately pressed in Croatian cultural context.

One-day seminars for the theory and one to two days training for the practice are considered as relevant didactical factors for sustainable intervention into driving behaviour.
FAMENA quotes that most of people/students which were familiarised so far with ecodriving techniques are often surprised with positive facts about ecodriving. Already were identified lower costs and lower emissions as major consumer benefits, while lower costs should have priority in the communication of Ecodriving to consumers.

FAMENA believes that consumers in Croatia are willing to pay only symbolic price for Ecodriving trainings. Price of 120 – 150 kuna (17 – 21 €) is suggested as acceptable for a one-hour 1:1 training. Real-world Ecodriving training courses should look like this: theory + practice + exam.

**Part C: Future Outlook**

Ecodriving should evolve in the future primarily on didactical basis. It is expected that Ecodriving will be business niche on the market.

**RECOMMENDATIONS**

The most efficient way to influence energy agencies, research institutes and academies in order to enhance ecodriving activities is definitively through the involvement of the mentioned stakeholders in relevant local, regional, national and international projects.

This group of the stakeholders is extremely important because it has very big influence on the information dissemination within very large group of the end users.

**3.5. Fleet operators**

For the purpose of gathering opinions regarding ecodriving, surveys took a place within four fleet operators project stakeholders:

1. Croatian capital’s Waste Management Company Zagrebački holding d.o.o. – podružnica Čistoća (WMC).
2. Zagreb’s public transportation company ZET d.o.o.
3. Konzum d.d., Largest retail stores company which is the owner and operator of the biggest heavy duty fleet in Croatia (Konzum).
4. City of Zagreb – professional drivers.

In addition, survey results for the WMC and ZET are presented.

**OPINIONS GATHERED FROM THE WASTE MANAGEMENT COMPANY ČISTOĆA (WMC) ARE PRESENTED BELOW**

**Part A: Fundamentals concerning Ecodriving**

WMC defines ecodriving as technical and philosophical matter.

Ecodriving is not jet relevant subject in waste management branch but it’s expected to become relevant in future. Watchful and cautious driving is already a part of WMC’s personal work. Lowering carbon dioxide emissions through ecodriving complements the idea of sustainable city transportation.

WMC is already engaged in the field of Ecodriving about one year and sees cautious driving and regular maintenance as most relevant ecodriving tips. Ecodriving is considered as useful technique since drivers will get new skills for ecological and economical driving. WMC does not perceive any significant problems with Ecodriving, as well as it hasn’t participated in any Ecodriving training so far.

**Part B: Ecodriving as business case**

Nowadays WMC operates with 64 vehicles above 3.5 tons and strongly considers ecodriving as a potential business case. WMC perceive necessity for that for the establishment of formal energy and environmental legal environment with compulsory issues in order to extend Ecodriving as business case. Major potential benefits of Ecodriving are seen in financial and ecological sense.
Ecodriving should be a standard procedure extended to all current and future drivers, stated company's representative. Currently, there is no any activity related to ecodriving in client's business filed.

There were not any obstacles that company has faced so far in ecodriving implantation activities. However, it will take some time for drivers to accept “new way” of driving.

Partner expects from the Ecodriving team to ensure efficient and practically oriented ecodriving training with measurable results. When it comes to expected savings, partner expect fuel savings around 10% - 20% as well as additional ecological benefits. For the client, most convenient time for the execution of ecodriving training course would be during working time, because it will simulate the actual real-world conditions. Of course, some basic training is needed on the training ground. Optimal lasting of the ecodriving training would be acceptable within 2 days.

Reasonable price for a short duration 1:1 is assumed at 150€. The client is monitoring fuel consumption only on average level. WM Company plans to introduce more comprehensive and precise fuel consumption and accident monitoring system. There is no costs personalization at the moment.

WMC anticipates sustainability support by having regular education and retrainings. WMC does plan to introduce some kind of bonification system even though it is not yet defined at the moment and the company does not have a bonification system.

**OPINIONS GATHERED FROM THE ZAGREB’S PUBLIC TRANSPORTATION COMPANY ZET D.O.O. (ZET) ARE PRESENTED BELOW**

In front of the ZET surveyed was Mr. Zvonko Biloš, who is charge of bus transport.

**Part A: Fundamentals concerning Ecodriving**

ZET defines ecodriving as technical and philosophical matter and considers ecodriving as a very relevant subject in public transportation profession.

There was only one ad-hoc ecodriving training conveyed within part of the ZET's drivers so far and there is no sustainability in continuous Ecodriving application.

ZET is already engaged in Ecodriving for about 4-5 years. From the previous experiences, ZET sees turning off the engine whenever bus stops as well as anticipated driving as most relevant ecodriving tips.

Ecodriving is moreover considered as absolutely useful! By adopting principles of ecodriving, life time of the fleet is extending undisputable, as well as fuel economy works in favour of the fleet owner. Major problems with ecodriving ZET sees with the non existing training infrastructure and additionally with potential scepticism and refusing to accept ecodriving principles from the drivers.

ZET has already experienced ecodriving few years ago when one of his bus supplier leasing organisations organized ecodriving training in order to protect the fleet from maltreatment of the buses. After the training, drivers were convinced that exiting routes could be driven even faster with eco driving principle that they were used to with ordinary driving style.

**Part B: Ecodriving as business case**

ZET operates with 240 buses above 3.5 tons. Taking into account the fact that ZET represents largest bus operator in the country, they are definitively consider Ecodriving as a potential business case. ZET believes that for the extension or building up the ecodriving as business case, primarily drivers should pass the training of the ecodriving.

Economical and ecological aspects are anticipated as potential benefits which ecodriving could bring to ZET.

Ecodriving should be further evolved by training in house professional and engaging other experts which will be available for further continuous education of existing and new coming drivers.

There was only one ad-hoc ecodriving training conducted for 10 drivers and it was accepted very positive by the drivers.
There is no any particular quality requirements set for the real-world training courses. So far, there are no any calculated savings provided from Ecodriving. ZET prefers training activities to be conducted during the working hours with empty buses operating along the training route. ZET is keen to adopt training time according to the trainer plan and schedule. So far, ZET doesn’t consider any extra payment for the Ecodriving lessons. ZET possesses fuel consumption monitor system which tracks consumption per each and every vehicle. So far, the company doesn’t have any bonification system.

**OPINIONS GATHERED FROM THE KONZUM d.d. ARE PRESENTED BELOW**

**Part A: Fundamentals concerning Ecodriving**

Ecodriving is considered both as a technical and philosophical matter. From the technical prospective, utilization of the EURO 4 and EURO 5 engines as well as utilization of the more aerodynamically vehicles, efficient tyres and automatic gearboxes, alternative fuels power trains, logistics optimization software utilization (Paragon) and employees’ education are considered as relevant ecodriving actions. On the other hand, philosophical anticipation of Ecodriving is proven by the understanding of the Ecodriving paradigm as a relevant for the environment protection, customer and consumer public awareness increase as well as for the profit improvement derived from the marketing.

Ecodriving is relevant from the context of fuel and air pollution reduction. Ecodriving is partly already a part of drivers’ education within Konzum Company within last three years.

The most relevant Ecodriving tips are: steering the vehicle in driving style which will diminish fuel consumption, regular control of the vehicle technical correctness.

Ecodriving is considered as useful because it has influence on fuel consumption reduction, longer life time expectancy, as well as it highly contribute to the environmental protection.

Problems encountered regarding Ecodriving are lack of the professional and technical support.

Konzum participates in Ecodriving training only partially through the drivers’ education on proper vehicle utilization by their own in house experts. These trainings only partly cover aspects of ecodriving and should be furthermore enhanced.

**Part B: Ecodriving as business case**

Konzum operates with 212 vehicles up to 3.5 tons. Ecodriving is considered as business case because it can help to diminish expenditures of companies’ business operations. In order to extend/build up ecodriving as business case, it is necessary to ensure proper education of drivers and well implement new technological solutions.

Potential benefits for the company are diminished fuel consumption, maintenance costs and green marketing benefit. It is addressed that Ecodriving should be involved in the future through the drivers’ and leaders education and by the implementation of new technological solutions.

There are currently existing Ecodriving activities in Konzum’s business field, like internal education of drivers and leaders and through the implementation of new technical solutions. During the education of drivers problems were encountered with lack of the professionals who are competent to transfer the knowledge, while on the other hand, expenditures of new technologies (alternative fuels and vehicles) are rather high.

As for the quality requirements, it is addressed that competent professionals are highly needed for the successful real world training course.

Expected savings in terms of fuel reduction are 2-4%, while maintenance costs could be reduced up to 3%.

Konzum is interested in integration of the training activities for all drivers during the working hours but after the operative activities of drivers.

Optimal time frame for the Ecodriving training would be one – two hours for the theoretical part and one – two hours for the practical part. Reasonable price for a short duration 1:1 training conveying the
Ecodriving core tips is 100.00 kn (14.00 €). Fuel consumptions for all vehicles from the fleet are monitored and these costs are personalized. Fuel consumption and accident tracking system also exist. Konzum is committed to support sustainability of the training effects through the implementation of Ecodriving in daily operations and by providing additional monitoring system.

Governmental subsidies for the environmentally enhanced vehicles are seen as the best incentives for the participation and sustainable implementation of Ecodriving. The company hasn’t jet integrated a bonification system.

RECOMMENDATIONS

In general, there are two groups of fleets that should be recognized. The first group represents public fleet operators such as waste collecting companies, public transportation companies, taxi services while second group are private fleet operators. Both groups of the fleet operator agree that ecodriving is very important issue.

Generally speaking, this group of the stakeholders is most interested in ecodriving and it is aware of the benefits, particularly economical, that derive from this intelligent way of driving.

Some of the fleet operators have already conveyed trainings of the ecodriving but only on the ad hoc basis. The identified problem is the fact that there is no any sustainability in the ecodriving education or monitoring system that actually should be integrated into ecodriving activities.

Therefore, the training infrastructure should be primarily established and once there will be ecodriving as commodity available on the market, fleet operators will for sure recruit the experts in order to educate their drivers.

Public fleet operators are, generally speaking, not willing to pay extra for the training and they suggest that somebody else provide this training for them, for instance leasing institutions or fleet providers.

On the other hand, private fleet operators could handle with the extra financial burden for the ecodriving training, but in this case, trainings should be very efficient and with tangible results.

3.6. Car Dealers / Leasing Organisations

For the purpose of gathering opinions regarding ecodriving, survey took a place within car Dealer Company and leasing organisation as follows: Toyota Croatia d.o.o. (Toyota) and Hypo-Leasing Kroatien d.o.o.

In front of Toyota Croatia surveyed was Mrs Vlatka Jankov Galić who is a general manager at Sales & Marketing Department. In front of Hypo-Leasing Kroatien d.o.o. (Hypo) surveyed was Mr Hrvoje Brajdić.

Part A: Fundamentals concerning Ecodriving

Ecodriving is considered as both technical and philosophical issue both for Toyota and Hypo. So far, there are no many examples of ecodriving promotion in car dealers’ branches, but Toyota is the pioneer in Croatia and believes that other dealers will get on track.

Ecodriving is already part of Toyota’s personal work primarily through the public awareness of the ecodriving principles over the official ecodriving web site

http://retailer.toyota.hr/corporate/environment/360-approach/driving-thoughtfully.aspx

Ecodriving is certainly useful because it helps to protect the nature, diminishes fuel costs, increase city safety and protects the engines, agrees both Toyota and Hypo.

Problems with ecodriving exist due to the fact that there is no sustainability in ecodriving campaign execution.
Part B: Ecodriving as business case

Ecodriving could be certainly considered as a potential business case, since it is very useful marketing instrument addressed Toyota. On the other hand, Hypo believes that Ecodriving would help to maintain the higher price of the vehicles during the life time.

Since one of the Ecodriving principles is a promotion of efficient power train technologies and vehicles on the market, Toyota believe that by presenting technologies in this perspective would additionally put a consumer eye on the company as environmentally and socially responsible one.

To extend/build up Ecodriving as business case, Governmental incentives on “green vehicle” purchasing should be introduced agrees both Toyota and Hypo.

Currently, promotion of ecodriving through the web site is the only activity that is already executed in Toyota’s business field.

Fuel saving trainings could be very useful tool for customer relationship management and for reaching new customers. So far, Toyota car manufacturer nor Hypo haven’t yet offered Ecodriving programs as best practice for customer relationship management and for reaching new customers. Use of the in-house experts for Toyota’s Ecodriving trainings is considered as very interesting.

Ecodriving should be organized in very efficient way with, with clear content and pragmatic presentation to the drivers.

Specific benefits that could Toyota’s customers enjoy from the Ecodriving, is primarily related to more profound acquaintances with Toyota’s state of the art technological achievement.

Ecodriving activities within Toyota should be communicated through the dealers’ network, web sites, newspapers, and other media. Hypo also agrees that Ecodriving should be presented to the costumers through the similar communication platforms.

A variety of different trainings should be organized in order to facilitate flexible use. Toyota Croatia did not take use of such training activities so far.

Short duration ecodriving trainings should put in the focus technological features of Toyota vehicles. Sales personnel are considered to take part in the training courses themselves. On the other hand, Hypo considers supporting Ecodriving through the public campaigns.

There is no prejudice against Ecodriving from dealer’s community so far. There is no either experience regarding prejudices’ against Ecodriving from the customers’ perspective. Toyota has no experiences concerning the acceptance of Ecodriving by its clients. There are no experiences regarding requests for real-world Ecodriving trainings of customers, who already have virtual training available via on-board computer. Same answers were obtained from Hypo.

Toyota believes that ecodriving trainings should additionally showroom the traffic. Fuel consumption is a very relevant subject in selling/leasing cars.

Most of the Toyota’s customers are more than average drivers environmentally concerned.

Ecodriving training courses is a suitable instrument to minimize the gap between the expert-defined minimum fuel consumption in the manual and the fuel demand of an average customer in order to reduce respective customer complaints as declared by both Toyota and Hypo.

Part C: Future Outlook

Further clarification needs to be provided on how Ecodriving will be implemented on national level and under which conditions, when and where the specialized instructors will be available.

Ecodriving will have to face in the future with the new power train technologies.

Ecodriving should technically, didactically and thematically evolve in the future.

Ecodriving development in Croatia has a bright future. A quality standard for real-world Ecodriving training courses should be efficient from the time, money and deliverables aspects.
RECOMMENDATIONS

Some of the car dealers in Croatia, like Toyota – Croatia, are highly aware of the Ecodriving benefits and are already actively involved in Ecodriving promotion.

For instance, Toyota – Croatia is recently organizing dedicated eco - test driving for their costumers within network of the dealers.

Further ecodriving influence on car dealers’ is seen primarily through the establishment of national ecodriving campaign. In order to make such a campaign a success, car dealers are already are willing to provide their cars.

As for the leasing organisation it could be concluded that awareness is rather high. Some of them already organized ecodriving trainings with their in house trainers for the borrowers. Recent example is Ecodriving training that was organized was the one for the Zagreb’s public transportation company bus drivers.

3.7. Automobile clubs

Croatian Car Club (HAK) as on of the largest and the most influential one in Croatia was surveyed. Dr Sinan Alispahic, Head of the Driver Sector shared with us opinions regarding Ecodriving.

Part A: Fundamentals concerning Ecodriving

Ecodriving is considered as both technical and philosophical issue. From the technical perspective, ecodriving is considered as new driving style of the ecologically awakened drivers. This is also smarter and safer way of driving. On the other hand, philosophically speaking, ecodriving represents a new approach in environmental protection and concern.

Ecodriving is considered as a relevant subject in HAK’s profession.

By ever day application of the ecodriving principles during the daily vehicle steering and by taking a part in the relevant projects, Ecodriving is already part of HAK’s personal work.

HAK has been involved in filed of ecodriving for about three years.

HAK sees following ecodriving tips as the most relevant:

- on time trip planning,
- traffic flow anticipation,
- smart and intelligent use of devices in car such as rpm counter, on board computer, air condition…
- anticipated gear shifting, low rpm, smooth acceleration and deceleration, impulsive breaking avoidance,
- engine breaking,
- tyre pressure monitoring.

Ecodriving is considered as useful technique since generates less fuel consumption, less CO2 emissions, money savings, more comfortable driving with less stress and aggressiveness, diminishes number of the traffic accidents.

There are no any problems seen with ecodriving, except that in intensive and density urban transport rules can not be fully applied.

Part B: Ecodriving as business case

HAK believes that ecodriving could become a potential business case in Croatia. Potential interest is recognized particularly in the education of the professional drivers. This estimation is based on the demand for education and rationalization of the business operations.
In order to build up Ecodriving as a business case it is necessary to define minimal standards, unique training programme, way and dynamics of the training execution, to train the trainers and to define unique price of the course.

Ecodriving is already executed within HAK in theoretical and practical education of candidate drivers, by participation in campaign Make Roads Safe and work on the education of all subjects which participates in the process of candidate drivers’ education (qualified examiners, driving schools and driving instructors).

HAK doesn’t have any commercial experiences. Money savings, fuel savings, environmental protection, less traffic accidents, more comfortability and safety are seen as potential benefits of ecodriving.

HAK has identified several target groups: professional drivers in transport companies, emergencies, taxi driver, public transportation drivers and so on. HAK is offering fuel savings trainings on public roads, in special training areas and in real world.

So far, HAK is not employing in-house fuel saving experts as trainers.

HAK is applying following fuel saving training concept: introduction to the ecodriving subject, presentation of the ecodriving rules, free style driving, analysis of the particular elements, driving with the instructor and by applying ecodriving principles, analysis of the driving elements and comparison with free style driving.

Part C: Future Outlook

Application of the ecodriving rules in intensive and density city transport, relationship between ecodriving and safe driving

HAK believes that ecodriving will have to face with the following challenges: speed requirements, time constraints and final ecodriving effects. Ecodriving should evolve in the future in technically, didactically and thematically.

HAK stressed out that it is extremely important to develop standards and content of the qualification and to define clear procedures for the certificate issuance.

Eventually, it is expected that ecodriving will develop in Croatia according to the defined standards, particularly after EU accession.

RECOMMENDATIONS

Croatian Car Club (HAK) is the most relevant institution in the Country in the field of candidate and licensed drivers education and examination. It operates with 80 examiners.

Since two years ago, ecodriving become mandatory part of the candidate driver’s education, but there is still no obligation to execute education for licensed drivers. This is certainly challenging issue.

HAK is also a pioneer in execution of ecodriving campaign for licensed driver. Even though there was only one campaign conducted so far in Croatia, it was sufficient to identify needs for further development in ecodriving enhancement.

First of all, ECOWILL project team should provide the answers on how ecodriving could take a role in pollution decrease in very loaded urban areas/cities, like it is for instance capital of Croatia? Namely, during the traffic jams, which occurs every morning and afternoon and it last for a couple of hours (this pattern is caused by the daily migration of employed people) it is almost impossible to apply ecodriving principles, unless there are vehicles equipped with the start-stop engine switchers.

Additionally, it is important to define minimal standards for the short duration ecodriving training course, unique curriculum of the training course, the training execution procedures, dynamics of the execution, trainer’s infrastructure and price of the training course.
3.8. Summary

Table 3.1. Classification of obstacles

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Non-existing teaching infrastructure for the short duration trainings</td>
<td>Classified obstacle is anticipated as one of the very significant for the licensed driver’s education. This issue is relevant for the drivers that obtained license prior to 2008, since Ecodriving is thought and trained intensively during the candidate driver’s education since than.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Non-existing legal obligations for licensed drivers</td>
<td>Relevant obstacle for the integration of short duration trainings within category of the licensed drivers. Without legal/fiscal obligation to promote Ecodriving, voluntary approach should be reached, which could be remarked as challenging.</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Resistance toward extra financial burden for ecodriving lessons</td>
<td>In general, people are not eager to pay extra for Ecodriving. It should be financed by &quot;somebody else&quot;. On the other hand, companies are a bit friendly toward supporting professional education of ecodriving of their drivers in financial sense.</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Ecodriving is in contradiction with current life style</td>
<td>Life style of the urban people is tremendously speeding up and consequently mobility is keeping the track. Therefore, ecodriving could be considered as significant constraint in free style living.</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>Young people like to show up and to be cool on the road</td>
<td>As almost everywhere in the world, ecodriving could have problems with acceptance from the side of the young drivers, which believes that it is manner which could breach their &quot;cool image&quot; within the other friends.</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3.2. Classification of benefits

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Financial</td>
<td>All of the surveyed stakeholders agree that financial benefit derived from ecodriving is undisputable. This benefit is particularly recognised within owners and operators of the large fleets.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Ecological</td>
<td>Public awareness of the mentioned benefit is already very highly present, but there is still lot of room for further perception enforcement.</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Safety</td>
<td>Ecodriving is commonly related to safety driving style.</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Green marketing</td>
<td>Industries which are directly involved in goods and people distribution/transport are highly aware of the opportunities which could derive from inclusion of ecodriving in portfolio of their green marketing activities.</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>Business opportunity</td>
<td>Driving instructors, examiners and owners of the driving schools see great opportunities with ecodriving in terms of establishing new business niche and service.</td>
<td>2</td>
</tr>
</tbody>
</table>
4. Finland

Benefits
The main benefits of Ecodriving according to the interviews are:
1. saving of money (fuel, tyres, repair&service);
2. improving traffic safety (damage, sick leaves, etc.);
3. reduction of CO2 and other emissions;
4. one tool for implementing environmental strategy and enhancing company image;
5. added-value service for CRM purposes in leasing and/or car selling business (building up a permanent customership);
6. offering a free Ecodriving training might help to approach issues with customers, e.g. high fuel consumption compared to EU fuel consumption.

Obstacles
In Finland Ecodriving has been integrated in the education of learner drivers as of 1997. Education of learner drivers has been divided in two phases. In the first phase the driver gets a temporary driver’s licence. Ecodriving training is integrated in the lectures.

The training in the second phase includes practicing and lessons including Ecodriving, but the fuel consumption (before-after) is not measured in all driving schools. Between the first and second phase there is a 1.5-year long intermediate period (‘temporary driving licence’), when the driver is supposed to practise on his/her own in traffic.

In driver examination both the driver himself/herself and the examiner assesses the Ecodriving skills using numbers from 1 (= poor) to 5 (= excellent). It is not a criterion to fail in the test by applying bad Ecodriving, though.

However, the problem of this quite rough assessment method is that very likely there is fluctuation of skills among examiners on how they assess a driver’s performance. The educational background of examiners is 50/50 driving instructors and inspectors (inspectors are automotive engineers or technicians). In the worst case, the examiner himself / herself does not know well enough what Ecodriving is.

Therefore, due to somewhat unclear assessment procedure and differences in assessment skills of examiners, assessment of Ecodriving in driver’s test is not yet possible in a fair enough way to make it possible to define, when the driver is poor enough to fail in the test. In the interviews, some of the experts thought that it would be a good thing, if the failing was possible. They also felt that it would also be possible to implement. Some of the experts on the other hand thought that in driver’s test it is not possible to measure Ecodriving (e.g. fuel consumption) skills reliably as a single factor.

As for licenced drivers, permanent benefits of Ecodriving are extremely difficult to prove when marketing training. Therefore, willingness to pay will probably remain a problem, because people do not believe that there is a reasonable payback time for training. Furthermore, marketing resources are limited because the most companies in the field are small. Therefore, marketing of ecodriving training is small-scale and local. Moreover, development and production of material and methods suffer from lack of resources.

As a general conclusion, in every interview the importance and benefits of Ecodriving were stated. There were some differences in emphasis whether improving traffic safety or fuel economy, as some stakeholders are emphasising traffic safety (insurance companies) rather than environmental matters. Everybody still agreed that safety comes first as well as that these two elements have to be included and integrated in the training.

General recommendations
1. From customer’s point of view, Ecodriving education should include:
   o both traffic safety and environmental matters (fuel consumption);
o both practice and theory.

2. Training of trainers (TTT) should be regular (at least once a year) in order to avoid outdated training services.

3. Careful selection of trainers assures motivated instructors.

4. Training material should include updated and reliable information on:
   o correct way of driving/using each of the new vehicle types (instance e.g. possible need to lower today’s rpm recommendation for shifting gears?);
   o new vehicle technology and alternative fuels (hybrids, flexi-fuel vehicles, biofuels, electric vehicles, etc.).

5. Harmonising of Ecodriving concept, adequate know-how of instructors together with proper marketing are key elements for making Ecodriving more popular than it is today.

6. Marketing materials should contain reliable results of long-term benefits of Ecodriving.

**Specific recommendations - Ecodriving for learner drivers**

1. Ecodriving should be integrated in the driving courses (one proper way of driving is learned right from the beginning).

2. It should be possible to fail in driver’s test because of applying poor ecodriving.
   - reliable, simple and clear assessment method is imperative in order to avoid complaints and even legal actions from the driver’s side.

3. Harmonising of training and driver’s test, so that the driver learns all the Ecodriving elements required for passing a driver’s test.

4. Proper guidelines, training and materials (examiners, instructors).

**Specific recommendations - Ecodriving for licensed drivers, max. 1-hour training**

1. Harmonised content of Ecodriving course is recommended, as it decreases the administrative load on the customer’s side (‘one size fits all’):
   o for instance, the same course mandatory for all company car drivers;
   o excessive customizing of courses can lead to practising ‘nice’ things but not necessarily the right things.

2. Feedback for the drivers is imperative and it must contain:
   o measured reduction of fuel consumption, average speed and driving time;
   o feedback of traffic safety (risk assessment including ‘personal warning’ like “Your most probable traffic accident will be rear-end collision.”).

3. Ecodriving should be marketed as a long-term strategy for companies.

4. The cost for a one-hour long training could be in the range of 50-100 €/person.

### 4.1. Driving instructors

**Benefits of Ecodriving**

- **Individual:**
  o improved traffic safety;
  o savings in fuel costs;
  o savings in tyre, repair and service costs.

- **Organisation:**
  o improvement of organisation’s environmental image.
- Society:
  - improved traffic safety;
  - energy saving (saving of fossil fuels);
  - reduction in CO2 and other emissions.

Obstacles of integrating Ecodriving in driver's education

**Licenced drivers**
- Insufficient resources for marketing training (resources in small enterprises are limited).
- Skills of driving instructors are not sufficient.
- Lack of customers.
- Training of trainers: how to find the right persons?
  - for instance, instructor vs. learner driver constellation should be replaced with coaching approach and attitude, because teaching Ecodriving to a person who’s had driving licence for decades and has driven 0,5 million kilometres or so is a very delicate situation.
- Customer:
  - it may be difficult for the trainer to interfere in customer's attitudes (values, basic attitude, disbelief in effect of driving speed and/or average speed, etc.).
  - cost-benefit ratio and payback time are difficult to calculate/prove.
- Some driving instructors think that Ecodriving is harmful for the vehicle, because:
  - driving at low speed with high gear causes damage to the gearbox and clutch,
  - low rpm causes carbon deposit in the engine,
  - attitudes have been changing among driving instructors lately, but this prejudice still exists among the drivers in applying Ecodriving.

**Learner drivers**
- Basically there are no major obstacles, but integration Ecodriving training into learner drivers education is far better way than implementing it as separate course:
  - only one way to drive a car is taught and learned;
  - benefits are more permanent.
- Skills of examiners:
  - not all examiners know what is Ecodriving.
- Skills of driving instructors:
  - since it is not possible to fail in driver’s test due to poor Ecodriving, fuel consumption may sometimes be overlooked in learner driver training.
- Skills of the learner drivers haven’t been improved sufficiently:
  - because of inexperience, the main attention of the driver is paid to driving as a technical task. That leads to lack of overall observation, which is a general problem of driver training, not just Ecodriving. Ecodriving needs smoothness, which is gained only through experience.
- If failing in the driver’s test because of applying poor Ecodriving was possible, it could be difficult to create a clear, transparent, fair and reliable way to assess the Ecodriving skills:
  - if the assessment method is open to various interpretations, even legal aspects might come up on the basis of consumer protection;
  - for instance, “unnecessary stops” is not a good criterion, because always safety comes first. The threshold of deciding whether to stop or to slow down the vehicle because of traffic safety reasons should be kept low, so that the driver never feels that fuel saving is more important.
than for example driving slowly enough through a difficult junction or giving way to a pedestrian in a crossing.

→ the right balance between traffic safety and fuel economy has not always been there.

RECOMMENDATIONS

Ecodriving for learner drivers

- Ecodriving should be integrated in the driver training (the right way of driving is learned without an extra effort);
- The present procedure of driver’s test is quite good, but some instructors recommended that it should be possible to fail in driver’s test because of applying poor Ecodriving in terms of fuel economy
  - it has to be possible to reliably assess the skills of ecodriving (e.g. a list of top three ecodriving tips, which are easy to monitor in driving test).

Ecodriving for licenced drivers

- selection of trainers to avoid non-motivated trainers in Ecodriving;
- Marketing of trainings using public funding is necessary, as the driving schools are usually small and their marketing resources are limited and thus marketing activities usually very local;
- In the marketing materials, benefits should be very easy and concrete to present to the customer (also in Euros), as the decision of purchasing training is often difficult for the potential customer to make (permanent effect including payback time);
- In the future, development of materials and methods should be coordinated by a neutral party such as national energy agencies (ideal use of development resources, uniform contents, real time knowledge as a result of material production by a network of stakeholders and experts such as research scientists);
- Training of trainer’s (TTT) should be regular (e.g. annual seminars) in order to make sure that the Ecodriving training is not considered outdated among customers (drivers) because of lack of updated material and trainers’ knowledge;
- Qualifications for a licenced driver instructor could include a minimum work experience as a driving school instructor before (e.g. at least three years)
  - a licenced driver is more challenging to teach than a learner driver, and sufficient professional and teaching experience improves in achieving a status of an authority in Ecodriving;
- The cost for one hour short-duration training could be around 50–100 €/person.

4.2. Driving examiners

No interviews were possible to conduct due to time and availability restrictions. On the basis of other interviews the most important aspects presented are:

1. To enable failing in the driver’s test in case of applying poor ecodriving
   1. this is the first thing to tackle as it sets the grounds for other improvements
2. Once the measure 1 is completed, it is imperative to create more precise and simple methods for assessing Ecodriving skills in driver’s test than today (just grading from 1 to 5 corresponding weak–excellent). For instance, the criteria could be a simple list containing the most crucial Ecodriving mistakes
   1. acceleration by shifting at too high rpm,
   2. driving at too low gear (too high rpm), and
   3. slowing down without leaving the gear on.
3. To make sure that all examiners are willing and able to assess a learner driver’s driving in a uniform way by providing sufficient training for the examiners.

4.3. Policy makers

Benefits:

- Reduction of energy consumption and emissions;
- Saving of money;

Obstacles:

- Licenced drivers

  - There is not sufficient evidence on permanent benefits of training (licenced drivers);
  - Marketing of training for consumers (licenced drivers) is difficult, but for company car drivers and for utility vehicle drivers the potential is considerably higher;
  - Non-harmonised terminology causes confusion and sometimes undesirable image for Ecodriving, if poor quality trainings are offered under the same brand (stakeholders do not speak the same language).

- Learner drivers:

  - In politics the emphasis of driver education is still more on traffic safety than on environmental matters:
    o balance between traffic safety and environment is not always ideal in implementation of Ecodriving training (sometimes trainer may emphasise too much economy on the expense of traffic safety, because fuel consumption can be measured in training and traffic safety not: for instance avoiding of stops may lead to too fast driving at junctions);
    o Ecodriving training of learner drivers and drivers examination should be better linked with each other;
    o examiners need more training for assessing driver skills;
    o as it is not possible to fail in the driver’s test because of not driving ecologically, Ecodriving has not achieved enough importance in either training nor examination:
      - the driving instructors concentrate on matters that are crucial for passing the driver’s test;
      - clear and unambiguous criteria is imperative.

RECOMMENDATIONS

Background

- Climate Policy Programme for the Ministry of Transport and Communications' administrative sector for 2009-2020 includes four main areas of measures in order to reduce GHG of road traffic:
  - Ecodriving is mentioned as one of the measures improving energy efficiency;
    o due to economic situation it may be difficult to get national funding for promoting Ecodriving (campaigns etc.) in the near future;
- The main areas of learner driver training are traffic safety, social skills and ecology;
- Policy makers are not convinced that Ecodriving training for all licenced drivers will ever make a major breakthrough as it is very difficult to get private car drivers to training courses.
Recommendations – Ecodriving for learner drivers

- Promoting Ecodriving among learner drivers is most important as the annual number of learner drivers is fairly high, and they are ideal for teaching the Ecodriving, because the have not learned any driving style yet;

- Therefore, policy makers should be encouraged to make decisions furthering Ecodriving:
  o the possibility of failing in the test because of applying poor Ecodriving should be possible in order to increase the importance of Ecodriving in driving schools;
  o development of infrastructure necessary for implementation measures:
    - development of driver training and driver's test;
    - reliable and simple criteria for driver’s test;
    - training and training materials should be synchronized with the driver’s test (training of trainers, training of examiners).

Recommendations – Ecodriving for licenced drivers

- Policy makers need more information on how to use Ecodriving as a strategic (long-term) tool for reducing CO₂ emissions and improving energy efficiency, in addition to other benefits:
  o the most prominent target group is company car drivers, because the decision of training is made on the employer’s side and not on each single driver's side;
  o also consumers purchasing a new car might be a good target group, if Ecodriving training is integrated in the briefing provided upon delivery of the new car to the customer;
  o other car drivers (the majority of licenced drivers) will not be an interesting target group for training. A large, nationwide campaign advertising ‘Golden rules of Ecodriving’ could be a more viable solution for them.

- Energy agencies could be a strategic partner for general marketing of Ecodriving as well as coordination of training development (methods, materials);

- In the beginning public funding should be available for general marketing of Ecodriving.

4.4. Energy agencies / environmental research institutes / universities / academies

University

Ecodriving in general

Benefits

- There is evidence on short term effects on fuel consumption. It is difficult to prove long term effects;
- Eco-driving correlates with safe and considerate driving style;
- Ecodriving has been presented as a business case already, but mainly for heavy vehicle users.

Obstacles

- In driver education one should not overdo it. Concentrating too much on technical aspects may confuse other aspects to be learned. Optimising fuel-consumption may lead to improper traffic behaviour if you really go to extreme;
- Ecodriving is easily forgotten in organisations. It is there as a “glued on” element and not actually “in” in the processes;
- The results seem to verify short term effects, i.e., ecodriving should be supported by the organisation. Without support measures the results of training will always be temporary;
In the future, willingness to pay for the training will be a problem. People accept the idea, but they are not quite ready to pay for the training.

**RECOMMENDATIONS**

**Energy agencies (e.g. Motiva and regional energy agencies)**

Energy agencies have an interest to promote Ecodriving as a strategic tool of transport administration, but it will be possible only, if

- there’s a budget for general marketing of Ecodriving (materials, lecturers, presentations, etc.) or for other promotional activities (development etc.);
- an updated list of certified training providers is available.

*Note! This part is not based on interviews as Motiva is a national organisation promoting energy and material efficiency in Finland and thereby has a clear idea of it’s role and possibilities.*

**Universities and other research organisations**

There is still no data on what would be the ideal introduction process of Ecodriving, e.g.

- training by lectures;
- training by e-Learning tools / simulator;
- training with an instructor (in normal traffic);
- training (in normal traffic) + monitoring device;
- training (in normal traffic) + monitoring device + rehearsal using e-Learning tools;
- etc.

Universities could perhaps make a study to find out, which introduction methods could bring the most efficient and permanent benefits in terms of fuel saving and improvement of traffic safety. For instance, the use of advanced monitoring devices after training could be used by both learner drivers and licenced drivers).

**4.5. Fleet operators**

**Licenced drivers:**

**Benefits**

- Fuel savings;
- Reduction of CO₂;
- Improving of traffic safety;
- Tool for implementing company’s environmental strategy;
- Ecodriving training is one HR action in improving personnel’s well-being.

**Obstacles**

- People are not convinced of the benefits of Ecodriving;
- It is challenging to sell the idea of training to the personnel:
  - why to spend one hour on training for just purchasing of a car?
- Permanent benefits for calculating payback-time of training are difficult to prove.
RECOMMENDATIONS

- Implementation of Ecodriving education:
  - management of training needs to be easy for the employer (no extra administrative work for arranging trainings, but rather modular and standardised training concepts);
  - if possible, the driver's own car should be used;
  - duration max. one hour (reasonable absence from work);
  - driving practice is important in order to teach the basic skills of Ecodriving;
  - the right time for the training is not the very moment the car is delivered (the driver is too anxious to get the car), but rather a couple of weeks after the delivery
    - for instance training is arranged once a month for all those company car drivers who have received a new car during the previous month;
  - Quality requirements:
    - before-after measurement of fuel consumption is necessary;
    - traffic safety assessment is imperative (risk analysis);
    - sufficient know-how and ‘street credibility’ of trainers;
  - Ecodriving should be marketed to companies as a tool for:
    - implementing environmental programme (reduction of CO2 and other emissions, energy saving);
    - saving costs (fuel, accidents, sick leaves, risk management);
    - taking care of the personnel (wellbeing);
  - Training ought to be marketed as a recommended standard introduction practice for all company car drivers:
    - the driver should not have to question the reason for training (training must not be considered as a punishment or as a ‘poor driver labelling’);
    - one solution could be to first have a training (such as short-duration training) upon the delivery of the car, then a rehearsal using a web-based tool for education after 1–1½ year
      - the ideal way to implement web-based tool could be to let the driver create a profile of his/her own in the first time, and then after one year the second rehearsal would reveal, which parts of Ecodriving knowledge still need improvement;
  - Cost for one hour training: max. 100 €/person (goal ca. 50 €/person) in order to have a reasonable payback time for investment.

4.6. Car Dealers / Leasing Organisations

Licenced drivers:

Benefits

- Ecodriving is theoretically a quick way of putting the full potential of vehicle technology in use, but in practice it is very difficult;
- Saving of costs;
- Reduction of environmental load;
- Adoption of Ecodriving and finding its benefits may lead to change in behaviour in other areas of life, too (for example, saving energy in heating/cooling of house);
- Lifecycle of vehicles can be extended by applying proper use of vehicles;
- Ecodriving might be a rather marginal but a positive spice in car selling business:
  - offering Ecodriving may help to build up long term customership;
  - possibility for creating an environmentally friendly company image.

**Obstacles**

- The savings potential may be difficult to perceive as the benefits are achieved during a rather long time (not an instant reward), therefore it is not a very useful marketing instrument;
- Permanent benefits of Ecodriving may be difficult to prove on rational level, but even more difficult to prove on emotional level (a human being is not always a rational creature, especially when it comes to purchasing and driving cars):
  - some drivers may think that Ecodriving somehow reduces the enjoyment of driving.
- Ecodriving is challenging to sell (maybe a proper market research in order to spot the actual obstacles is needed):
  - development process like with other products: market research, testing, interviews, etc.
- Ignorance and indifference of stakeholders hampers promotion of ecodriving.

**RECOMMENDATIONS**

- Training courses should be a standardised product that can be offered to customers without causing extra administrative work on the leasing company (virtually no customizing);
- Both traffic safety and environmental aspects should be included in training (content, feedback) in order to gain more interest among drivers and employers;
- Training would be used as an added-value service for car selling and leasing:
  - more important for current customer relation management (CRM) than for gaining new customers;
  - training could help in establishing a long-term customership, hence the customer is more likely to come back to the same car dealer next time he needs a new car (a customer gets the feeling that the car dealer is interested in the customership more profoundly than just selling and delivering the car and then forgetting the whole thing);
- Ecodriving training could also be used in dispute situations, when customer claims that it is impossible to achieve the fuel consumption level as low as the EU combined fuel consumption of the car he/she has purchased
  - the car dealer could give him/her a free Ecodriving course after checking that his/her driving corresponds the conditions of EU combined fuel consumption (ca. 1/3 urban, 2/3 rural);
- In most of the answers, duration of maximum one hour would help the customer to make decision of ordering training (one hour absence from work is)
  - however, one person pointed out that the most difficult thing is to get the customer to make the decision of ordering Ecodriving training, hence the difference in duration of training is not that significant in decision making.

4.7. **Automobile clubs**

No interviews were conducted with Autoliitto, FIA’s member club in Finland due to time and availability restrictions.

However, it’s relevant to assume that in Finland the automobile clubs could do general Ecodriving marketing and arrange Ecodriving competitions in the future, too.
The basic attitude of automobile clubs to Ecodriving training seems to be positive, but in order to use automobile clubs as a marketing channel of trainings, an updated list of certified trainers providing training at a reasonable price for private car users would be necessary.

4.8. Other stakeholders

Insurance companies

Licenced drivers:

Benefits

- Improving of traffic safety;
- Savings: fuel, repair & service, insurance;
- Saving of oil resources;
- For insurance companies Ecodriving training is added-value service.

Obstacles

- Egocentric attitude has become more common in society, which is out of tune with applying considerate driving style;
- Benefits of Ecodriving should be more emphasised in training of both learner drivers and licenced drivers;
- Sometimes there may be some kind of initial resistance among the personnel of insurance companies, but as soon as one has taken part in training the attitude changes to positive;
- Training is not long-term enough (improvement takes time in terms of improving traffic safety and reducing fuel consumption);
- From insurance company's view it may be difficult to build up business case solely on Ecodriving, it needs a more comprehensive approach (fuel, tyres, repair & service, HR, insurance).

RECOMMENDATIONS

- Insurance companies have been interested in promoting safe driving for a long time, both for insurance personnel and for their customers.
- Clear and convincing results of benefits of ecodriving training are necessary, as without facts marketing of the Ecodriving training to customers is difficult.
- Ecodriving is considered as an added-value service that can be offered for customers. However, a business case cannot be built only from the insurance company's point of view (training cost vs. possible discount in insurance fees for customers offering Ecodriving). For marketing purposes a comprehensive analysis of total benefits has to be applied (fuel, accidents, HR savings due to reduction of accidents, maintenance of vehicles).
- Most insurance companies are already somehow involved in promoting Ecodriving, which makes them interesting partner candidates in ECOWILL project for marketing (short-duration) trainings to their customers.
- It is important to market trainings as a long-term procedure in an organisation, because it usually takes years to achieve all benefits of Ecodriving. The most common mistake is to arrange only one set of training courses during one year and then give up, if results are not gained right away.
4.9. Summary

Table 4.1. Classification of obstacles.

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Know-how of trainers</td>
<td>There is too much fluctuation in the skills of trainers (certification needed as well as regular training of trainers including driving test and theory test).</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Know-how of examiners</td>
<td>Examiners need to know better the basics of Ecodriving in order to provide reliable assessment in driver’s test.</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Marketing strategy</td>
<td>There seems to be problems in finding the right strategy to convince the customers on the benefits of Ecodriving training (reliable and concrete figures).</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Limited marketing resources</td>
<td>Without subsidies in the beginning it is difficult to make Ecodriving well-known all over the country. When the training becomes more popular, the share of public funding could be decreased. The ideal situation would be to market Ecodriving under one common brand.</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Quality of methods and materials</td>
<td>The credibility of training depends strongly on the quality of materials and methods (content, updating). Also the introduction method on the customer’s side is not always ideal (bonus, feedback and monitoring quite often missing).</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.2. Classification of benefits.

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fuel savings</td>
<td>Reducing fuel costs by regular driver training</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Traffic safety</td>
<td>Improving traffic safety by regular driver training</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>CO2 reduction</td>
<td>Tool for implementing environmental strategy</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Use for Customer Relation Management</td>
<td>Ecodriving as an added-value service in building up permanent customership as handling of difficult situations regarding fuel consumption of the car</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>CRM purposes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Company image</td>
<td>A tool for enhancing company image</td>
<td>2</td>
</tr>
</tbody>
</table>
5. Germany

In Germany, there is already a long tradition in Ecodriving. It is a legally required part of the education and examination of learner drivers backed by respective written curricula from the German Association of Driving Teacher Associations and the German Road Safety Council. Also the driving teachers from Luxembourg are educated in the curriculum from the German Road Safety Council. The relevant Ecodriving issues are part of the theoretical and practical education of learner drivers and it is also part of the theoretical and practical education of driving teachers. Additionally, there is a certification system with regular audits and re-certification in driver training programs as "Drive like a pro – safe driving, both in a professional and a private context", „Sicher, wirtschaftlich und umweltschonend Fahren“ and „Ford Eco-Driving – managed by DVR“.

Most of the interviewed stakeholders perceive Ecodriving as beneficial at various levels, but with low implementation rate on part of licensed drivers though fully implemented in learner drivers' education. The key benefit of Ecodriving to save fuel is notably correlated to preserving the climate by reducing CO₂ per kilometre driven. Ecodriving is also contributing to noise reduction and broadly stated as important - enhancing road safety, an expected effect in the Ecodriving philosophy, especially arising from anticipation and relaxed driving style.

Best effects of Ecodriving can be gained in synergy with vehicles' technological progress. All interviewed stakeholders see in Ecodriving a state-of-the-art mobility. Respective training courses offer individual and societal benefits. But also obstacles have a strong impact, appearing as doubts and causing hesitation. The challenge is, to make Ecodriving a broad based mass phenomenon in order to exploit its huge potential for resource savings and climate protection. A cultural change seems to be necessary and the question arises, how to initiate and fuel it, as a rising environmental awareness is not enough to kick it off.

From a business perspective, Ecodriving seems to offer potential, but a consistent overall strategy is missing (branding, communications, etc.). There are many activities, but they do not yet combine to a big picture, a strong impact on public awareness or a cultural change to Ecodriving as default way of driving.

An innovative concerted approach by all relevant stakeholders promoting Ecodriving as “modern driving” and “hip” should be able to create enough business case potential to facilitate a training mass roll-out.

In Germany Ecodriving is already implemented in testing and teaching procedures. Over the last decade there have been a lot of activities to improve and harmonize Ecodriving contents in the education and testing of learner drivers. But also many standards for Ecodriving to learner drivers have been established. Yet, there seems to be room for improvement.

The most important factor to involve stakeholders in Germany into the project is to get new insights on the impact of new technological developments on Ecodriving, and integrate them into the already existing standards. The Snack-Training (Short Duration Training) concept seems to be a good trigger, if the related standards additionally contain information on how to involve and approach different consumer target groups.

The image of Ecodriving in the broader public has to be improved (without raising the impression it was so easy to adopt that everybody could do it without proper education). Even though Ecodriving is an important subject for many years there is still need for information in different opinion leading target groups. Therefore improved communication for different stakeholder groups seems appropriate. The safety aspect is highly underrepresented in the awareness of important stakeholders. The cost saving aspect dominates the communication. A shift towards safety issues and proof of the potential impacts seems a good way to involve and convince more stakeholders to enhance their Ecodriving activities.

Another subject is a high-quality standard for training concept and trainers. The need for qualified trainers with high experience and standardised training concepts is very important for a mass role out of trainings to licensed drivers. Some potential target groups are very reluctant because there is lack of valid information on Ecodriving and its effects and no clearness regarding quality control of trainers and trainings.
5.1.1. Driving instructors

Part A: General impressions on Ecodriving

Vehicle technology is evolving continuously. Therefore, educational contents and the way to operate modern cars must be kept on the current on the part of drivers and the multipliers in charge of driving education. Well-worn patterns of driving behaviour on vehicles with new technical features could not only be ecologically counter-productive, but could even have negative effects on driving safety. To deal with this, regular training courses were necessary. Vehicle technology aimed at taking more and more load off the driver. To make best use of new technical features, one had to learn how to handle them. Even experienced drivers were often surprised by their actual saving potential. From the point of view of many instructors, it was becoming more and more obvious that human behaviour was as important for fuel savings as technological evolution. It was a major factor to effect a change in drivers’ attitude towards traffic.

The major Ecodriving tips from the instructors’ perspective:

Tips concerning driving behaviour like making best use of the vehicle’s momentum, anticipatory driving style or driving with low revs are seen as the most important ones. From the instructors’ experience, technical information like adequate tyre pressure is easily acceptable for the customers. On the other hand, the instructor had to work hard against most drivers’ subjective impression of becoming slower by practicing Ecodriving.

1. Harnessing momentum/ letting the vehicle coast
   - approaching red traffic lights
   - approaching Stop-road signs
   - in Yield-situations
   - approaching roundabouts
   - in congestion

2. Riding at low revs

3. When starting, change into higher gear approximately after two cars’ length

4. Changing into higher gear at max. 2000 r.p.m.

5. Skipping gears when sensible

6. Removing unnecessary ballast

7. Taking care of the adequate tyre pressure

8. Checking vehicle’s technical condition/ maintenance

9. Switching-off the engine when sensible

10. Defensive and anticipatory driving

11. Keeping the adequate safety distance
   - means more safety
   - means enlarged scope of decision and action
   - leads to more relaxed driving
   - Efficient use of modern vehicle technology
   - fuel cut-off
   - automatic start/stop mechanism

Beyond its contents, Ecodriving was a general concept/ life attitude. In the opinion of the instructors, the society itself has to further develop. It was necessary to stop the glorification of the automobile and to start looking at it as one of various mobility options. Ecodriving would fit seamlessly into concepts of sustainability and responsible treatment of environment and resources in other life areas. This would
show, how necessary it was, to convey Ecodriving as an attitude towards driving, rather than just a technology-oriented package of actions.

The interviewed driving instructors see Ecodriving as sensible means to reduce vehicle emissions. From the perspective of traffic safety, they consider it even as absolutely crucial because of the significant positive safety effects of an anticipatory and more relaxed driving style. Potentially dangerous situations would de-escalated by traffic anticipation. Consistently practicing Ecodriving would favour a change in attitude towards the car and result in a more relaxed and smooth way of driving, also benefiting the passengers. In the experience of the driving instructors, the original way to drive would become the more annoying to drivers the more they would master Ecodriving techniques. Actually, drivers would start to develop ambition in optimizing their new driving style. The driving instructors consider Ecodriving as a leverage to change the attitude to driving in general resulting in a more economical and ecological form of driving. However, the major motive to practice Ecodriving was still to save money by lower fuel consumption and less material wear and tear, but fuel was still not expensive enough to trigger significant public demand and attention.

Some instructors would hold the prejudices described in the following, though these reservations are considered unfounded by the interviewees:

- Learner drivers should deal with the essential features of driving in the first place. In order to learn Ecodriving as specific form of driving, they would need automatisms in observation and handling, which would develop only by time.
- Ecodriving was just giving additional problems to driver examination.
- Driving with low revs would harm the motor.
- Ecodriving was a sidekick for eco-freaks but de facto pointless.
- Ecodriving would not work on the own vehicle.

The above mentioned remarks represent problems in attitude, quite similar to the prejudices on part of the drivers. The changing of a driving style and especially of a style to teach which was practiced for decades meets strong inhibitions. To convince in particular older colleagues was quite challenging and took strong effort, but in general, the driving instructors had a very positive attitude towards Ecodriving.

The issue of certification is discussed quite controversial. There is an certification scheme with regular audits and re-certification within the programs "Drive like a pro – safe driving, both in a professional and a private context", „Sicher, wirtschaftlich und umweltschonend Fahren“ and „Ford Ecodriving – managed by DVR“. The interviewees consider this scheme as necessary, though some of them see no reason for more of these schemes. The opinion prevails, that certifications were bureaucratic, usually useless but expensive and would trigger inhibitions, in addition. Much more important than to certify on the same contents over and over again is to convey state-of-the-art knowledge via qualification measures. This attitude results from the predominant wish to keep their specialized knowledge up-to-date. On the other hand, certification in the field of Ecodriving is considered as crucial in order to guarantee the quality of contents and teaching methods. The instructors explicitly criticize people, who call themselves „trainers“ without having internalized this way of driving.

Part B: Benefits of Ecodriving for learner drivers/ Obstacles/ Potential improvements

In contrary to the above mentioned reservations of some driving instructors to integrate Ecodriving into the education of learner drivers, all of the asked experts consider this as sensible. Ecodriving would not demand too much of the learner drivers. Just the very increase in safety, that it brings about, was reason enough to integrate it into the education scheme. As Ecodriving for learner drivers would not have to compete with an already internalized driving style, one could thereby establish environmentally-sound behaviour in everyday driving right from the very start.

The instructors are of the opinion, that the Ecodriving benefits of sustainable mobility, significant money savings because of lower fuel consumption and less material wear and tear should be communicated more offensive. In fact, they fear that already high and still increasing respective costs might make more and more young people lose interest in the own car or the driver licence.

Inhibitions against Ecodriving were mainly imposed on driving education from outside. Usually, learner drivers would adopt the demonstrated driving techniques without reluctance until conflicts with the driving manner of others like parents or partners came up. Not only that most others wouldn’t
practice Ecodriving, but also that many of those held it up to ridicule, could keep learner drivers from carrying on with Ecodriving. Antiquated information which are false nowadays or an out-of-date driving style would conflict with modern education contents. Learner drivers often recognized these contradictions when being passengers. From that moment on, they tantalized to adopt common prejudices against Ecodriving.

From the asked driving instructors’ point of view, the permanent change of technical conditions requires regular further education to meet the professional standards in the long term. Driving instructors had to practice Ecodriving in their everyday driving, not only on the job. There mustn't be any doubts about the feasibility and the reasoning behind these modern driving techniques. Technical comprehension, several years of professional experience, a lot of idealism and technical competence were the necessary foundation to teaching Ecodriving in driving schools. But as in the past, there was still a lot of convincing to do.

Moreover, Ecodriving mustn't remain a sidekick in driver education, but should gain more relevance by the help of intensively further educated and certified instructors. Additionally, respective offers would increase the motivation of the driving instructors.

Theory and practice of Ecodriving should be embedded integrative into driver education during the whole period. All of the asked appreciate the integrative approach practiced in Germany. Only this method would bring about an internalization of Ecodriving causing a sense of achievement and reliable acceptance. Using this method, learner drivers would experience the benefits of Ecodriving from the very first driving lesson. Positive long-term effects could only be achieved, if the driving instructor was consequently addressing these driving techniques in a comprehensible manner throughout the theoretical and practical modules of the education. Only thereby, Ecodriving was going to be taken as a matter of course and to be automatically practiced. But an integrative approach was only sensible, if it was applied in blanket coverage and given examination relevance.

Forms of communication:

It was important to convey to the learner drivers that Ecodriving was the modern, the best and most efficient driving mode at the time. Together with modern vehicle technology, Ecodriving effects the highest energy saving and emission reduction and, on top of that, leads to a more secure and relaxed driving. But it was most crucial to work out, that Ecodriving doesn’t make you slower than the other traffic participants.

In the theoretical lessons, the learner drivers should be encouraged to come to recognitions by own effort and experiences, if one wants to lay a stable foundation. Besides technology and legislation, the social component should be in focus. This could be implemented by a sensible mix of steered teaching conversation, plenum and small-group work. Most important was the dialogue with the learner drivers. The visualization should be done with materials such as flip chart, meta-plan maps (cue or prompt cards), transparencies and video sequences as well as the DVR-modules and the 3- or 4-corner method.

In practice, in addition to teaching the technical skills until internalized, the social component should be integrated and addressed, based on the curricular guidelines “Drive cool – save fuel – clever and environmentally – protective driving in traffic” and starting with the special subject class. This should enable learner drivers to cope after their exam with traffic requirements as well as with the threatening conflict potential.

As improvements in behalf of the integration of Ecodriving in driver education and examination, the driving instructors recommend that the examiners should also be trained intensively in Ecodriving and be obliged to apply it themselves. From the perspective of the interviewed instructors, there was still not enough attention being paid to Ecodriving contents. Ecodriving was still not accepted enough as contributing factor to a negative test decision. Also, positive feedback from the examiners for learner drivers, who did well in Ecodriving techniques, is still too rare, although this would underline the relevance of Ecodriving in driver education and lay the foundation for positive multiplication, e.g. in school. The instructors would also need further convincing in order to eliminate latent prejudices against Ecodriving. Only then, Ecodriving became a matter of course and was thus considered as an educational content of the same value as others. In addition, one should foster a broader public communication of the usefulness and the benefits of Ecodriving in order to reduce the described conflict potential between educational contents and everyday driving experiences.
Part C: Benefits of Ecodriving for licensed drivers/ Obstacles/ Potential improvements

Although unanimously convinced of the usefulness and necessity of Ecodriving, all interviewed instructors had to concede that Ecodriving for licensed drivers was nowadays only a marginal business. There was little demand and all attempts to expand the business proved to be ineffective. Necessary precondition to turn Ecodriving for licensed drivers into a promising business was a wider social acceptance. This could be achieved only by increased public communication of the necessity and the benefits Ecodriving, targeted advertising of training measures and a stringent marketing concept. For example, if car dealers or car manufacturers employed Ecodriving for advertising purposes and would thus underline its usefulness, or if insurance companies would create an incentive for Ecodriving by lowering the car insurance premium for drivers with Ecodriving training, acceptance and thus demand could be increased. In any case, fuel saving as stand-alone argument was not motivating enough.

Currently, a rise in the acceptance of Ecodriving was only detectable on the part of companies and most recently in BKF-further education measures. Accordingly, most of the interviewees name companies with big vehicle fleets and professional drivers as potential target groups. But also seniors and drivers with a high amount of penalty points are mentioned as possible customers of Ecodriving for licensed drivers. A potential customer for an Ecodriving training was usually someone, who had to have an eye on his expenditure and was grown out of his “wild” years. Thus, young families were often enthusiastic about Ecodriving.

Others would still strongly believe that only fast starts, heavy braking and roaring motors would make driving fun. Moreover, most of the drivers were convinced, that they were already good and wouldn’t need any training. Under these circumstances, people were reluctant to spend money on Ecodriving training. The question would remain how to sell trainings to someone, who doesn’t see the point in it. Another common problem was the lack of willingness to concede improvement potential as only inefficient drivers would have to change their driving style. Additionally inhibitory were a high price of such courses, the initiative necessary to find and book trainings and the presumption of a small practical value, simply ignoring the fact that almost everybody could still optimize his driving style.

There was a specific set of revolving prejudices against Ecodriving:

Many drivers feared, Ecodriving would make them crawl, that they might hold up the others, Ecodriving would harm the motor or that it was impracticable with the own vehicle. Moreover, many people simply wouldn’t believe in the possibility of savings. Most of these prejudices result from too little or outdated technical information and feared inconveniences by Ecodriving, whereas the benefits of Ecodriving are more than obvious in the eyes of the driving instructors asked. Besides significant cost savings and environmental protection, Ecodriving also provided more safety and relaxed driving. The effect was a better driving feeling, but this was only to convey by having people gain own experience in a respective training. The paradox is that one had to promise benefits in order to motivate drivers to a training course, which wouldn’t become credible until the driver tried them out in the training.

The instructors recommend having the benefits of Ecodriving communicated in public by prominent role models supporting this driving style. Also, specific events at car retailers’ or addressing Ecodriving in infotainment programmes like „Der 7. Sinn“ could enhance demand. If once the potential customer was reached, it was easy to convince him of the benefits of Ecodriving and to trigger enthusiasm. In the training, these benefits could be verified in practice and the willingness to implement Ecodriving could be enhanced by working against the prejudices given. The interviewees consider a price of 40 to 60 € for a one-hour-training as appropriate.

Quality requirement for Ecodriving trainings:

The interviewed instructors recommend limiting the contents of Ecodriving trainings to the basic information i.e. few core-tips to avoid overloading the participants. The trainer should assume the role of a consultant, rather than a teacher, as not the cognitive, but the emotional approach effected the most significant and stable changes in behaviour. Who understood Ecodriving, wouldn’t necessarily implement it, if he considered it as not feasible in practice. Moreover, it had to be ensured, that current Ecodriving contents remained compatible with future advances in vehicle technology as long as possible. Given this context, a more individualized training design was essential.
According to the instructors, only qualified providers should be allowed to teach Eco-driving. Even a competence check for trainers is proposed. A classification of Eco-driving as legally required further vocational training for driving instructors could increase the willingness to participate in such qualification measures. The price could be adapted to what other measures of further education with focus on practical exercises cost. Eco-driving trainings and tests are looked at as instruments to safeguard education quality. The certification of competence by such standard-setting events was a good motivation for driving instructors to participate.

Part D: Outlook

The situation for Eco-driving in Germany is judged quite positive. Yet, not nearly all driving instructors are completely convinced of Eco-driving. Certain prejudices persist calling for ongoing informing and convincing.

Improvements on a high level are demanded, especially concerning the practical examination of learner drivers, in which Eco-driving issues were not enough represented and accepted. Though it is intended, that candidates with poor Eco-driving behaviour fail the exam, this was put to practice only rarely. A first step was to lay down the respective reasons for failure in coordination with the driver testing authorities.

The relevance of Eco-driving would become more obvious to learner drivers, if its contents played a more important role in the driving exam. Driving examiners too should be educated in Eco-driving techniques more intensive and should practice the full range of Eco-driving to facilitate discriminative judgement of the examinee’s Eco-driving abilities. For further harmonization of education and examination of learner drivers and for gradual rapprochement, one could foster joint in-service training courses for instructors and examiners. Based on harmonized knowledge, it should be even easier to establish Eco-driving in young drivers’ everyday driving.

The interviewees frequently point out, that young drivers had to face common prejudices against Eco-driving after their exam in everyday life on the part of their social surroundings or other traffic participants. This conflict potential would undermine the educational success. From the instructors’ point of view, there is a broad need for further action and information.

Some respondents don’t see much room for improvement of the current Eco-driving contents in regard to combustion engines. Even from the didactic point of view, teaching and learning materials were already of high quality. On the other hand, it was high time to develop guidelines for Eco-driving on electric vehicles.

Other respondents asked for more information on the effects of driver assistance systems and other new technologies on Eco-driving. The increasing choice of alternative propulsion systems available and the fact, that the questions of training participants were getting more and more specific, would render information about technical innovations and their impact on eco-driving as part of a regular update of the training contents essential.

Eco-driving as a topic in advertising and politics was neglected and underestimated for decades. There was basic need for action. Also counter-productive were anachronistic rules as the entry “automatic” in the driving license, but also the lack of certain regulations such as a general speed limit on German motorways, which continues to spur the development of vehicles with extreme performance.

Though safe and environmentally friendly motoring should remain the major idea, the future focus should be moved to alternatives to automotive mobility. Moreover, accompanying measures should be taken to raise broader awareness of the necessity of Eco-driving. In future, size, power and speed of the own vehicle should be chosen for functional reasons, rather than status-oriented. In this regard, the interviewed instructors underline the responsibility of the automotive industry. In future traffic, no longer the individual speed, but traffic flow in general should be the relevant criterion. Traffic management systems and driver assistance systems would thus contribute to an environmentally friendly driving style, as well.

RECOMMENDATIONS

For driving instructors, it is extremely important to further promote the subject of Eco-driving to a broader public. The acceptance rate and knowledge regarding Eco-driving are still on a very low level in public. As a result, the instructors see a major conflict between the education of learner drivers and
the real-word driving experiences after the exam. Another big problem to be solved from the point of view of instructors is, that communicating contents or golden rules of Ecodriving, which seem to be quite easy to adopt, has the effect, that most licensed drivers come to the conclusion, that they are already practicing ecodriving. They do not feel a need to participate in training courses. The necessity of training to practice Ecodriving the right way should be communicated more clearly. The demand for trainings can be raised, if public image campaigns are conducted.

To get instructors more involved in the subject of Ecodriving trainings for licensed drivers and additional qualification procedures for Ecodriving to learner drivers, it is necessary to update Ecodriving contents to recent technological developments. As Ecodriving is already part of the education of driving instructors and part of the mandatory further education, the qualification on ECOWILL basic standard is not necessary, but there is big demand for new insights. The results of an expert workshop on Ecodriving regarding new motor generations, e-mobility and hybrid technologies are highly welcome to be included in the further education procedures.

The advance qualification procedures could and should be harmonised with the education of driving examiners. Stressing the importance of the Ecodriving issues within the practical examination would give it a higher value within the whole education of learner drivers. It seems to be necessary to also engage driving examiners within the project.

Regarding the qualification on Snack-Trainings (Short Duration Trainings), driving instructors are willing to participate in qualification procedures within ECOWILL, if these additionally include basic recommendations how to address specific target groups.

### 5.1.2. Driving examiners

#### Part A: General impressions on Ecodriving

According to the interviewed driving examiners, modern eco-sound driving is a relaxed way to participate in everyday traffic. In particular, it was characterized by the driving techniques described below:

The major Ecodriving tips from the examiners’ perspective:

- Quick acceleration;
- Quick switching into the next gear at about 1.500 to 2.500 rpm;
- Steady driving in the highest gear possible;
- Keeping an enlarged safety distance;
- Early stepping off the gas pedal if you have to stop; harnessing momentum, when further acceleration is inappropriate;
- Turning off the engine in case of a stop that takes more than 20 seconds according to personal experience;
- Maintaining the right tyre pressure to keep rolling resistance low.

Only in conjunction with advanced vehicle technology, Ecodriving would effect better environmental conditions and energy savings. Driving behaviour had to adapt to the progress of automotive technology. An overall concept of „Ecodriving“ would include the effective design and coordination of all transport modes, traffic installations and traffic flows in order to minimize the consumption of natural resources and the environmental impact.

In the eyes of the examiners, Ecodriving is a highly relevant topic, as there was a high number of registered cars in Germany and thus a huge saving potential for fuel and emissions in this driving style. It was only by application of Ecodriving, that the benefits of modern vehicle technology could come to fruition. For this reason, many examiners would have taken a basic training in Ecodriving and underwent regular measures of further education in this field to keep their expert knowledge up-to-date.

The main incentive for drivers was the reduction in fuel consumption and the resulting cost savings. It was also of interest that Ecodriving was a safer, more traffic-sound and passenger-friendly way of
driving. Also the aspects of environmental protection and CO$_2$-avoidance were becoming continuously more central.

The asked experts see a major problem in the fact, that Ecodriving must not be applied under any circumstances. The most relevant guideline was still, that safety must always take precedence over environmental considerations or savings aspects. Another problem would consist in the fact, that some aspects of Ecodriving could not be sharply defined. Additionally, some drivers had their difficulties to keep up with the progress in vehicle technology by adapting their driving style and developing it further. Moreover, it was just for some years, that Ecodriving was subject in driver education. Thus, the majority of the licensed drivers never heard of Ecodriving and would doubt the sense in it. These people in particular had to be approached with effective programmes, if Ecodriving was to reach a higher degree of implementation.

According to some respondents, the examiners had internalized meaning and contents of Ecodriving and would practice it consequently themselves. There were no significant inner inhibitions. Adequate Ecodriving behaviour was consequently demanded, checked and evaluated in the exam. On the other hand, other interviewees criticize that there were still diverging interpretations and demands concerning Ecodriving, which required further clarification.

**Part B: Ecodriving for learner drivers/ driving schools**

As did the instructors, the interviewed driving examiners also consider Ecodriving as sensible and most necessary part of driving education, in particular, because it even contributes to the development of a responsible driver personality. Ecodriving wasn’t only a catalogue of technical skills in fuel saving, but also supporting moral development, both altogether shaping the future driving style of the learner driver.

First of all, learner drivers had to realize, that their driving education resulted in more than the driving license. They could also raise their social competence and environmental awareness on the specific example of the intended participation in traffic. One couldn’t early enough respond to the common notion, that driving education was just for obtaining the drivers license. Moreover, learner drivers had to understand, that first of all traffic was social interaction and not just a system, in which only technical skills in a framework of legal regulations counted as it was common notion. Reasonable socially-sound behaviour had to be learned first and thus taught. The trainers had to teach to assume responsibility for own actions, either towards other traffic participants, or the environment in terms of reduced emissions. Therefore, the integration of Ecodriving into driving education was particularly appropriate.

From the start, novice drivers had to be capable to cope with the challenges in the social space of traffic, failure was no option. Thus, driving education had to lay a comprehensive, appropriate and stable foundation. Teaching social competence via advanced driving techniques and tactics from the very start of the education required an organisation of learning processes taking into account the necessity to directly experience the benefits of socially-sound behaviour. Thereby, one could also lead the development of driving culture in general into the right direction. Moreover, it was substantial to put straight, that automotive traffic was not only dangerous, but also highly harmful to environment and human health and thus had to be reduced wherever possible and generally decelerated. The conclusion should be, to employ the car only if necessary - and in this case at least not at full speed. In general, one should only use the car as rarely as possible.

Conveying the correct basics from the start, inappropriate behaviour simply wouldn’t come up and become set. Only addressing Ecodriving continuously throughout the whole course of the driving education would lead to a stable memory of the techniques on the part of novice drivers. The overall goal of driving education to enable learner drivers to be as safely driving, responsible and environmentally-aware traffic participants as ever possible was becoming much more probable by employing such an integrative approach, than with a stand-alone module of Ecodriving. Thus, teaching the technical and social aspects of a modern, more environmentally-sound driving style was to pervade the entire education process.
Part C: Ecodriving in driving examination

The examiners underline, that an accumulation of mistakes in environmentally conscious and energy-efficient driving was a decisive factor for failing the test, indeed.

No. 5.17.2.2. Practical test

Besides mistakes as specified in 5.17.2.1, also repetition or accumulation of mistakes like the below listed examples lead to failure of the exam:

- Poor traffic monitoring
- Unsuitable speed
- Incorrect safety distance
- Mistakes in vehicle operation
- Mistakes in environmentally conscious and energy-efficient driving

(This list is exemplary and thus not supposed to be complete.)

Yet in most cases, violations of Ecodriving were only judged as indirect driving errors. Only together with other misbehaviour, they would cause failing the exam. In the view of some of the asked experts, the criteria of decision still needed clearer definition. Therefore, political agreement between driving instructors and examiners on how to concretely implement the examination guideline was substantial.

At the beginning of their driving education and sometimes even still in their exam, the candidates would look upon Ecodriving as an unrelated measure. But at the latest, when the learner driver had internalized the individual components of Ecodriving and had gained some practical experience, the connection was disclosing itself. Though Ecodriving consisted of many distinct aspects, these were complementary. Only altogether, the different aspects would result in energy-efficient driving. The term „Ecodriving“ was introduced and already quite common in Germany, but there were circulating other terms like „environmentally friendly and energy-saving driving style“, too.

The examination guideline comprises the Ecodriving requirements in the exam and its assessment. Additionally, there were other specific education and information materials for the examiners. During the practical driving test, the examiner was monitoring the behaviour of the candidate and evaluating the implementation efforts regarding Ecodriving, i.e. the respective operation of the vehicle, traffic anticipation and gear shift at different speeds. In the practical test, the candidate had to demonstrate, that he was capable to safely conduct a motor vehicle - possibly with trailer - in traffic having the necessary technical skills and sufficient knowledge of environmentally conscious and energy-efficient driving and the skills to apply it.

The main aspects of Ecodriving were:

- Shifting into the next gear as early as possible;
- Skipping gears up and down;
- Starting with coasting (with or without gear) in time, when a stop is expected, i.e. at traffic lights or railway crossings;
- Anticipatory driving;
- Avoiding unnecessary ballast in the vehicle.

4 Behaviour when starting

Before and during start-up, especially the rear traffic must be observed thoroughly. In vehicles of Class B on plane ground, 1st gear is only used for the start and, as a rule, changed into the 2nd gear after approximately two cars’ lengths.

5 Gear change

Timely gear change must be taken care of. The candidate is expected to change into the next gear as early as possible and - on vehicles of Class B, depending on the vehicle type, up to 50 km/h - to use at least the first four gears, as a rule. Other gears exceeding the 4th must also be applied as early as possible. The information of the car manual is to be considered.
9 Driving speed

Speed is to be adapted to the traffic circumstances. Avoid unnecessary high revs when accelerating.

15.1 Anticipatory driving

- Timely response to oncoming vehicles, other traffic participants, bottlenecks, traffic signs, road markings, changes in road surface conditions and obstacles.
- Before a predictable stop, i.e. at crossroads or red lights, harnessing the momentum without gas or shift-back and having the vehicle coast.
- Avoiding unnecessary braking and accelerating.

Most interviewees were of the opinion, that these contents were feasible to check, but wouldn’t want other aspects to be introduced in the examination. The current contents could possibly be described even more precisely. Some of the experts see specific improvement potential regarding the concrete definition of Ecodriving violations.

In the experience of the respondents, there are some conflicts between Ecodriving and other examination contents, such as overtaking or passing crossroads, which should be conducted rapidly. In such cases, Ecodriving was to step back. Basically, safety always had to take precedence over environmental protection or savings aspects.

In Germany, Ecodriving is part of drivers’ education and examination since 1999. The opinions of the experts diverge as to the difficulties: Some examiners do not see any major problems. Though it wasn’t all easy for driving schools, learner drivers and driving examiners in the beginning, a standard had become stable over the years, which was very sensible and effective for both education and examination. In Germany, the valuable harmonization of education and examination was already accomplished in all topics including Ecodriving. Driving schools and testing organizations were well in tune with each other regarding the interfaces of education and examination. Therefore, the driving schools would know exactly, which contents were to be trained as they are addressed in the test. This opinion, however, is opposed to the statements of many of the other interviewed instructors. From their perspective, coordination and assessment of the topics of education and examination had to be put in even more concrete form. In particular, the required skills/behaviour, in other words: the objectives of driving education, and possible mistakes in the course of the examination and their respective evaluation were to be specified and coordinated.

Part D: Outlook

Technological evolution of motor management and vehicle operation techniques was ongoing in the future. Ecodriving had to adapt to it, but also the drivers were to innovate their driving style to drive energy-efficient. Upcoming driver assistance systems supporting environmentally conscious driving and new propulsion concepts like electro or hybrid vehicles would constitute a major challenge to driver education and examination.

The Ecodriving topic should be taken regularly into general public to gain momentum in the context of limited resources and climbing vehicle prices. It was most reasonable to take advantage of opportunities for fuel reduction and to protect the environment by the very same.

In the Ecodriving context, certification was very recommendable for both, training measures for individuals and companies to save a lot of money and reduce accidents, as well as for driving examiners and instructors to guarantee consistent standards. A quality assurance system with defined standards was necessary in order to increase quality despite the fact that in the end the resulting costs were imposed on the learner drivers and that other contents of the driving education might have to be cut back.

A quality standard for Ecodriving should provide for continuous updating to latest technical knowledge of theoretical and practical kind. Driving instructors and examiners should be obliged to undergo regular further education measures concerning new vehicle technology and driving techniques. This was particularly difficult for the examiners, as they had to deal with a variety of driving school vehicles of different technology. For some of the asked experts, a joint training of examiners and driving instructors was necessary in order to harmonize the basic understanding of Ecodriving. A respective training should define the contents of theoretical and practical driving education, concrete contents of
the theoretical test and the practical exam (observation category) as well as specific assessment guidelines for each practical driving task.

RECOMMENDATIONS

The only way to involve examiners within the project in Germany seems to be to give an insight on new technological developments.

Driving examiners in Germany are as highly qualified on Ecodriving as the instructors are. To involve them in the project, it is necessary to present new insights on the impact of new technologies on Ecodriving contents.

Additionally, it would be an incentive for the examiners to participate, if further harmonisation and more detailed insights on how to evaluate Ecodriving behaviour of trainees was an integral part of the project. Yet, it seems difficult to motivate examiners and instructors to common seminars but if it can be accomplished it works very well.

Strengthening the importance of Ecodriving within the exam turns out to be a problem, as not just a few examiners see it as a sidekick/ sub-aspect. Enhancing the relevance of Ecodriving in the eyes of the examiners, especially for its safety promotion is to be recommended.

5.1.3. Policy makers

Part A: Ecodriving in general

Through more conscious driving, CO\textsubscript{2} emissions could be significantly reduced. A more defensive and adjusted driving style saves fuel, reduces the emission of toxic gases. Yet, the Ecodriving tips were not specified in detail during the interviews.

Part B: Ecodriving for learner drivers (driving schools)

Benefits:

The education towards an energy-saving driving style is not seen as primary target of the driver education but it supports the important secondary target of environmental protection and helps the driver to reduce costs. Thereby modern mobility is supported in general.

Obstacles:

While implementing Ecodriving into the driving school curricula several obstacles turned up. The major problem from the point of view of the interviewees was the opinion, that there will be higher costs of the driving school education because of additional teaching contents.

Part C: Ecodriving for licensed drivers

The biggest problem to reach licensed drivers with Ecodriving trainings was that most drivers were not willing to pay for such offers. There is a serious lack of interest making it difficult to reach licensed drivers.

This is considered as a big problem as Ecodriving would contribute to a more secure driving style, enhance traffic safety and reduce noise, emissions, fuel consumption and costs (maintenance costs, accident related costs, fuel costs). Yet Ecodriving is underrated in its importance.

Its integration into driving school education was a good start, but for a broader acceptance in public opinion more communication and marketing efforts were needed to make Ecodriving a mass phenomenon.

Ecodriving trainings should include the following standards:

- Before and after comparison (visualisation of savings potential);
- 1/3 technical contents, 2/3 anticipatory behaviour;
- Manufacturers to be integrated;
- Solutions to the general Image-Problem of “slow driving”;

- 68 -
Refute the impression of drivers that they already know how to Ecodrive;

Change the attitude of most drivers not thinking further than the bumper of the car in front.

Ecodriving trainings should only be conducted by experienced and highly qualified driving instructors.

Part D: Outlook

In the point of view of some politicians, a stronger focus on Ecodriving (environmentally-sound driving) within the education and examination contents seems inappropriate, if this would mean to neglect safety aspects. It was essential to find a new image for Ecodriving, fighting common prejudices and raising environmental awareness. Predominantly, the focus should be on voluntariness and cooperation with industry sponsors and organisations. Additional financial resources - e.g. EU supported and promoted voluntary regulations - were needed.

RECOMMENDATIONS

The interviews of political stakeholder show a deficiency of information on Ecodriving. Especially the safety benefits of Ecodriving within the education of learner drivers should be underlined towards political stakeholders.

Ecodriving trainings should only be conducted by experienced and highly qualified driving instructors and special standards need to be defined.

The positive effects of Ecodriving must be conveyed to politicians in a more detailed manner, as they have to be convinced of Ecodriving if they shall make it to a bigger subject within political communication.

5.1.4. Energy agencies / environmental research institutes / universities / academies

Part A: Ecodriving in general

Ecodriving is the reduction of fuel consumption by a energy efficient driving style. The driving style includes technical car components as well as a specific driving behaviour. Ecodriving is seen as a whole concept.

There are several research activities regarding Ecodriving and its positive impacts on fuel-consumption and CO₂-reduction in individual traffic.

The most common Ecodriving tips:

- No warming up of engine before starting
- Early gear shifting: The first gear is just for getting the car into motion, then directly shifts in the second gear. Rough rule: 3. gear at 30 km/h, 4. gear at 40 km/h, 5. gear at 50 km/h. Between 2.000 and 2.500 rev the engine reaches the optimum effectiveness, although some modern cars may reach their optimum at differing points.
- Driving at low engine revs: the lower the engine revs and the steadier the driving style is, the lower is the fuel consumption. Savings potential is estimated up to 30% and is also good for the engine.
- Anticipating traffic flow and coast/ cruise: Every start and acceleration raises fuel consumption. By anticipating the traffic flow and cruising with steady speed, a constant momentum can be kept. Keeping an enlarged safety distance, helps to balance irregularities in traffic.
- While driving on highways, high velocity has to be avoided. Rising velocity raises fuel consumption: Rough rule: 80 km/h on rural roads and 100-120 km/h on highways.
- Switch off electronic consumers: Every electric consumer raises fuel consumption. The biggest consumer (except the engine) is the air conditioning. While in use, the consumption in city traffic is up to 1,8l times higher.
Switch off engine: At stops longer than 10 seconds the engine should be switched off. When starting the engine again the throttle/accelerator should not be used.

Remove unnecessary ballast: Every kilo raises fuel consumption. 100kg additional weight raise the consumption by 0.5l.

Regular control of tyre pressure.

Make use of technical assistant systems like gear shift indicators and fuel consumption monitor.

Using Eco-tyres can reduce fuel consumption up to 5%.

Potentials of Ecodriving:

According to latest research results the potentials of Ecodriving must be considered as highly relevant for the reduction of CO₂-emissions. But the results also clearly showed, that persons trained in Ecodriving only implement individual aspects/tips of Ecodriving in there normal driving behaviour. There was still need for research on the long-term effects of Ecodriving trainings.

Part B: Business Case

Regarding the expected continuously rising fuel prices Ecodriving is considered a business case in the near future. But still there were additional requirements to make it a big business case (see part D)

The lack of information on the benefits of Ecodriving in different target groups was one of the major problems. Additionally, certain types of driver personalities were not willing or not skilled enough to apply a fuel efficient driving style.

The environmental protection aspect is not yet considered as the most effective approach to promote Ecodriving, although a rising personal affection is noticeable. This is said to be induced by personal disadvantages resulting from higher costs and strict regulations (e.g. limited access to city traffic zones). In the view of some researchers, it seems more appropriate to promote Ecodriving by communicating the cost saving benefits. A better and broader communication of Ecodriving benefits is needed to further implement the idea of Ecodriving in the broader public.

But additionally also a consistent qualification or further education of instructors/trainers had to be guaranteed as well as clearly defined and universally valid contents of Ecodriving trainings.

Part C: Outlook

More information was needed on the potentials of Ecodriving as well how to overcome the restraints of drivers to attend Ecodriving trainings. Furthermore the question whether Ecodriving trainings should be mandatory or voluntary has to be defined. The interviewed experts tend to be in favour of mandatory regulations.

Ecodriving was to be adjusted to the latest technical developments of cars and engines. The potential participants had to learn that new technical developments need adjusted fuel efficient driving behaviour.

As long as Ecodriving education was voluntary and limited to the basics taught in driving schools, a in-depth penetration of the market by Ecodriving is considered as difficult.

RECOMMENDATIONS

There is still need for more research on the long-term effects of Ecodriving trainings and more publishing of known results.

Consistent qualification or further education of instructors/trainers has to be guaranteed. Universally valid contents of Ecodriving trainings have to be defined.

There has to be more information on the potential of Ecodriving as well as on how to overcome the restraints of drivers to attend Ecodriving trainings.
5.1.5. Car Dealers

There was no response of addressed car dealers to the questionnaire. Still, some input can be delivered here, as several short interviews with medium-sized and big car dealers who also operate in parallel to retail business part sales and repair shops were conducted. As the questionnaire was not applied, the structure follows the central topics of the interviewees.

Very few dealers already had first-hand experience with Ecodriving events. Most of the interview partners spent just a few minutes as they considered Ecodriving only as side aspect to their business.

**Practical aspects of Ecodriving**

The fuels saving effects of Ecodriving were widely undoubted. Some doubts remain whether this is jeopardizing so called “driving fun” or whether it can be practiced under everyday driving conditions. Also some technical aspects were addressed as unclear (e.g. low engine speed as uncomfortable or potentially negative for diesel engines & particulate filters). In general, the car dealers asked do not see broad acceptance of Ecodriving on the part of customers / drivers which is considered as the biggest obstacle. Fleet customers would concentrate on the economic benefits of Ecodriving, which might put even more pressure onto company drivers.

**Retailers’ core business: sales of vehicles & parts, maintenance & repair**

A link of Ecodriving to the dealers’ business was not very obvious. Addressing Ecodriving had only little relevance to selling cars, parts or service operations. For this reason, Ecodriving is perceived as “nice to do”, but not as a priority. Those dealers who already conducted Ecodriving events are convinced by the outcome: The events are considered as useful for image building or promotional purposes as showroom traffic can be generated. In general, all interviewees appreciate the opportunity to offer Ecodriving courses carried out by hired external trainers to expand and distinguish their full service package for fleet customers.

**Involvement of other stakeholder; incentives & public perception**

As Ecodriving is judged as non-core business, stronger involvement of other stakeholders was claimed to boost interest in Ecodriving. Proving drivers’ benefits was a key task. In parallel, public perception had to change, also triggered by politics (awareness campaigns, incentives) and automobile clubs. Other industries apart from the automotive are identified as important, especially oil industry and private insurance companies. Within the automotive industry, a cross-brand approach (VDA / German Automotive Manufacturers’ Association) within “actions weeks” is recommended effecting bigger impact than a few decentralized events.

**Benefits**

- Generating showroom traffic / support of promotional intentions;
- Delivering service to identified customer needs or on (fleet) customers request;
- Perception as competent partner and service-minded / consumer-oriented;
- Attracting media attention / press coverage (print & electronic media).

**RECOMMENDATIONS**

Multiple options for boosting Ecodriving can be concluded from the car retailers’ statements:

- Modular offer to select from and combine.
- Credible contents plus trendy / attractive branding.
- Convincing overall Ecodriving concept, addressing drivers’ / customers benefits and overcoming existing doubts.
- “plug & play” Ecodriving events with high-quality trainers to generate showroom traffic and raise media attention; customer loyalty activities.
- Involvement of fuel retailers and insurance companies.
• Link to political activities (campaigning, incentives) and associations (oil industry & intra automotive industry).

• Promote Ecodriving events as a synchronized and jointly branded stakeholder approach – centralized and decentralized (“action weeks”; motor shows, etc.).

5.1.6. Insurance Companies

Part A: Ecodriving in general
Ecodriving is considered as an overall concept of modern driving. The specific tips were driving in the highest possible gear with low revs, short acceleration phase, letting the car roll if a stop is expected. The defensive and anticipatory driving style would make driving more relaxed, safe and would additionally save money. The interviewees see Ecodriving as a possibility to avoid traffic accidents, save costs and resources and help to improve the CO\textsubscript{2}-balance.

Problems:
Some aspects of Ecodriving needed to be further specified and adapted to new car technologies. Sometimes information could be misleading and thereby strengthen common prejudices. The particulate filter of diesel cars tended to clog if the car was driven consequently below 2000 revs/min. Yet, this was only a problem, because the filter wouldn’t reach the needed temperature. This is the case, if only short distance trips were conducted. Therefore, technical specifics had to be defined clearly.

Part B: Business Case
Ecodriving is not considered as a business case for insurance companies. Yet, there were opportunities to give Ecodriving stronger support in the future (see part C).

Part C: Future Outlook
Introducing an equal status of safety trainings and Ecodriving trainings on the part of car insurance companies could help to raise the acceptance, especially with young drivers/ novice drivers.

During the development of new cars, Ecodriving issues should be taken more into account e.g. the adjustment of automatic gear boxes in regard to Ecodriving aspects. But not only technical issues needed to be improved but also psychological aspects like a more relaxed attitude towards overtaking (“I am not moving backwards if I’m overtaken”) or the impression of being an obstacle for traffic.

The contribution of Ecodriving to a better CO\textsubscript{2}-balance and, in general, a longer persistence of individual traffic should be pointed out.

RECOMMENDATIONS
In order to get insurance companies involved in the project and convince them to support and enhance their Ecodriving activities, one must stress and proof the safety benefits of Ecodriving.

Additionally, it is most important to insurance companies that a high quality standard for training programs and trainers including continuous adoption to latest technological developments is safeguarded.

Communicating Ecodriving to a broader audience and thereby raising public acceptance also seems necessary to convince insurance companies to offer incentives for a participation in Ecodriving training programs.
5.1.7. Car manufacturers and respective organisations

Part A: Ecodriving in general

Technical:

Technical improvements supporting a fuel saving driving style, such as Gear-shift indicator, low-friction oils, Eco-tyres, lightweight construction of cars, improved engine technologies, etc., should be accompanied by efforts to change driving behaviour to anticipation, early gear-shifting and a defensive style.

Overall concept:

The focus of consumers/ drivers should be led to a fuel-efficient driving behaviour in combination with the right application of modern technological vehicle solutions, using synergies of driving style and vehicle technology. As Ecodriving was an important issue, it often was integrated into dealer-based and centralized promotion activities, e.g. on motor-shows (AMI & IAA), to support corporate sustainability actions. Ecodriving was a customer-oriented approach to address the highly relevant issues of fuel economy with regard to the cost savings and of climate protection.

The main benefits of Ecodriving were financial savings and the efficient usage of modern cars and their technological components, thereby saving natural resources and contributing to lower CO₂-emissions. It was necessary to raise a feeling of responsibility in using limited natural resources. A general change of people’s mindset was required, for most of the consumers/ drivers still would not realize their personal responsibility, opportunities and benefits. But one of the most important social benefits of Ecodriving was its contribution to road safety. Generally, a “safety first” philosophy was absolutely crucial.

The estimated effects of Ecodriving trainings would lie between 20-25% short term savings and 10% (+/-) long term savings, depending on the driver’s intrinsic motivation. The more impact of Ecodriving was personally experienced, the more tips were applied. The asked car-manufacturers see Ecodriving as a voluntary action without external pressure - which is higher with professional drivers- to make the difference and gain multiple benefits.

Part B: Business case

Most drivers considered themselves as “good drivers”, who already apply fuel-efficient driving and would not see a need for ‘training. Therefore, Ecodriving courses were still no business case. Yet, they were a useful marketing and sales tool for promotion purposes and for image raising effects as well as to prove manufacturers’ fuel economy technologies already available and show their positive effects in real-world driving. To make it a business opportunity, a change in general public attitude and a higher priority of Ecodriving on the political agenda was crucial.

To exploit the whole range of benefits of Ecodriving courses, a high qualification level of trainers was mandatory. Only trainers with maximum competence would guarantee optimum training effects, sustainable results and a positive image transfer. Classic “teaching” should be avoided. Quality standards for training courses needed to reflect these criteria. The lack of transparency regarding the quality of Ecodriving trainings and trainers is seen as a major problem for consumers and other interest groups. Additionally, it was necessary to guarantee the safety aspects of Ecodriving trainings by implementing a “safety first”-philosophy to avoid risky tips or misleading interpretation with negative effects on road safety.

Premium Ecodriving trainers are seen as precondition for a roll-out of Ecodriving activities in all target groups, helping to raise customers’ loyalty, promoting company products and services. Trainings were to be adjusted to specific interests and focused on benefits, e.g. saving money, protecting the environment, less stress while driving, higher safety, less accidents and related costs, image improvement as a socially responsible company, etc. Only highly qualified and certified trainers would guarantee positive effects of training activities. These top-qualified trainers must have a strong didactical background (like driving instructors have), high-level safety and Eco-Driving knowledge and are very experienced in conveying safety and Ecodriving messages to various driver groups. Trainer quality must be proven by certification and a continuous process of further education acc. to state-of-the-art knowledge, technically and pedagogically.
Eco-Driving trainings would clearly show, that fuel consumption strongly depended on the driving style, supporting that the consumer meets the officially stated fuel consumption (acc. to standard and legally required fuel consumption measurement) of his car. In average, 20-25% improvement were possible by an Ecodriving training, which would make it possible to fully exploit the energy efficiency potential of modern cars and bring each individual driver to his maximum fuel efficiency.

**Part C: Future Outlook**

Ecodriving would need to keep up with the latest technical developments, changes in public opinion or political agenda and general changes within society (like the rising number of older drivers).

Especially the following issues would have to be monitored and taken into account:
- Impact of alternative fuels and new vehicle technologies;
- Application / integration of driver assistance systems in regard to synergies with Ecodriving;
- Adjustment to specific needs of different target groups;
- Guarantee of continuously adapted high-quality standards.

**RECOMMENDATIONS**

For car manufacturers the marketing possibilities of Ecodriving trainings are highly interesting. To get them convinced and involved within the project a high quality standard for training contents and trainers has to be ensured. Also the involvement of other stakeholders and positive media attraction might be useful to communicate.
## 5.1.8. Summary

### Table 5.1. Classification of obstacles: Learner Drivers/Driving schools

| No | Obstacles for the integration of Ecodriving into learner driver education and examination | Short description | Classification  
|----|-----------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 1. | Prejudices in public | There are still many common prejudices in public on part of licensed drivers which make a successful transfer from Ecodriving education in driving schools into real-world traffic quite difficult.  
| | **detailed description of prejudices part 5.1.1 B** | → Challenge: Strengthen learners argumentation portfolio & boost self-image "good driver" / doing it right; Actively communicate in driving school "old" vs. "new" with background information and how to argue without confronting | 1 |
| 2. | Minor relevance in examination | Ecodriving should be more relevant in the practical examination of learner drivers  
| | → strengthens learners self-perception of "done it right" and "approved Eco-Driver", may be explicitly mentioned after testing by instructor and examiner  
| | Even stronger commitment of examiners and roll-out of all aspects into everyday examination practice to support overall Ecodriving implementation to learners | | 1 |
| 3. | Impact of new technologies | Ongoing collection and assessment of information regarding the of the impacts of new technologies on Ecodriving in teaching and testing | 1 |
| 4. | Conflict with safety issues (fear of political stakeholders) | The safety aspect of Ecodriving needs to be stressed!! Interviewed politicians were not aware/ convinced of the safety benefits of Ecodriving | 2 |
| 5. | Synchronisation of teaching and testing contents | Common further education of examiners and instructors is necessary to specify and harmonize Ecodriving contents in teaching and testing | 2 |
| 6. | Higher costs of driving school education (fear of politicians) | The assumed higher costs for the driving school education because of additional education contents (overcome in Germany during the implementation phase of Ecodriving) | 2 |
| 7. | Prejudices | There are still some prejudices within the group of driving instructors (but mostly overcome)  
| | **detailed description part 5.1.1 A** | → Challenge: Driving instructors as role models, multipliers for Ecodriving must be credible ambassadors of this advanced "new" driving style | 3 |
| 8. | Ecodriving contents in examination are not specified enough (from examiners point of view) | The Ecodriving contents in the examination are still not detailed enough to allow an examiner to define what exactly a "fault" in Ecodriving behaviour is. | 3 |
### Table 5.2. Classification of benefits: Learner Drivers

<table>
<thead>
<tr>
<th>No</th>
<th>Benefits of the integration of Ecodriving into learner driver education and examination</th>
<th>Short description</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Integrated approach in the education of learner drivers (instructors and examiners view)</td>
<td>Integration of Ecodriving into driving school education is sensible, also supporting a safe driving mindset and respective techniques → “Do it from the beginning! Teach it as the only way to drive.”</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Financial benefits</td>
<td>Distinct communication of benefits to learner drivers (the later young/novice drivers): Lower maintenance costs; lower fuel expenses, etc. → detailed description of benefits see part 5.1.1 B</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Ecological benefits</td>
<td>Distinct communication of benefits to learner drivers (the later young/novice drivers): environmentally friendly driving, sparing resources → detailed description of benefits see part 5.1.1 B</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Social competence/ Future mobility</td>
<td>Distinct communication of benefits to learner drivers (the later young/novice drivers) Promoting Ecodriving as a life-style attitude and not only a driving technique to effect sustainable behaviour and social responsibility → creating new images → detailed description of benefits see part 5.1.1 B</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Safer driving</td>
<td>Distinct communication of benefits to learner drivers (the later young/novice drivers): more secure driving, avoiding risks and reacting more appropriate in such situations, etc. → detailed description of benefits see part 5.1.1 B</td>
<td>1</td>
</tr>
</tbody>
</table>

### Table 5.3. Classification of obstacles: Licensed drivers

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacles for Ecodriving trainings for licensed driver</th>
<th>Short description</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Little demand for Ecodriving courses</td>
<td>Licensed drivers are but little interested in Ecodriving training offers. Overall marketing concept necessary communication campaign conveying benefits, etc. Supportive role of automotive industry, retail business and insurance companies with incentives → Challenge: How to overcome obstacles causing low training take-rate? How to deal with the various prejudices? → Innovative approach needed!</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Impact of new technologies</td>
<td>Ongoing collection and assessment of information regarding the of the impacts of new technologies on Ecodriving in teaching and testing</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Prejudices</td>
<td>Licensed drivers have still some common prejudices against Ecodriving: “bad for the car”, “slows down”, etc. → detailed description of prejudices part 5.1.1 C</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Quality of training and trainers (from the perspective of automobile industry)</td>
<td>The lack of transparency in quality standards of training and trainers is a big problem. Only highly qualified trainers can guarantee positive results of marketing activities. → detailed description of quality aspects see part 5.1.7 B</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Quality of trainers and training</td>
<td>Training contents and standards must be adjusted to in order to solve the image problems of Ecodriving</td>
<td>1</td>
</tr>
</tbody>
</table>
Obstacles for Ecodriving trainings for licensed driver

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacles for Ecodriving trainings for licensed driver</th>
<th>Short description</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>contents (perspective of politicians)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>⇒ detailed description see part 5.1.3 C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Costs for training courses</td>
<td>Most drivers are not willing to pay for a course at all. Prices seem to be too high, because the expected results are underestimated. ⇒ Additional financial incentives/ co-sponsoring of trainings needed</td>
<td>1</td>
</tr>
<tr>
<td>7.</td>
<td>Self image (of drivers)</td>
<td>Most drivers believe, that they already apply an environmentally friendly driving style</td>
<td>1</td>
</tr>
</tbody>
</table>

### Table 5.4. Classification of benefits: Licensed drivers

<table>
<thead>
<tr>
<th>No</th>
<th>Benefits of Ecodriving trainings for licensed driver</th>
<th>Short description</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Financial benefits</td>
<td>Target group specific communication of benefits to licensed drivers: Lower maintenance costs; lower fuel expenses etc. ⇒ detailed description of benefits see part 5.1.1 C</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Ecological benefits</td>
<td>Target group specific communication of benefits to licensed drivers: environmentally friendly driving, sparing resources, etc. ⇒ detailed description of benefits see part 5.1.1 C</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Social competence/ Future mobility</td>
<td>Target group specific communication of benefits to licensed drivers Promoting Ecodriving as a life-style attitude and not only a driving technique to effect sustainable behaviour and social responsibility ⇒ creating new images ⇒ detailed description of benefits see part 5.1.1 C</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Safer driving</td>
<td>Target group specific communication of benefits to licensed drivers more secure driving, avoiding risks and reacting more appropriate in such situations, etc. ⇒ detailed description of benefits see part 5.1.1 C</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Marketing tool for companies (e.g. car manufacturers or car dealers)</td>
<td>Ecodriving trainings work as marketing tool, helping to promote and sell new cars, special products and services. Additionally, they raise customer loyalty.</td>
<td>1</td>
</tr>
</tbody>
</table>
6. Greece

In general, everybody in Greece is positive towards ecodriving and its further implementation. In addition everybody recognises the great benefits that ecodriving offers (environmental protection, road safety, cost saving) and at a great cost-benefit ratio.

However, the current bad financial situation in Greece (increase of taxes, reduction of income, and increase of unemployment) seem to bring some reluctance on investing in ecodriving in the private and public sector. Increasing costs are pressing especially in private companies and even small investments are disregarded (without further considering the cost – benefit ratio and possible returns in the long-term). Indicant of this unwillingness is that companies or individuals often refuse to proceed into ecodriving trainings for their employees even if these are offered for free!

Old habits die hard! This is especially true regarding the driving habits in Greece. Most drivers have learned to drive inefficiently over the years and this way of driving is greatly assisted by the poor infrastructure (traffic congestion in cities, occasionally bad condition of the roads, lack of dedicated tracks for ecodriving trainings).

Another obstacle to further promoting ecodriving is the lack of a network of certified driving instructors and examiners. Therefore, driving instructors and examiners are not obliged to know, practice, teach in depth and examine the ecodriving techniques. It also seems that objections from some driving instructors and examiners are expected if an ecodriving program that would contain testing and certification was to be implemented.

Most of the driving instructors and examiners that were interviewed suggest to teach ecodriving separately and in parallel with the rest of the driving theory. It is also suggested by some driving instructors that driving experience is a prerequisite for a new driver in order to implement ecodriving while others suggest that new drivers will learn to drive as taught, i.e. if a new driver is taught to shift gears at 2500 rpm, he will indeed change gears at these engine revs.

It should also be stressed at this point that demonstration of ecodriving techniques during the practical examination test is not foreseen, therefore even if an examiner is willing to evaluate the drivers’ abilities on ecodriving, this is not foreseen by the procedure and therefore has no practical sense.

Some insurance companies seem quite interested in ecodriving however the lack of scientific data on the relationship of ecodriving and the avoidance of road accidents in Greece is a drawback. In addition there are leasing companies that are interested in further using ecodriving as a business case. Most of the private companies face ecodriving as a useful marketing and CSR (Corporate Social Responsibility) tool when integrated in quality, environmental and CSR policies.

Regarding ecodriving and it's further and more effective integration into the official procedure of training and examining new drivers, all stakeholders should be trained, examined and certified on ecodriving. Proper infrastructure should be used (e.g. dedicated tracks) during the examination in order for the candidate driver to deploy its knowledge on ecodriving. The theoretical and practical part of the curriculum should be further enriched with the techniques of ecodriving.

Regarding private companies with fleets of vehicles, the benefits and possible financial returns should be stressed in order to persuade the fleet managers to involve ecodriving as a measure to reduce costs and environmental impacts. A low cost and simple to adopt monitoring tool should be very helpful to this direction.

Especially regarding insurance companies, road safety benefits arising from the use of ecodriving should be stressed with the presentation of solid data from relevant case studies.

Finally, Member States and the European Union could have a central role by imposing national and European legislation to promote ecodriving, by funding energy agencies and universities for research on ecodriving and by funding promotional activities to increase public awareness and market demand for ecodriving trainings.
6.1. **Driving instructors**

**Part A: Fundamentals concerning Ecodriving**

**Benefits**
- Ecodriving leads to lower fuel consumption and the relative costs.
- Ecodriving leads to a reduction in the emission of hazardous gases (NOx, SOx, etc).
- Ecodriving leads to noise reduction.
- Ecodriving reduces the costs for maintenance of the vehicle.
- Ecodriving increases road safety.
- Education and certification in ecodriving will greatly help driving instructors.
- Ecodriving reduces other relevant costs such as medical and insurance costs.
- Ecodriving contributes to a general positive change of attitude of life. Ecodriving techniques contribute to a more relaxed way of driving and consequently to a less stressed way of living.

**Obstacles**
- Ecodriving sounds nice but still very few people are willing to deal with it (even if trainings are offered for free). This happens probably because some people actually do not believe in the effectiveness of ecodriving or are not patient enough to see any results.
- Public awareness of ecodriving is quite low.
- In some cases people increase the risk of an accident by applying all the time ecodriving (e.g. some people avoid the use of breaks at all and try to decelerate only by shifting down gears).
- A virtual training program is not easily available.
- The current bad financial situation in Greece puts activities such as ecodriving trainings as a second priority, especially when there is a cost involved with the training.
- An organisation that would educate and certify driving instructors doesn’t exist.
- Trainers that are not familiar with ecodriving believe its hard to teach it.
- The cost of training and certification for driving instructors may be an obstacle if it’s too high (according to their perception).
- There is the prejudice that driving instructors know perfectly everything about driving and there is no room for improvement.
- Some driving instructors are expected to oppose to a training, examination and certification procedure (since these driving instructors claim they are fully aware of ecodriving).
- It has been proven in the past that it is quite difficult to change the current system of education and examination for new drivers and this is quite discouraging for some driving instructors to participate.
- There are no dedicated tracks for training new drivers in ecodriving.
- The common situation of heavy traffic greatly increases the difficulty of teaching ecodriving in public roads.
- Some driving instructors may own a vehicle that isn’t equipped with a trip computer or another device that shows fuel consumption.
- Ecodriving principles are not obligatory to know for becoming a professional driving instructor.

**Part B: Ecodriving for learner drivers / driving schools**

**Benefits**
- Ecodriving would create more educational time necessary to better comprehend driving in general.
Obstacles

- The way new drivers are examined (practical test) doesn’t allow for practicing the ecodriving techniques (maximum speed during the examination is 30 km/h since driving is done in highly populated urban areas).
- New drivers are quite stressed during the examination procedure and are not calm enough to practice ecodriving.
- New drivers sometimes just want to get the driving licence and don’t care for any long-term financial or environmental matters.
- The theoretical part of the education is sometimes too extended and confuses the new drivers.
- Ecodriving is not obligatory to be demonstrated during the practical examination of new drivers.
- New drivers are eager in driving fast in general.
- Education in ecodriving may increase the time and cost of training at the driving school.
- Sometimes there is no fear of accidents or even death regarding new drivers.
- Ecodriving theory is a very small part of the curriculum for training new drivers.

Part C: Ecodriving for licensed drivers

Benefits

- Companies are interested in implementing ecodriving programs in order to reduce their operational costs.
- Educating old drivers in ecodriving would be much helpful as it would enhance greatly road safety and would contribute greatly to the protection of the environment.
- Ecodriving for old drivers may increase the driving instructors’ income.

Obstacles

- Old drivers usually are not interested in ecodriving or learning it (old habits die hard).
- Many old drivers are confident that they drive well (even if this is not true).
- Many old drivers are certain that it is impossible either to implement ecodriving in every day life or in the case that someone implements ecodriving, it is very doubtful that someone will achieve any reductions of fuel consumption.
- Sometimes wealth (disinterest for fuel saving) and apathy for the protection of the environment are two great obstacles for practicing ecodriving.
- Drivers who drive a leased car (company’s car) sometimes don’t care of their fuel consumption and ecodriving correspondingly.

RECOMMENDATIONS

- A system on Education, Certification and Quality Control should be established for driving instructors, in order to get their professional licence and be appropriately trained in ecodriving.
- Driving examiners must also be trained on ecodriving, otherwise driving instructors efforts will have no meaning.
- The theoretical part of the driving curriculum must contain more on ecodriving. Currently only a few paragraphs on ecodriving appear in the learner drivers’ curriculum and these do not cover all the ecodriving techniques. However, very soon a new version of the curriculum is expected and hopefully it will contain more on ecodriving.
- The examination of the new drivers should include the assessment of the practical demonstration of ecodriving. Currently, ecodriving is assessed only during the theoretical test (a few questions) and not during the practical test as it is not foreseen in the official procedure for learner drivers of category B.
- Vehicles of the driving schools should be equipped with a fuel consumption device (e.g. trip computer). This is a major drawback because even if a driving instructor wishes to teach
ecodriving, he is unable to effectively prove the positive impacts of ecodriving regarding fuel consumption.

- The training of the driving instructors should be adequate but also simple and fast. Driving instructors wouldn’t like to be engaged in time consuming training activities.

- Ecodriving should be a separate chapter in the theoretical part of the curriculum and integrated totally in the practical part. Many driving instructors believe that ecodriving should be taught as a separate chapter, some time after the learner driver gets its driving licence in order to be able to really control its vehicle and practice effectively ecodriving.

- Presentation of the effectiveness of ecodriving, that it works in real conditions and clarification of all techniques in doubt. Several instructors (mostly those who have not received any relevant training) are not convinced on the effectiveness of ecodriving while driving under real conditions. There are also some techniques that put them in a dilemma such as rolling in neutral or with a gear engaged. Some of them also believe that especially regarding learner drivers, there may be a compromise on safety issues as learner drivers are unable to demonstrate ecodriving and at the same time to follow safety rules.

- If the market starts to ask for more ecodriving trainings (for old drivers) the instructors will make use of such trainings (bottom-up procedure). Currently there isn’t such a market demand for ecodriving trainings.

- National or European legislation could assist on the promotion of ecodriving if it became an obligatory element of the procedure for becoming a licensed driver (top-down procedure) (an example could be 2003/59/EC).

- The cost of getting trained in ecodriving for an instructor should be kept low. Most instructors avoid to tell which is the actual amount they are willing to spend on get trained, but in general this amount is below 100€ and depends strongly on the quality and duration of the training.

- The driving schools should target private companies and public organisations with fleets of vehicles as they are the most promising “customers”. There seems to be a demand for such trainings as the companies wish to further reduce their operational costs.

- Ecodriving should be obligatory during the renewal of the professional licence.

- New business opportunities could arise also if insurance companies offered reductions in insurance premiums upon ecodriving certification.

- Development and adoption of e-learning materials on ecodriving could assist driving instructors to attract more customers. There are many driving instructors that are interested in using a virtual ecodriving trainer when training learner drivers or even licensed ones.

### 6.2. Driving examiners

#### Part A: Fundamentals concerning Ecodriving

**Benefits**

- Ecodriving leads to lower fuel consumption and the relative costs.
- Ecodriving leads to a reduction in the emission of hazardous gases (NOx, SOx, etc).
- Ecodriving leads to noise reduction.
- Ecodriving reduces the costs for maintenance of the vehicle.
- Ecodriving increases road safety.
- Education and certification in ecodriving will greatly help driving instructors.
- Ecodriving reduces other relevant costs such as medical and insurance costs.
- Ecodriving contributes to a general positive change of attitude of life.

**Obstacles**

- Trainers that are not familiar with ecodriving believe it’s hard to teach it.
It has been proven in the past that it is quite difficult to change the current system of education and examination for new drivers and this is quite discouraging for some driving examiners to participate.

- The common situation of heavy traffic greatly increases the difficulty of examining ecodriving in public roads.
- Ecodriving principles are not obligatory to know for becoming a professional driving examiner.

**Part B: Ecodriving for learner drivers / driving schools**

**Benefits**
- Ecodriving would create more educational time necessary to better comprehend driving in general.

**Obstacles**
- Ecodriving theory is a very small part of the curriculum for training new drivers.

**Part C: Ecodriving in driving examination**

**Benefits**
- Ecodriving is considered very important during the examination as it leads to a good driving behaviour overall.

**Obstacles**
- The way new drivers are examined (practical test) doesn't allow for practicing the ecodriving techniques (maximum speed during the examination is 30 km/h since driving is done in highly populated urban areas).
- New drivers are quite stressed during the examination procedure and are not calm enough to practice ecodriving.
- Ecodriving is not obligatory to be demonstrated during the practical examination of new drivers, therefore examiners cannot penalise a candidate for poor implementation of ecodriving.

**RECOMMENDATIONS**

- A system on Education, Certification and Quality Control should be established for driving examiners, in order to get their professional licence and be appropriately trained in ecodriving.
- Driving instructors must also be trained; otherwise driving examiners’ efforts will have no meaning.
- The theoretical part of the driving curriculum must contain more about ecodriving.
- The examination of the new drivers should include the assessment of the practical demonstration of ecodriving. As already mentioned, examiners are not obliged by the official procedure to assess ecodriving qualities of the learner drivers. In addition, the way testing is undertaken doesn’t help to this direction. During the practical test, maximum speed is usually 30 km/h while the route selected is in highly dense urban areas with a lot of traffic. Therefore, learner drivers are unable to demonstrate ecodriving properly.
- Ecodriving should be a separate chapter in the theoretical part of the curriculum and integrated totally in the practical part.
- National or European legislation on the obligatory implementation of ecodriving by all relevant stakeholders (top-down procedure) (an example could be 2003/59/EC).
6.3. Policy makers

Part A: Fundamentals concerning Ecodriving

Benefits
- Ecodriving leads to lower fuel consumption and the relative costs.
- Ecodriving leads to a reduction in the emission of hazardous gases (NOx, SOx, etc).
- Ecodriving leads to noise reduction.
- Ecodriving reduces the costs for maintenance of the vehicle.
- Ecodriving increases road safety.
- Ecodriving contributes to reaching national targets on energy saving and protection of the environment.
- New driving instructors are trained on ecodriving principles during the educational period for becoming professional instructors. The older driving instructors are now trained with the use of ecodriving DVDs provided by CRES.
- In the new curriculum for the education of the new drivers, there will be even more ecodriving included.

Obstacles
- Driving behaviour in Greece is not at a very good level and therefore expectations from the implementation of ecodriving are quite low, regarding the possible benefits

Part B: Ecodriving for learner drivers / driving schools

Benefits
- Ecodriving is already integrated in the official procedure for training and testing learner drivers.

RECOMMENDATIONS
- Presentation of the effectiveness of ecodriving, that it works in real conditions and clarification of all techniques in doubt.
- If the market starts to ask for more ecodriving trainings (for old and new drivers) the instructors will press for more ecodriving (bottom-up procedure).
- National or European legislation on the obligatory implementation of ecodriving by all relevant stakeholders (top-down procedure) (an example could be 2003/59/EC).
- A monitoring system could be established to assess the results of ecodriving at a national level and its contribution to the national environmental targets. Therefore, policy makers could obtain solid data on the possible positive effects of ecodriving.
- Presentation of the ecodriving benefits in order to persuade policy makers to use ecodriving as a tool towards achieving national environmental targets.

6.4. Energy agencies / environmental research institutes / universities / academies

Part A: Fundamentals concerning Ecodriving

Benefits
- Ecodriving leads to lower fuel consumption and the relative costs.
- Ecodriving leads to a reduction in the emission of hazardous gases (NOx, SOx, etc).
- Ecodriving leads to noise reduction.
- Ecodriving reduces the costs for maintenance of the vehicle.
- Ecodriving increases road safety.
- Ecodriving reduces other relevant costs such as medical and insurance costs.
- Ecodriving contributes to a general positive change of attitude of life.
- Even if someone is using a not environmentally friendly vehicle, ecodriving allows for a partial compensation by reducing the environmental impacts.
- Ecodriving contributes to the reduction of the urban traffic congestion.
- Educating old drivers in ecodriving would be much helpful as it would enhance greatly road safety and would contribute greatly to the protection of the environment.

Obstacles
- Public awareness of ecodriving is quite low.
- In some cases people increase the risk of an accident by applying all the time ecodriving (e.g. some people avoid the use of breaks at all and try to decelerate only by shifting down gears).
- Appropriate education on road safety is lacking in Greece, especially regarding children and young people.
- Still, very few people in Greece are practicing ecodriving.

Part B: Ecodriving as business case

Benefits
- The cost-benefit ratio of ecodriving is excellent.
- Ecodriving may contribute to the reduction of any penalties imposed to Greece for any emissions in excess.
- Ecodriving may increase the income of driving instructors.
- Ecodriving may be part of the political agenda regarding the “Green Development” announced by the relatively new government.
- Companies are interested in implementing ecodriving programs in order to reduce their operational costs.

Obstacles
- The current bad financial situation in Greece.
- An organisation that would educate and certify driving instructors doesn’t exist.
- Reduction of fuel consumption deriving from the implementation of ecodriving may lead to reduced turnover for oil companies and reduced income from taxes for the government.
- There are no obligatory taxes in Greece regarding environmental protection.
- In general people are not willing to pay large amounts on such trainings.
- Drivers that do not practice ecodriving are obstacles to the ones that are willing to do so.
- There are doubts whether the integration of ecodriving in the official educational and examination procedure is done appropriately.
- Not everyone is particularly sensitive on environmental issues.
- A mass deployment of education for old drivers could face some practical problems during the implementation.
- There are no available subsidies or funding for trainings in ecodriving.
Part C: Future Outlook

Benefits
- Environmental awareness is increasing steadily.
- There are good examples of proper implementation of ecodriving in other countries.
- There is still a great unexploited potential regarding ecodriving.

RECOMMENDATIONS
- More funding available from the government or the European Union for research on ecodriving. The EU and Member States should invest on research for ecodriving. Furthermore, there should be subsidies for ecodriving trainings and / or reduction in circulation taxes for individuals certified on ecodriving.
- More funding available from the government or the European Union for further promotion of ecodriving. Energy agencies and other organisations should be funded in order to start new promotional campaigns and raise the level of public awareness.
- Cooperation of energy agencies/research institutes/universities with companies and organisations that are interested in such research. Research institutes/energy agencies should work on the production of reports on the possible positive effects of ecodriving. These reports could provide solid ground for interested companies such as insurance companies that are willing to implement ecodriving but are not yet convinced of its effectiveness.

6.5. Fleet operators

Part A: Fundamentals concerning Ecodriving

Benefits
- Ecodriving leads to lower fuel consumption and the relative costs.
- Ecodriving leads to a reduction in the emission of hazardous gases (NOx, SOx, etc).
- Ecodriving leads to noise reduction.
- Ecodriving reduces the costs for maintenance of the vehicle.
- Ecodriving increases road safety.

Part B: Ecodriving as business case

Benefits
- Ecodriving contributes to a better image of a company that implements such programs.
- Ecodriving contribute to the development of a company’s CSR (Corporate Social responsibility).
- Ecodriving is or should be part of a company’s Environmental Policy.
- Fuel consumption is a very important issue for fleet operators.
- Ecodriving can assist a company’s Cost saving program.

Obstacles
- The current bad financial situation in Greece.
- An organisation that would educate and certify drivers doesn’t exist.
- There are no available subsidies or funding for trainings in ecodriving.
- More than 1 hour training in ecodriving is necessary.
Companies are focusing on cost saving and ecodriving training expenses are not top priority.

RECOMMENDATIONS

- Presentation of the effectiveness of ecodriving, that it works in real conditions and clarification of all techniques in doubt. Research reports on ecodriving could be a valuable tool in order to persuade fleet operators to initiate ecodriving programs in their companies. Case studies and results from the same country and industry should be presented to further get them involved.
- The financial benefits should be stressed together with the environmental ones.
- Presentation of an effective and low cost monitoring tool for their employees. One main obstacle for fleet operators is that they are unable to assess the effectiveness of ecodriving since they cannot accurately measure reductions in fuel consumptions per vehicle and per driver. This is of utmost importance when applying incentives/awards policies to motivate the employees to apply ecodriving.
- Presentations of successful case studies that involved ecodriving, especially ones that are from companies of the same sector and country.
- Training on ecodriving for the employees of the company as part of offer from a leasing company. Some companies already offer such trainings as part of the deal.
- Information and guidance on other complimentary measures on fleet management that could be used together with ecodriving (e.g. car-sharing or car-pooling). If other alternative mobility measures are already implemented (such as car-sharing), ecodriving could further increase their effectiveness.
- Ecodriving could be integrated in the Environmental policy of the company or could be part of Corporate Social Responsibility CSR projects. There are a lot more chances for ecodriving to succeed when it is integrated in a greater policy (either environmental or CSR) like for example ISO 14001.

6.6. Car Dealers / Leasing Organisations

Part A: Fundamentals concerning Ecodriving

Benefits
- Ecodriving leads to lower fuel consumption and the relative costs.
- Ecodriving leads to a reduction in the emission of hazardous gases (NOx, SOx, etc).
- Ecodriving leads to noise reduction.
- Ecodriving reduces the costs for maintenance of the vehicle.
- Ecodriving increases road safety.
- Ecodriving reduces other relevant costs such as medical and insurance costs.
- Ecodriving contributes to a general positive change of attitude of life.

Part B: Ecodriving as business case

Benefits
- It's easier to “teach” environmental issues such as ecodriving to anyone at the place of work.
- Ecodriving contributes to a better image of a company that implements such programs.
- Ecodriving contributes to strengthening the bonds with customers.
- Ecodriving contribute to the development of a company’s CSR (Corporate Social responsibility).
- Ecodriving is or should be part of a company’s Environmental Policy.
• Fuel consumption is a very important issue.
• Results from the ecodriving trainings are surprisingly good.
• Ecodriving is a strong marketing tool.
• Ecodriving may be used as a tool to attract new customers (leasing company).
• E-learning of ecodriving could be very useful (car dealer).
• E-learning of ecodriving has a low cost compared to other kinds of trainings.
• Ecodriving e-learning is fast.
• Ecodriving e-learning may be addressed to people who are not specifically interested in the vehicle technology and just want to drive eco-wise.
• The latest measures taken by the government (increase of fuel price, circulation taxes linked to CO2 and respectively fuel consumption) increase the interest of customers on ecodriving.

Obstacles
• The current bad financial situation in Greece.
• An organisation that would educate and certify driving instructors doesn’t exist.
• There are no available subsidies or funding for trainings in ecodriving.
• An ecodriving program would not attract new customers (rental company).
• Lately, there are many changes at the legislation regarding leasing or renting vehicles that makes ecodriving and environmental issues become second in priority for such companies.
• Customers sometimes believe that ecodriving leads to increased travel time.
• There is no particular interest for ecodriving trainings from customers (rental company).
• Environmentally friendly vehicles that would further assist ecodriving are still quite expensive.
• There is a prejudice that the cost of ecodriving trainings is quite high.
• Ecodriving could reduce the differences of fuel consumption at every day use and manufacturers’ specifications.
• Someone has to know the basics on internet in order to participate in an E-learning training.
• Many customers are eager in driving fast leading to a high fuel consumption.
• More than 1 hour training in ecodriving is necessary.
• The traffic conditions do not allow for a continuous use of ecodriving.
• There are no dedicated tracks for ecodriving trainings.

Part C: Future Outlook

Benefits
• There is a steady increase of interest regarding environmental issues from the customers.

RECOMMENDATIONS
• Presentation of the effectiveness of ecodriving, that it works in real conditions and clarification of all techniques in doubt.
• The financial benefits should be stressed together with the environmental ones.
• Presentations of successful case studies that involved ecodriving, especially ones that are from companies of the same sector and country.
• Training on ecodriving for the employees of the company as part of offer from a leasing company.
Information and guidance on other complimentary measures on fleet management that could be used together with ecodriving (e.g. car-sharing or car-pooling) from their customers.

Ecodriving could be integrated in the Environmental policy of the company or could be part of CSR projects.

Ecodriving could be part of promotion activities / events / competitions. Some car dealers are already organising ecodriving competitions, but this has to be scaled up.

Salesmen could demonstrate how to achieve the fuel consumption specified by the manufacturer of the vehicle, by demonstrating the ecodriving techniques. It seems that currently in Greece there isn’t such a market demand on behalf of the customers. However, when ecodriving trainings or tools (such as dedicated software, in-board device to assess driving style) are given for free, these are most welcome especially when referring to specific target groups (for example customers with high environmental consciousness).

6.7. Automobile clubs

Part A: Fundamentals concerning Ecodriving

Benefits

- Ecodriving leads to lower fuel consumption and the relative costs.
- Ecodriving leads to a reduction in the emission of hazardous gases (NOx, SOx, etc).
- Ecodriving leads to noise reduction.
- Ecodriving reduces the costs for maintenance of the vehicle.
- Ecodriving increases road safety.
- Ecodriving is particularly useful because it reduces the environmental impacts without affecting the degree of mobility of citizens.

Part B: Ecodriving as business case

Obstacles

- The current bad financial situation in Greece.

RECOMMENDATIONS

- Automobile clubs could contribute to research in ecodriving especially regarding the road safety benefits.

6.8. Insurance companies

Part A: Fundamentals concerning Ecodriving

Benefits

- Ecodriving leads to lower fuel consumption and the relative costs.
- Ecodriving leads to a reduction in the emission of hazardous gases (NOx, SOx, etc).
- Ecodriving leads to noise reduction.
- Ecodriving contributes to a general positive change of attitude of life.
Part B: Ecodriving as business case

Benefits
- Ecodriving contributes to a better image of a company that implements such programs.
- Ecodriving contribute to the development of a company’s CSR (Corporate Social responsibility).
- Latest vehicle technologies assist the implementation of the ecodriving techniques.
- In such a bad situation of the economy, ecodriving could prove a valuable marketing tool.
- Ecodriving trainings could be linked to insurance premium bonus or malus.
- Even 1% reduction of road accidents with the use of ecodriving would be significant for some insurance companies.
- There could possibly be a reduction of the insurance premiums provided that the customer is certified ecodriving trainings.

Obstacles
- The current bad financial situation in Greece.
- The traffic conditions do not allow for a continuous use of ecodriving.
- There aren’t specific research results on ecodriving and reduction of road accidents.
- It’s difficult to change the driving culture in Greece.

Part C: Future Outlook

Benefits
- In general the insurance companies sector looks positively on ecodriving.
- There is great unexploited potential for ecodriving.

RECOMMENDATIONS
- Presentation of the effectiveness of ecodriving, that it works in real conditions and clarification of all techniques in doubt.
- The financial benefits should be stressed together with the environmental ones.
- Presentations of successful case studies that involved ecodriving, especially ones that are from companies of the same sector and country.
- Presentation of detailed results regarding ecodriving and the reduction of road accidents. There are some results on the effectiveness of ecodriving regarding road safety, however these are rather limited in a few countries and observed for a short period of time.
- Information and guidance on other complimentary measures on fleet management that could be used together with ecodriving (e.g. car-sharing or car-pooling) from their customers.
- Ecodriving could be integrated in the Environmental policy of the company or could be part of CSR projects.
- Ecodriving could be part of promotion activities / events / competitions.
## 6.9. Summary

### Table 6.1. Classification of obstacles.

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cost</td>
<td>The current bad financial situation in Greece sets ecodriving as a second priority</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Driving culture</td>
<td>It's difficult to change the driving culture in Greece</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Lack of certified driving instructors</td>
<td>Trained and certified instructors and examiners would contribute greatly to the further development of ecodriving</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Public awareness</td>
<td>Still in Greece, public awareness of ecodriving is generally low and for those who have heard of it, details on the ecodriving techniques are relatively unknown</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Legislation</td>
<td>Despite the fact that ecodriving has been integrated in the official procedure of training and testing new drivers, there is still much room for improvement and practical demonstration of ecodriving techniques should be part of the mandatory criteria. A European directive could contribute in promoting further ecodriving.</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Driving instructors opposition to training and certification</td>
<td>Some driving instructors are expected to oppose to a training, examination and certification procedure (since these driving instructors claim they are fully aware of ecodriving)</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Infrastructure</td>
<td>There are no dedicated tracks for training new drivers in ecodriving. Also the common situation of heavy traffic greatly increases the difficulty of teaching ecodriving in public roads</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Lack of monitoring equipment</td>
<td>If the vehicles that the driving instructors use during the trainings are not equipped with a trip computer, it's difficult to demonstrate and convince on the effectiveness of ecodriving. This applies also to individuals who own a car without trip computer and to fleet managers that cannot manage a fleet on fuel consumption effectively if such equipment is absent</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Driving experience as a prerequisite to implement ecodriving</td>
<td>It is a common belief that someone must have adequate experience on driving in real conditions (min 1 year or about 20,000 km) in order to be able to practice the ecodriving techniques</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Disinterest for cost reduction, environmental protection</td>
<td>Sometimes wealth (disinterest for fuel saving) and apathy for the protection of the environment are two great obstacles for practicing ecodriving. Also drivers who drive a leased car (company’s car) sometimes don’t care of their fuel consumption and ecodriving correspondingly</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Lack of data</td>
<td>There is no extended research and results in Greece on the actual benefits of ecodriving (e.g. reduction of road accidents)</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Duration of short duration-trainings</td>
<td>Many believe that 1 hour training is not enough to fully realise the benefits of ecodriving</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 6.2. Classification of benefits.

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Environmental impact</td>
<td>Ecodriving reduces hazardous emissions to the environment. Also reduction of noise</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Cost saving</td>
<td>By lowering fuel consumption and maintenance costs</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Road safety</td>
<td>Increased road safety</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Change of attitude of life</td>
<td>Adapt a more calm attitude</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>Business opportunity</td>
<td>By selling trainings to old drivers and professional drivers</td>
<td>2</td>
</tr>
<tr>
<td>6.</td>
<td>Contribution to national</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>environmental targets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Urban traffic</td>
<td>Ecodriving contributes to the reduction of the urban traffic congestion</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>Cost-benefit</td>
<td>The cost-benefit ratio of ecodriving is excellent</td>
<td>2</td>
</tr>
<tr>
<td>9.</td>
<td>Reduction of penalties</td>
<td>Ecodriving may contribute to the reduction of any penalties imposed to Greece for</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>at a national level</td>
<td>any emissions in excess</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Corporate Social Responsibility (CSR)</td>
<td>Ecodriving contributes to a better image of a company that implements such programs</td>
<td>1</td>
</tr>
<tr>
<td>11.</td>
<td>Mobility</td>
<td>Ecodriving is particularly useful because it reduces the environmental impacts</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>without affecting the degree of</td>
<td>mobility of citizens</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mobility of citizens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Insurance premiums</td>
<td>Ecodriving trainings could be linked to insurance premium bonus or malus</td>
<td>2</td>
</tr>
</tbody>
</table>
7. Hungary

This report consists of the assessment results of the benefits, obstacles and recommendations to overcome these obstacles identified for different stakeholders in terms of integrating ecodriving into the B category learner driver education in Hungary as well targeting licensed drivers with ecodriving education. The report is based on personal and phone interviews conducted with the following stakeholders: policy makers, representatives of driving school associations, driving instructors, examiners, auto club, as well as with car dealers.

The general impression is that the Hungarian players are aware of the ecodriving concepts both technical and philosophical wise. The key stakeholders like the main Hungarian driving school associations and several driving schools admit that ecodriving is useful from environmental, economic and also from safety point of view and they think it is relevant in their profession.

The main identified benefits of ecodriving in Hungary are:

- Environmental benefits (e.g. reduction in CO2, NOx, etc. emission, energy savings);
- Financial benefits for the drivers (e.g. fuel savings, lower wear and tear costs);
- Social benefits (e.g. less accidents due to a safer, more conscious driving style);
- Potential business opportunities for driving instructors.

The main identified obstacles of ecodriving are:

- Lack of structured information on ecodriving;
- Lack of interest of learner drivers (exam focused learning style);
- Lack of regulation on ecodriving elements in the current driving education and examination;
- Low demand for ecodriving education among licensed drivers (low interest and financial concerns);
- Financial concerns of fleet operators.

Some elements of ecodriving are already present in the current category B learner driver education. However, most of the respondents agree that ecodriving could be included more. Concerning the driver education environment in Hungary, it is important to see that currently it is changing significantly. There are several modification initiatives for the Hungarian learner driver education as well as for the driving instructor education. In additional, there are personal changes among the responsible policy makers due to the government change in 2010. These changes makes the preparation of ecodriving integration plans more difficult but also gives possibilities to integrate ecodriving together with other changes into the new education systems.

In terms of the licensed drivers ecodriving education, the main obstacle is the low demand for ecodriving trainings. Without awareness rising campaigns and government support, the main stakeholders do not see opportunity for big change in Hungary.

All interviewed stakeholders were interested in cooperating with the project, however the final agreements and the methods of cooperation with the Hungarian players in trainings and sustainability will depend on the project outcomes.

The main obstacles of enhancing ecodriving skills of learner and licensed drivers are lack of information, interest and financial resources. The main recommendations addressing these problems are:

- Provide case studies, best practices on ecodriving elements and long term-effects.
- Organise campaigns on ecodriving.
- Include ecodriving into the current category B driving education and exam system with an integrated, harmonised approach.
- Provide standard, high quality materials for ecodriving education for learner drivers and instructors.
- Increase the commitment and interest of driving instructors.
Increase of the demand of licensed drivers by:

- Increasing the awareness of the society as general as well of fleet operators by providing information on ecodriving elements as well as on its effects to the different target groups on a structured, easily available way.
- Providing support for organising ecodriving trainings.

**Driving education (category B)**

Some elements (e.g. correct gear shifting, frequently checking tyre pressure, etc.) of ecodriving are already part of the driving education in Hungary. However, the environmental aspects of these “tips” are not highlighted and, for instance, they are not collected together in one chapter as ecodriving elements. Therefore, there are opportunities to integrate better the ecodriving already into the current category B driving education by highlighting the environmental aspects as well as emphasising more ecodriving tips both in the theoretical and practical parts.

Without legal regulation, only the commitment of driving instructors could be increased in order to mention and highlight ecodriving techniques and environmental concerns during the driving lessons. Due to the very strong price competition in Hungary, proper ecodriving education can be based only on legal regulation (measurable regulation) on long term.

**Driving instructor education**

The current (new and already certified) instructor education will be modified from 2011. The integration of ecodriving can be based only on the new education system.

**Licenced drivers education**

There is already demand for eco-driving lessons in Hungary. However, this demand is quite low. Mainly multinational organisations operating fleets educate their drivers. By providing information on ecodriving effects and by marketing campaigns, the demand of fleet operators as well as private drivers could be increased.

Examples, experiences in countries where ecodriving is already part in the driving education and examination could help the Hungarian integration.

It is also important to clarify what kind of cooperation opportunities can the project offer (e.g. marketing cooperation, etc.) and what kind of requirements are needed/recommended to be able to offer Ecowill ecodriving courses in order to be able to cooperate with the Hungarian interested stakeholders.

Long term efficient changes can be reached only with the involvement of the main Hungarian stakeholders (authorities, driving schools and their associations, etc.). In order to be able to adopt the developed certification and education methods to the Hungarian situations intensive dialogue is required with the main stakeholders.

### 7.1. Driving instructors

**Main benefits of ecodriving identified for driving instructors**

- Potential competitive advantage for driving schools and instructors offering driving education for learner drivers with integrated ecodriving concept.
- New business opportunity by offering driving education for licensed drivers.
- Environmental and social responsible behaviour.

**Main obstacles of ecodriving identified for driving instructors**

- There is information available related to ecodriving tools, techniques and educational methods in Hungarian, but the information is not available in a structured way to be able to easily update knowledge base on ecodriving.
- There is no official, certified/standardised national regulation on ecodriving education and examination for learner drivers, and learner drivers mainly focus on passing the exam and not on learning the best driving techniques.
There is a very high price competition in offering driving courses for learner drivers, therefore, the instructors need to offer the practical lessons on low price and not necessary with the best didactical methods.

Low demand for extra driving courses from private people as well as from organisations

The ecodriving elements are not integrated into the instructor education and further education of licensed instructors.

Instructors do not have the financial resources and time to attend long and expensive courses on ecodriving.

Many instructors and examiners do not know how to use built-in tools, camera, etc. that could support ecodriving education. They do not keep up with the technical development and do not have the financial sources to buy these equipments.

All interviewed think ecodriving is relevant to their profession. Most of them agree that ecodriving as a concept should be part of the driving education from the beginning as it is hard to change of driving habits afterwards.

**Ecodriving for learner drivers/driving schools**

- Some elements of ecodriving are already part of driving education also at category B.
- The current theoretical material contains elements of ecodriving under safety measurers and general driving technique introduction. Some instructors do not feel the need to include separate ecodriving section; however, most of them expressed that ecodriving elements should be presented on a more structured and highlighted way.
- The official 30 hours practical part does not allow the instructors to cover all topics necessary for the students adequately. Without legal regulation the priority of ecodriving depends mainly on the instructors attitude, thus not handled by many of the instructors.
- The attitude of the students towards ecodriving is not adequate, they are generally not committed. The students learn on an exam-focused way and concentrate on learning the basics, not the best techniques. Without emphasising ecodriving more during the exam, it is hard to encourage learner drivers to focus on ecodriving techniques, unless they are personally interested in it.

**Ecodriving for licensed drivers**

- There are already driving schools offering theoretical and practical ecodriving courses for licensed drivers. The customers of these services are mainly legal persons, multinational organisation, operating their own fleets. In spite of the long term financial benefits, the demand for these kinds of courses is very low in Hungary. The two main reasons of the low demands are the lack of information and financial resources.
- There are examples for ecodriving education with simulators as well that allows to offer the courses at lower price. The main customers of these courses are professional and not category B drivers. (Professional drivers are obliged to take part in ecodriving education.)
- Concerning the education of licensed drivers, possessing certified ecodriving instructor license could give a competitive advantage to the driving schools and instructors.

**Future outlook**

- The interest and commitment of driving instructors is important from the future perspective of ecodriving. Besides regulation, increasing the commitment, educate and certify instructors could encourage the integration of ecodriving into the Hungarian driving education.
- Increasing the willingness of taking part in ecodriving education will be the key aspect in the future of ecodriving in terms of the licensed drivers. Informative materials (electronic as well as printed), practical tips, best practices based on experiences combined with marketing campaigns could be useful in awareness rising.
RECOMMENDATIONS

In the current system the appearance of ecodriving depends mainly on the attitude of the instructors. Beyond the basic information already existing in the driving materials, the focus on ecodriving in the theoretical as well as in the practical parts is up to the instructor. Therefore, in addition to integrate it better into the driving curriculum with regulation, increasing the commitment of the instructors is also crucial. The commitment of the instructors could be increased by education and awareness raising.

Driving instructor education

Ecodriving could be integrated into the education of new driving instructors as well as in the advanced education of the already certified instructors after finalising the instructor education system changes in Hungary. Right now there are initiatives to modify both education methods (new and already certified instructor education), however, ecodriving could take the advantage of these modification and get integrated into the new system in the modification phase.

International examples and experiences could offer useful alternatives to the policy makers to assist them in the new education system development.

Licenced drivers

There are already driving schools offering eco-driving courses for licensed drivers. The customers of these services are mainly legal persons, multinational organisation, operating their fleets. By increasing the demand of organisations as well as private drivers could further develop this segment in Hungary. Marketing campaigns as well as international experiences could assist ecodriving exploitation among licensed drivers.

Concerning the education of licensed drivers, possessing certified ecodriving instructor license could give a competitive advantage to the driving schools and instructors.

The involvement of the two main driving school association (JASZKOE and MAISZ) as well as driving schools already providing or willing to provide ecodriving education is needed for the project success.

Role of simulators can be considered as well. There are approximately 20 simulators at the moment in Hungary, but the instructors and examiners do not utilise the benefits of the machines and generally do not want to use them. Promoting the purchase and use of simulators (driving schools could offer hours on a much lower price level) may result in better acceptance rate amongst examiners as well.

7.2. Driving examiners

In Hungary, the National Transport Authority (Nemzeti Közlekedési Hatóság) is the organisation in charge of driving examination.

Main obstacles of ecodriving identified for driving examiners

- Lack of driving exam regulation on ecodriving elements
- Subjectivity of evaluating ecodriving skills

The interviewed driving examiners are aware of the main concept of ecodriving as well as of its environmental, financial, and social aspects.

Ecodriving for learner drivers/driving schools

- Further integration of the ecodriving techniques into the current driving education and exam system regulation is needed. Examiners admit that ecodriving is not emphasised in the driving curriculum and practical education.
- A harmonised driving education and exam system is required to be able to integrate ecodriving better into the current ecodriving education.
**Ecodriving in the driving examination**

- Only minimal elements of ecodriving are part of the theoretical and of the practical driving education and exam in Hungary (tyre pressure, switching gear, etc.) The theoretical exam is computer-based and exam programme is able to handle several functions and extendable with further questions.

- There are no guides, instructions on the ecodriving evaluation methods to be able to make the ecodriving evaluation on the practical exam on an objective, harmonised, comparable way.

- It is hard to objectively evaluate the ecodriving skills of the learner drivers, especially as they are stressed on the exam. Additionally, gaining ecodriving skills requires driving experience, while category B learner drivers have only minimal experience. There are concerns that as there is a single stage exam system in Hungary, it is too early to evaluate ecodriving skills on the exam. The proper evaluation would require multiple-stage exam system.

- Objective ecodriving evaluation is not possible on the exam as equipments capable to measure e.g. fuel consumption are not used.

- Many instructors and examiners do not know how to use the camera, built-in tools. They do not keep up with the technical development and not have the financial sources to buy these equipments.

**Future outlook**

Concerning ecodriving from examination point of view, change in the legal regulation is required to encourage the integration of ecodriving into the Hungarian driving exam system and support the work of examiners.

**RECOMMENDATIONS**

Without legal regulation, the involvement of driving examiners in testing the ecodriving skills of the learner drivers at the exam is not possible. In case, ecodriving will be official part of the driving exam, international experiences on used methods, measures, tests could assist the integration process into the ecodriving examination and support the evaluation creation procedures in order to reduce the subjectivity elements.

7.3. **Policy makers**

The Hungarian Transport Authority is responsible for the education and examination system development in Hungary. The Authority is controlled by the Ministry of National Development.

**Main benefits of ecodriving identified for policy makers**

- Reduction of energy consumption and CO2, NOx, etc. emissions
- Safety effects

**Main obstacles of ecodriving identified for policy makers**

- Environmental aspects are not among the key education and exam aspects (e.g. safety)
- Concerning the practical education, and potential subjective elements in the exam, without convincing and functional suggestions the integration of ecodriving into the driving exam system (category B) is not realistic.
- Difficult to create a fair, reliable, harmonised exam system that is able to combine safety, ecodriving, etc. elements
Ecodriving for learner drivers/driving schools

- Currently only some elements of ecodriving (e.g. correct gear shifting, checking tyre pressure regularly, etc.) are part of the driving education in category B; however, it is not an emphasised separate section in the curriculum and exam.
- Due to the low minimum driving lesson requirement it is difficult to integrate ecodriving into the driving education on an efficient and controllable way.
- The theoretical exam is computer-based and exam programme is able to handle several functions and extendable with further questions.
- The practical exam is competence and mistake based where the elements of ecodriving are presented at a minimum level.

Driving instructor education

- After a several year long pause, the education of driving instructors started again in 2009 at the Budapest University of Technology and Economics with a test phase. The first graduation in the one-year long programme was in autumn 2010. The evaluation of the first class is under progress right now. The new, final instructor education system will be based on the evaluation results.
- Concerning the already certified driving instructors, integrating ecodriving into the official advanced course could be a possible way for their involvement. Currently, there is an annual obligatory 1- or 2-day long course (organised by driving schools and associations and controlled by the Hungarian National Authority) that will also change in the future.

Future outlook

Best examples, case studies, international experiences on ecodriving education and exam system would be useful concerning the future of ecodriving regulation in Hungary.

RECOMMENDATIONS

The Hungarian Transport Authority is responsible for the driving education in Hungary. There are and also were initiatives to change the current driving education system as well as the new instructors’ and already certified instructors’ advanced trainings.

- The involvement of a sample of driving students (category B) into the Ecowill ecodriving education activities could provide statistics on fuel saving efficiency compared to not involved students to be able to influence future regulation modifications by Hungarian statistics/results on long term.
- International comparison of ecodriving education methods and experiences in the frame of the given education and exam system could support the Hungarian regulation modification.
- The integration of ecodriving into the learner driver and instructor education and examination is only possible with an integrated approach to assure long term effects.

7.4. Energy agencies / environmental research institutes / universities / academies

Main benefits of ecodriving identified

- Environmental benefits (energy savings as well as emission reduction)
- Economic benefits (energy savings, less accidents)
- Social benefits (e.g. better air quality, less traffic accidents)

Main obstacles of ecodriving identified

- Hard to measure short/long term effects of ecodriving on fuel savings as well as on CO2, Nox, etc. reductions
- Ecodriving is not a priority on the political agenda
- Financial constraints of purchasing and using the appropriate equipments, lack of human and financial sources for initiating major campaigns

In Hungary, the Energy Efficiency, Environment and Energy Information Agency Non-Profit Company (Energy Centre) is the national energy agency responsible for the improvement of the energy efficiency and renewable energy utilization. However, the activities of Energy Centre currently do not cover transport related activities. They support the idea of the project but could not contribute effectively to the eco-driving assessment in Hungary.

Ecodriving is part of research activities of universities in Hungary. For instance, on the Vehicle Department of the Budapest University of Technology and Economics Budapest ecodriving is part of the fleet management activities where they analyse feel management with integrated economic, environmental, and safety approach. Additionally, the University hosted the one-year long trial period of the new driving instructors education in Hungary in the period 2009-2010.

Due to the limited energy resources and rapidly changing technologies, ecodriving will become more important in the future. Further clarifications and specifications will be needed based on the technological developments.

**RECOMMENDATIONS**

The academics and the Energy Centre in Hungary could be motivated to provide concise and structured information about the developments in ecodriving. Better cooperation and information sharing between the relevant institutions could help the ecodriving integration process.

### 7.5. Fleet operators

**Main benefits of ecodriving identified for fleet operators**
- Financial benefits (e.g. lower fuel consumption and wear and tear costs)
- Marketing tool representing environmental and social responsibility

**Main obstacles of ecodriving identified for fleet operators**
- Required financial investment (training fee as well as the lost working time of the employees)
- Long-term return rates (not medium or short term)
- Hard to motivate the drivers to drive on an eco friendly way on long term

**Ecodriving as business case**
- Currently, the need for ecodriving courses is very low in Hungary. There are fleet operators interested in ecodriving, however, most of them, even those, who pay attention to environmental aspects, focus more on the technological development of the cars, than on the driving skill improvements of the drivers.
- Though the long term saving opportunities, fleet operators generally reduce investments in their fleets. Mainly international organisations are interested in further safety and ecodriving techniques for their drivers. According to the experience of fleet operators, ecodriving education alone is not enough. The financial motivation of the drivers is also important to reduce fuel consumption on long term. Drivers can be motivated only if eco-drivers are rewarded, preferably with financial tools.
- Fleet operators interested in ecodriving operate mainly fleets of trucks, light duty vehicles, etc. with higher training investment return rates and not personal fleets.
RECOMMENDATIONS

There is already demand for ecodriving education from fleet operators in Hungary. Organisations interested in it are mainly multinational organisation with bigger fleets. However, this demand is currently not enough to develop ecodriving course concepts for licensed drivers. Even the demand of fleet operators for fuel saving is mainly technology and not driving behaviour focused.

With statistics on economic benefits, access to contact of ecodriving providers and marketing advantages, showing good examples from Hungary and abroad – motivational videos, as well as with governmental programmes, fleet operators could be further encouraged to take part in ecodriving activities.

7.6. Car Dealers / Leasing Organisations

Main benefits of ecodriving identified

- Marketing tool
  - Emphasising fuel saving and air pollution reduction possibility
  - Can be integrated into the customer relationship management

Main obstacles of ecodriving identified

- Low interest/demand of customers

Ecodriving as business case

- Many car brands (e.g. Toyota, Honda, Peugeot) emphasise the environmental characteristics of their cars, however, all of them focus mainly on the technological characteristics (e.g. motor and fuel type, fuel consumption, CO2-emission, recycling of the different elements) and they do not deal with the driving behaviour of the drivers in Hungary. The fuel consumption and CO2-emission is indicated in line with the 80/1260/EEC and (CE)715/2007 regulations. Concerning the driving behaviour the only thing indicated usually are that the final fuel consumption depends not only on the cars’ characteristic but also on the driving behaviour of the drivers.
- Dune Autó Ltd. has already organised environmental protection related events, however, they focus on the technological developments and not on the driving behaviours. Their experience with these kinds of events is that the Hungarian market is not developed enough for the new environmental technologies.
- They also feel that the attitude towards ecodriving, the people’s interest in ecodriving is inadequate. In terms of the potentials of the eco-driving concepts they support the idea of the awareness raising in the driving behaviour in order to change the people’s attitude towards the environmental affects of human behaviour.

Future outlook

The future attitude towards ecodriving depends mainly on the success of awareness raising activities, political and financial support of the government as well as on the financial situations of the fleet operators.

RECOMMENDATIONS

Car dealers are mainly interested in business opportunities (marketing as well as extra service/programme for their clients) concerning ecodriving. Therefore, convincing statistics of ecodriving results and marketing activities could support their future involvement.
7.7. Automobile clubs

There is one Automobile Club in Hungary, the Hungarian Auto Club that is member of FIA (Federation Internationale de l’Automobile). They offer very diverse service portfolio to the public. Besides the services to their club members, they educate not only driving students but grammar and high school students as well on transport rules on their own practice field in Budapest. They also organise generally 1-week long education session in each bigger Hungarian city in the frame of their lifelong transport education.

Main benefits of ecodriving identified for automobile clubs

- Environmental benefits (fuel saving, better air quality)
- Social responsible behaviour
- Financial benefits (business opportunity, marketing tool)

Main obstacles of ecodriving identified for automobile clubs

- Low interest in ecodriving
- Lack of financial resources for campaigns

Ecodriving as business case

- The Hungarian Auto Club operates driving school where they educate learner drivers as well as licensed drivers. Their instructors are highly qualified and pay attention to ecodriving aspects during the practical lessons of learner driver education.
- They also provide theoretical ecodriving courses combined with safety education. However, their experience is that the clients are mainly interested in safety techniques rather than in eco-driving. The main clients are fleet operators.
- They have publications on ecodriving in Hungarian; however, national level awareness raising is needed to be able to catch the attention of the people.
- They share the general opinion of driving instructors (see chapter 2)

Future outlook

Awareness raising and marketing campaigns as well as state activities, support is needed to encourage the integration of ecodriving and its positive elements into the Hungarian culture.

RECOMMENDATIONS

Besides the general services to the auto club members, the Magyar Autóklub (Hungarian Auto Club) takes part in the driving education (also category B), and provides already theoretical ecodriving courses based on materials developed by themselves.

Recommendations:

- Dissemination campaigns could increase the currently low demand of licensed drivers for ecodriving trainings.
- Certification of ecodriving trainers could give additional value to attract new learner and licensed drivers as well.

Financial support in awareness raising and training implementation could also encourage their future involvement.
# 7.8. Summary

Table 7.1. Classification of obstacles

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Lack of adequate information on ecodriving</td>
<td>Information available to the public on ecodriving elements and effects are not adequate and structure properly</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Lack of adequate regulation on ecodriving</td>
<td>Lack of integrated approach in involving ecodriving into the driving education and examination system</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Short minimum time period of driving education</td>
<td>It is difficult to officially integrate ecodriving into the current frame of the driving education, especially into the practical part (category B)</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Very high price competition</td>
<td>Instructors tend to focus on meeting the minimum requirements in giving lessons rather then on the best outcome of the lessons. The learners thus will in high proportion pay for extra hours. The driving schools providing proper education have higher rates.</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Attitude of instructors</td>
<td>Without legal support the integration of ecodriving elements into the education system depends only on the commitment of the instructors</td>
<td>1</td>
</tr>
<tr>
<td>6.</td>
<td>Subjectivity of ecodriving skill evaluation</td>
<td>It is difficult to minimise the subjectivity of ecodriving skill assessment during the practical exam.</td>
<td>1</td>
</tr>
<tr>
<td>7.</td>
<td>Harmonised examination</td>
<td>It is difficult to combine the ecodriving skills of the learner drivers without standard requirements</td>
<td>1</td>
</tr>
<tr>
<td>8.</td>
<td>Low need for ecodriving training</td>
<td>Currently the demand is low for ecodriving training for licensed drivers (due to financial reasons, interest)</td>
<td>1</td>
</tr>
<tr>
<td>9.</td>
<td>Category B education as well as instructor education is under progress right now</td>
<td>It is difficult to suggest alternatives for ecodriving integration when the system is also changing and in case ecodriving would not get integrated into the education during the modifications, later involvement might be more difficult as that would require further modifications</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 7.2. Classification of benefits

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Environmental benefits</td>
<td>Results in fuel saving and air pollution reduction</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Financial benefits</td>
<td>Fuel saving, less wear and tear costs, safer driving</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Social benefits</td>
<td>Safety effects as well as the health effects of better air quality</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Potential competitive advantage, image as well as extra service</td>
<td>Marketing tool to present environmental and social responsibility as well as extra service for the certified instructors, driving schools and for organisations taking part in ecodriving education.</td>
<td>1</td>
</tr>
</tbody>
</table>
8. Italy

In the preparation of this report the following interviews were carried out: with 11 drivers instructors, 1 policy maker, 1 representative of the National Energy Agency (ENEA) and 1 member of the Automobile Club.

On the contrary, driving examiners, car dealer and fleet operator were not considered.

These results come from a meeting with all these stakeholders in Milan and from the results of surveys realized during the month of September 2010. During the meeting, all the strengths and weakness related to ecodriving and also all the possible ways to promote it were confirmed by the stakeholders and by the surveys.

Generally speaking, the analysis reveals that, apart from the lack of political intervention in the field of ecodriving, which is a very serious problem for a country such as Italy, everyone thinks that the ecological driving style is a very important subject.

So the fact is that in Italy, there is a whole system to realize: from the programs in the driving schools until the introduction of certification systems and quality.

The important data is that everyone believe that it is a great chance for our country especially from the point of view of the contribution that everyone is called to give to the preservation of the environment.

All respondents agree to say that it is easier to teach it to the young people through a targeted learning pathway not only to play in driving schools but also in the schools of education, in order to contribute to create a green conscience that is still missing in Italy. To do this, it is necessary that everyone – first of all institutions - understand the real importance of this style of driving.

As for licensed people, the way to teach is a bit different: it is necessary to give incentives and to spread the importance of ecodriving with a strong initial public communication campaign where people can perceive all the advantages connected to these new concepts. A part from this, all respondents agree that it would be possible to create for licensed people some specific training courses (not too long), through driving schools.

The respondents also agreed that, at the beginning, it would be very hard to drop some common beliefs related to drive, but despite these initial obstacles, people interviewed think that ecodriving is the future and it is also a moral duty that all citizens should observe just following a few important tips.

All the stakeholders interviewed have underlined the same ways to enhance ecodriving. The main points regards: government intervention, training, incentives, certifications and a massive campaign. Only through this path it will be possible, in their opinion, to spread ecodriving in the right way.

The impression is that all stakeholders are ready for changes and they also think it is the right time for people to catch the benefits related to ecodriving.

8.1. Driving instructors

The driving instructors interviewed educate on average 200 people per year. They consider ecodrive both as a technique and a philosophy. Many of them say that unfortunately ecodriving is still not important for their profession also because in Italy does not exist quality controls and certification systems for instructors. The driving instructors suggest that the introduction of these initiatives (quality, etc) could guarantee the quality of teaching thanks to a continuous training.

Despite this fact, many of them are experienced and have many training courses related to ecodriving and to sustainable mobility in their curriculum: all the respondents are ready to update their knowledge, through new training courses.

Everyone says that all the ecodriving tips are important (with no particular preferences) while everyone agree that ecodrive is absolutely indispensable for our society and it's time to give it the importance that it must have.

Naturally, there are some problems connected to a psychological aspect of the drivers, which have to drop some common beliefs related to drive and also to combat the reluctance to change their driving style. Other problems are connected with not yet licensed young people that, at the moment, have to
follow no particular training courses related to this subject and don’t have to pass a specific exam on ecodrive. So, for everyone, the introduction of ecodriving will be a very slow but necessary process, both for licensed people and for not licensed ones.

The respondents say that there are no prejudices against ecodriving by the professional driving instructors, with the exception of the resistance of the oldest who do not want to lengthen the procedure. As mentioned before, everyone say that ecodriving is not part of the driving school curriculum in our country, despite all the advantages it can give immediately. They believe it’s time to update programs and to move in the same direction of the car industries which are always more sensitive toward the theme of the respect of the environment. To do that, it is important to change things both for instructors and for examiners to give them the necessary instruments to teach in the right way.

To spread ecodriving, communication campaigns are important but the most important element is the training, as a way to communicate knowledge to change driving style and to assume more correct attitudes. Training can be done in different ways: not only in the classroom, but also with technical instruments, with practical examples, with workshop, with meetings.

Respondents say that there are still many unexpressed potentialities connected to ecodriving: this is the reason why it should be better to prefer an integrated approach in order to make people understand that it is not an isolated concept, but it is part of the style of driving.

On the contrary, the instructors prefer the modular approach just for licensed drivers. Obviously, all must be part of an harmonising process to avoid conflict between the training and the evaluation test. Everyone agree that the only way to make people believe that “ecodriving” is important is to make ecodriving part of the final test to get the license, otherwise, everything will be useless. There should be also a particular way to communicate ecodriving; people should understand that it is a chance and not a limitation, it should suggest but not impose, it should recommend but not require. In this contest, instructor will have an important role: starting from wrong attitudes they have to propose a more ecological driving model.

Considering different target of users and the “ecodriving” as a potential business case, some instructors think that one important group of user to which commercialize ecodriving are those who drive for many km/year, such as sales agents and truckers. For them, it is possible to imagine to organise meeting, demonstrations, training courses with incentives. An alternative way would be to organize training courses for people who are just buying a new car, in order to explain them that the new car isn’t enough for the environment, but it is important also to drive in the right way. Another proposal is to reduce taxes or the insurance premium to people who will attend such courses.

In the question related to the reasonable price for 1 hour of training for licensed drivers, some interviewees said that the average price would be 50 euro (maybe too high for a person who has already got the driving license and has simply to integrate their knowledge!). On the contrary, regarding to the price which instructors are available to pay for a training course, most of them don’t give an appropriate answer, while just a few of them declare that they are available to pay what is necessary to be informed and trained in the right way.

RECOMMENDATIONS

The survey demonstrates that the one of instructors is the most involved category in the subject of ecodriving. In fact, they have many ideas to improve its spread.

What should be done / improved (legal, financial, administrative, social, etc. aspects) in order to enhance ecodriving activities:

1. The first activity to be done from the legal point of view is to make the government be aware of ecodriving. All the changes have to start from government which must take into account the situation and to make interventions trying to reduce the existing gap between Italy and other European countries. It should adequate laws so to give ecodriving the importance that it needs;

2. Secondly, under the administrative aspect, it should be necessary to involve instructors in training courses related to the subject;

3. Another element is the social aspect: that is why it is important to start from training in schools because it contributes the growth of the ecological awareness among young people. Then, the
training must continue in the driving schools which have to offer a new approach thanks to the integration of ecodriving with the subject already studied, but it is not enough. A part from theoretical lessons, also practice should be very different: young people, in fact, must get a new training by driving lesson on the road and must “touch” the advantages of this driving style. In this contest the respondents underlined also the need to organise new evaluation tests so to make people perceive the importance of this subject. Naturally, training should involve also already licensed people for whom it is necessary to plan different approaches considering the features of the belonging group (age, sex, annual income). In this case, considering that probably all licensed people are aged and have not much time for this things, lessons should be shorter and should be organised to make them understand in a very simple and easy way why to choose ecodriving.

4. From a financial point of view, the local organisations together with the driving schools should organize co-founded ecodriving training courses for young people and for the one already licensed;

5. To enhance ecodriving activities it is necessary also to organise great campaigns, thought all media which are the “holders of knowledge” of our time, to promote events, to participate at focused workshops and to distribute flyers;

At the moment instructors are very interested in ecodriving concepts and they think that it should be a chance for their job. They are available to be part of Ecowill courses, we had a meeting with them related to WP2 during which we underlined the next operating steps. For them it is important to get a “certification” to be used for their professional future. It should also be important to give visibility to their driving school on the ecodriving web site.

**How to motivate drivers to take part in ecodriving trainings. What aspects / issues should be addressed while communicating them:**

1. Some respondents think that it could be useful to promote ecodriving with incentives. Many of them propose to reduce taxes (the ownership tax) or insurance premium to people who will attend such courses. In particular, these kind of economical benefits could be very useful for fleets operator (i.e. trackers) and sales agents, as they drive many miles a year and in this easy way could save money;

2. Drivers could be motivated to take part in ecodriving courses if they understand that to buy a new car isn’t enough for the environment, but it is important also to drive in the right way. That is why it could be useful to propose these courses in the showrooms, together with the sale of a new car.

**8.2. Policy makers**

First of all, it should be noted that the policy makers interviewed was a representative of the Vehicle Registration, which then represent also the category of driving examiners.

He defines ecodriving both as a technique and a philosophy, he says that ecodriving is very important for his work and he is involved in these new concepts since different years: for this reason, he considers his knowledge related to the subject as sufficient. He did his personal training on the books, by reading specialised magazines and he thinks that ecodriving is very useful to respect environment thanks to the CO2 reduction. He doesn’t see any problems with ecodriving and he thinks it can be part of the interventions in environmental policy.

He thinks it would be important to introduce ecodriving concepts also into the evaluation processes in the examination and he also thinks that it should be necessary to give a greater weight both in the theoretical and in the practical part. The respondent says there will no problems with ecodriving if it will be correctly integrated. Among the useful measures for the integration, he proposes some incentives both for instructors and for students of driving.

The respondent says that ecodriving, at the moment, isn’t not well known and he proposes a greater attention to the subject in all evaluation moments. He also remarks the importance to introduce a specific quality certification related to training for instructors and examiners.

He judges his organisation is not yet prepared to plan such activities. The future challenges of ecodriving are related to its spread. In the future, there will be a growing interest in this subject and there will be a need of more training, as necessary precondition.
RECOMMENDATIONS

It is necessary to implement a technical commission aimed to involve not only the main representatives of the government, but also the Italian automobile club, teachers and experts of the subject and coming from that European countries where ecodriving is well established, so to spread all the existing best practices. The aim is to create a continuous dialogue - not subordinate but collaborative - with the institutions to discuss and promote actions to support the ecodriving. It is necessary to enhance communication with local authorities and with European organisations through seminars / workshops.

Thanks to the seminars it is also possible to upgrade professional skills of the insiders with the aim of improving knowledge, skills and competence: training, therefore, is not only as a response to the needs of the country but also a tool useful to anticipate and better manage economic and socio-cultural changes.

What should be done / improved (legal, financial, administrative, social, etc. aspects) in order to enhance ecodriving activities:

1. The respondent underlines that from the legal point of view everything must start from the government, which has to build up a new system: starting from the evaluation tests to get the license, going to the introduction of quality certifications for instructors, arriving at the definition of the whole legislation on this subject. Only in this way, people will start to observe the few important rules related to ecodriving. It should be important, in his opinion, to foreseen also penalties whether people don’t respect ecodriving rules.

2. The respondent thinks also about the financial chance to organise this kind of courses with the funds related to Regions, Provinces and Municipalities.

3. He agrees in the fact that the spread of ecodriving depends also on the efficiency of communication that will be organised for its promotion.

Discrepancies between legal requirements and actual implementation of these requirements (if identified).

All changes related to ecodrive should come before the new European directive foreseen for 2011, otherwise the risk is to make useless laws not compatible with the international scenario.

How to motivate drivers to take part in ecodriving trainings. What aspects / issues should be addressed while communicating them.

The first aspect to communicate to drivers is that with ecodriving people can save money: in a crisis period it could be very interesting to know how to spend less. So, together with all ecodriving concepts, it should be necessary to improve also other activities, such as car sharing, car pooling and the bought of a new car with incentives.

8.3. Energy agencies / environmental research institutes / universities / academies

At this point, the interviewee is a representative of ENEA-National Agency for New Technologies, Energy and Sustainable Economic Development, who works as a researcher.

He defines eco-driving as a driving technique and declares that it is very important for his profession. In fact, eco-driving is already part of his job since he is working on a research project on the management of urban mobility through a system that aims to assess driving styles.

The researcher thinks that ecodriving is very useful to reduce fuel consumption, for the environment and also for the road safety. The only problem he sees is the need to get more training and to be more informed in all social fields.

He thinks that there are two most important target groups: fleet manager and public transport companies. The researcher thinks also that ecodrive is a potential business case and, at the moment, his work is to find out a software or an hardware system to evaluate styles of driving of the users. There are also other activities connected to the sector: in particular, his work team has studied the on board devices already developed which give information related to the different driving style.
The respondent declares that in Italy, on the contrary of what happens in other European countries, there are no significant initiatives to promote ecodriving, even if ecological awareness is growing among citizens.

As for the last results connected to ecodriving, many car industries have promoted ecodrive as a smart driving style, as a green and positive attitude which also reduces fuel consumption and people can measure benefits thanks to on board computer.

He underlines the importance of environmental subject in his work since his company is involved in projects related to energetic efficiency and sustainable development. Among the didactical factor related to ecodrive, the interviewee underlines the importance to integrate the theoretical with the practical part (both on road and with the support of simulators).

The researcher thinks that Italian users are ready to pay to attend ecodriving courses and he estimates a right price for 1 hour of ecodriving lesson in 10 Euros. He says that the way to spread ecodriving is through a communication campaign, the distribution of brochures, the organization of workshops, a major development of on board instruments to support drivers and more training with expert instructors. That is why he underlines the need to get the quality certification to the ecodriving courses and to driving instructors. He also says it is important to harmonise ecodriving in all European countries.

Only in this way, he thinks that ecodriving will evolve in the future from all the points of view.

RECOMMENDATIONS

To enhance ecodriving activities it could be useful to create a network made up by researchers (universities) and car manufacturing with the aim to create an innovative on board disposal which informs the driver on his driving style.

What should be done / improved (legal, financial, administrative, social, etc. aspects) in order to enhance ecodriving activities:

1. Firstly it should be improved the social aspect connected to ecodriving: it is necessary more training for all, starting from young people, to make them understand the importance of the environment for their future and to give ecodriving the right spread. In Italy there is still a lack of “green” awareness even if things are changing. That is why it should be useful to introduce ecological concepts starting from schools. The researcher interviewed, at the moment, is working to find out a technology of support to drivers and he hopes that in the future in all driving schools there will be simulator to help people understand practically all the benefits related to ecodriving. Obviously, training is important also for already licensed people and for trainers;

2. Considering the financial aspect, it should be right to give incentives to spread ecodriving concepts. As in Italy there is the license with penalty points, he suggests to give two points more per year to people who attend ecodriving courses. Another proposal is to reduce the ownership tax (an Italian fee) to this people;

3. Obviously, all the aspects to be improved must be accompanied by national campaigns which are fundamental to support the spread of ecodriving.

4. Another idea could be the institution of the “eco licence” which gives the chance to transit also in the ZTL (limited traffic zones).

How to motivate drivers to take part in ecodriving trainings. What aspects / issues should be addressed while communicating them.

As the energy agency where the researcher interviewed is working on research project aimed to energy efficiency and sustainable development, it could be useful to motivate drivers to take part in ecodriving trainings underlining, in the theoretical course, the difference in fuel consumption and emissions between eco and non eco driving.
8.4. Automobile clubs

For this category, the respondent is an engineer of the Italian Automobile club who works there since 1998. He defines "ecodriving" as a **philosophy** and he declares to be involved in this field since 2 years, but he denounces the difficulty to develop an ecological awareness in Italy.

He believes that ecodriving is also a potential business case especially for **fleet managers** even if he has identified the **entire population** as potential target group (including private users). At the moment, his company offers some initiatives related to “ecodriving” in the safety driving centres, but he thinks that these courses should be certified and organized by a company with a great experience.

The future of ecodriving means a great spread of its concepts (starting from schools of educations) and a great effort in terms of research. Ecodriving - in his opinion - will lead to **new materials** and **new fuels**, and it should be teach also to **motorcyclists**.

**RECOMMENDATIONS**

As the Italian automobile club represents and defends the general interests of Italian drivers, it should be part of a technical commission that, starting from the best practices of the other European countries, find out the best way to improve ecodriving in Italy. During these meeting, the different actors can suggest the activities that the automobile club should carry out. For example, a part from assistance, the members of the club could get some reduction for attending ecodriving training courses.

**What should be done / improved (legal, financial, administrative, social, etc. aspects) in order to enhance ecodriving activities:**

1. The first thing to do to improve ecodriving is the training which should start into the schools.
2. To enhance ecodriving activity, courses should be **certified** and organised by very experienced Institutions.
3. Another suggestion is to give **fiscal incentives** to the **fleets** which demonstrate to pollute less and to save fuel after having attended ecodriving courses.

**How to motivate drivers to take part in ecodriving trainings. What aspects / issues should be addressed while communicating them.**

Drivers should understand that ecodriving is a continuous chance for the future, as its improvement means more innovation and can imply the born of new materials and of new fuel.
## 8.5. Summary

Table 8.1. Classification of obstacles.

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lack of an environmental awareness</td>
<td>In Italy it is necessary to make people realize the importance of environmental protection for all the citizens</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>The ecodrive is not part of Ministry programs yet</td>
<td>As no Ministry has still adopted a shared program, in Italy it misses a unique teaching method for driving schools and a related test to check the competences attended</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Car park still old and not suitable for this type of innovation</td>
<td>Practicing eco-driving with an old car gives no benefit to the environment</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Mistrust and habits of users at a certain driving style</td>
<td>Drivers don’t like changing their driving style starting to respect new rules</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Non presence of incentives for licensed drivers</td>
<td>For young people it would be enough to focus on training in driving schools, in parallel with the normal training that they currently have. As for licensed ones, it would be necessary to introduce economic incentives aimed to persuade these people to take refresher courses on the subject.</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Inability to perform demonstrations to illustrate the benefits of eco-driving</td>
<td>At the moment, people are not able to perceive the benefits connected to eco-driving; the simulators are not sufficiently widespread and also opportunities for the demo are not significant enough.</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Obstruction by some car manufacturers who don’t know how to innovate</td>
<td>There are still too many car manufacturers that rely on models such as SUVs and sports cars that are highly polluting</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Differences between users</td>
<td>Differences of age, sex, income and kind of job will imply different marketing strategies</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 8.2. Classification of benefits.

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Environmental protection</td>
<td>Ecodrive reduces CO2 emission by 10-15%</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Fuel savings</td>
<td>There are several studies showing that eco drivers save between 10 and 15% more than others while maintaining a higher speed</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Safer driving</td>
<td>Eco-driving means more attention to the condition of vehicles and greater attention to the road: this is why many people consider it as a safer driving</td>
<td>1</td>
</tr>
</tbody>
</table>
9. Lithuania

Obstacles preventing integration of ecodriving into drivers’ education, benefits of ecodriving for different stakeholders in Lithuania have been investigated and recommendations to enhance ecodriving activities in the country were provided in this report. 25 persons from 7 target groups have been interviewed.

All interviewees admitted ecodriving to be useful in general irrespective of differences in the level of perception of ecodriving benefits. The main benefits recognised by the majority of respondents were financial (saving of money), environmental, fuel saving and safety.

However some respondents identified that ecodriving might have negative influence on the maintenance of a car (driving at low engine speed) and driving safety (ecotyres, driving at optimal speed, switch off engine at stops).

The main obstacles of integration of ecodriving into drivers’ education identified by majority respondents were financial, consciousness of people, awareness of real benefits of ecodriving and the lack of governmental activities (there is a need for education and information of people and financial support measures) as well as lack of information and information sources about ecodriving in general. Many respondents emphasised the age of the Lithuanian transport fleet (in 2008 84% of passenger cars were older than 10 years).

The majority of respondents agreed that ecodriving should be included into the education of learner drivers. As for the licensed drivers, the governmental actions can play an important role. It is very important to motivate people to go for ecodriving trainings. People lack information, knowledge about ecodriving and are not eager to spend money on these trainings.

Opinions regarding certification and qualification procedures are very different. Some respondents consider it necessary and some of them think that there would be no added value in it. While the remaining ones presume that it could be integrated into the instructors’ education system.

In general ecodriving is regarded as a potential but not profitable for the time being business case. In principle driving instructors would probably agree to participate in ecodriving trainings as it would be a possibility to improve their knowledge and skills.

Price of training course would depend on the programme, its content, quality and duration. The identified prices by stakeholders range from 17–30 €/hour up to 260 €/day for trainings of instructors and examiners and from 10–30 €/hour up to 260 €/day for trainings of drivers.

The main recommendations to enhance ecodriving activities in Lithuania:

- Incorporate ecodriving into driving examination system while ensuring harmonisation of driving schools curricula and examinations contents;
- Prepare consolidated (officially approved) material for learning ecodriving, which would include theoretical and practical ecodriving aspects, didactical methods and measures;
- Ensure high qualification of driving instructors and examiners;
- Qualified information dissemination campaigns are required in order to educate society;
- Governmental programmes, subsidies are required to encourage, support society to train ecodriving.

9.1. Driving instructors

The main benefits of ecodriving identified by driving instructors: reduction of fuel consumption, expenses, pollution, lower level of wearing and tearing of a car and improved culture of driving, safer driving.

The main obstacles of ecodriving identified by driving instructors: lack of financial resources, low demand from drivers’ side, lack of information, insufficient initiatives from the state level. There is also a prevailing opinion that there are some limitations to teach learner drivers ecodriving in practise.
Part A. Fundamentals concerning Ecodriving

- The given preference in the understanding of ecodriving tends to philosophy (thinking) however, technical characteristics of a car are of importance as well.

- All respondents maintained the direct connection of Ecodriving and their profession altogether stating it to be a significant and relevant subject in their profession. Two respondents expressed their attitude that the transfer of ecodriving principles to a learner would be too early and too difficult to grasp by the latter at the very start. The key target of a learner is to learn driving and a task set before an instructor is to teach safe driving. Ecodriving is the second step. Only a mention about economic driving is made during the initial stages of learning. Topics on ecodriving are dealt with during the last lessons. It takes one year for a driver to understand that ecodriving is useful for both, his pocket and nature.

- In Lithuania Quality control and Certification system of ecodriving instructors is missing. There are different opinions in regard to the need of this. It was pointed out by one respondent that there would be no need of it while no strong opinion was expressed by another interviewee who informed that the said issues were tackled during the academic lessons at a driving school. The need would probably emerge if someone succeeded in persuading drivers that this would be beneficial.

- The most relevant Ecodriving tips distinguished by the respondents were as follows: use of the vehicle’s momentum to avoid unnecessary breaking and acceleration; anticipatory driving (watching the traffic well ahead); regular checks of tyre pressure. The following tips have also been mentioned – driving at low engine speed; early gear shifting; planning of destination/trip; longer safety distances; switching off engine at stops; perfectly (stress-free) flowing with the traffic; use the electric consumers of the car (e.g. radio, air condition) in a sensible way; use of low-friction oils; avoid unnecessary loading; use Eco-tyres; use alternative transport modes.

- Basically, all principles are significant however they need to be appropriately introduced to the stakeholders by indicating their financial benefit to draw the attention of the interested ones.

- All have unanimously sustained the usefulness of ecodriving due to the reduced fuel consumption by a car further leading to lower expenses for fuel, reduced pollution of environment and lower level of wearing and tearing of a car and improved culture of driving.

- Problems arising due to the ecodriving application have been distinguished by a single respondent who has stated the origination of problems associated with the operation of a car. The problems mainly related with the acceptance by individuals have been stressed (mentality has been mentioned among the obstacles). The missing information and publicity has been highlighted. However, Lithuania is making the first steps in the matter. Theory is taught at driving schools but minimum practice is obtained. The importance of the state role is emphasised in the provision of information, education, application of motivation measures and orienting the society towards the use of more ecologic cars/vehicles.

- In principle driving instructors had nothing against ecodriving. The aspects like difference in the qualification of instructors, insufficient attention paid to environment, unavailability of information and sources to gain more experience have been indicated. The need of quality improvement of instructor training has been pointed out.

Part B. Ecodriving for learner drivers / driving schools

- As per relevant Republic of Lithuania legislation, the principles of ecodriving are included into the curriculum of driving schools. Inclusion of ecodriving principles into the theoretic part of training has been stated by 2 respondents (without direct mention of ecodriving therein). Practical training is limited to the extent needed to pass an exam. Another 2 respondents pointed out the availability of Ecodriving principles in the curricula and the presence of lecturing on a topic of economic driving.

- All respondents were in favour of including the ecodriving into curricula of drivers’ training due to the resulting advantages of environmental pollution reduction, improved culture of driving and perfected driving skills which would be witnessed in the future rather than at once. It was a reply of one respondent that teaching ecodriving the existing drivers would be much more complicated than the learner drivers. Since the former have developed their skills that would be more difficult to alter whereas teaching of learner drivers would lead to better mastering of ecodriving skills by them.
There is no emphasis put on ecodriving during examination. It is more associated with safe driving (e.g. gear shifting, acceleration and the like). The majority replied that integration of Ecodriving issues into the driving exams would be expedient. However, there was no straight answer that this might prevent from passing an exam. It has been mentioned by one respondent though that it would be useful if a driver proved his thoroughness at the driving exam.

Amendments to the valid legislation would be required and determination of explicit evaluation criteria would be needed for the purpose of integration of ecodriving into examinations. Probably, more driving lessons would be needed and changes in the drivers’ thinking should follow.

Driving schools are responsible for the preparation of curricula themselves thus the curricula may vary among different driving schools:
- It was indicated by one respondent that the learner drivers are lectured about exhaust vehicle gases/substances and their adverse impact on environment and human health, about tyre pressure, unnecessary loading of a car, route planning and engine switching off at stops.
- Another respondent pointed the lectured topics about early gear shifting, route planning, checking of tyre pressure and smooth (stress-free) flowing with the traffic, avoidance of unnecessary loading and toxicity of exhaust gases.
- The lectured topics indicated by the third respondent were route planning, avoidance of unnecessary loading, use of vehicle oils, adequate exploitation of a car, tyres, etc.

There was an ultimate difference in opinions regarding unused potentials of ecodriving for driving schools. To the opinion of one respondent sufficient attention is paid to the issue at the driving schools. As for the unused potential the following is worthwhile mentioning: use of more efficient cars, failure of individuals to get ready to start learning such topics, insufficient knowledge of lecturing instructors. It was indicated by one respondent that driving schools surrender to the pressure of student drivers having the prime goal of getting the graduation certificate of a driving school and having little concern about ecodriving principles.

The following aspects of ecodriving are relevant for training of learner drivers: the very understanding of ecodriving, its benefit and the key principles of it. One respondent sees gear shifting to be among the most important ones together with smooth driving and driving within the traffic flow. It was indicated by another respondent that it would be expedient to compare the achievements of the learner drivers of the same group in terms of the saved fuel.

The listed problems faced during the learner drivers training included the factors like the need for extension of curricula and the related increase of training cost as well as mentality of people, understanding of ecodriving benefit, limited capabilities of a trainee to learn ecodriving.

The biggest restraints (limitations) witnessed in training the learner drivers of practical ecodriving are: to prove the benefit of ecodriving, shortage in training hours, general knowledge of students about driving and their capabilities (too little hours for driving are allocated by the majority of learner drivers due to high cost). It is also stated by the respondents that the prime task is to teach safe driving, help overcoming psychological barriers and nervous strain and afterwards teaching of ecodriving may follow.

It is suggested that ecodriving is highlighted in both, theoretical and practical training. Practical training may include a comparison of fuel consumption by individual learner drivers.

Adequate qualification is required for ecodriving instructors (not necessarily different than that of driving instructors in general), their knowledge should be deeper and they should be educated in the technical issues about cars. Ecodriving issues should be integrated into qualification improvement courses. It was a reply of one respondent that certified ecodriving course would be necessary.

Required changes in the education of driving instructors: mandatory qualification improvement courses in ecodriving, deepening of the gained knowledge, follow-up education. The examiners and instructors have to believe in the benefit of ecodriving so that they were able to convey the message to the trainees.
Problems associated with integration of ecodriving: attitude towards both work and ecodriving, extra costs due to which driving price increases, a need to increase a number of training lessons.

The way ecodriving should be integrated into the drivers’ training and testing: it should be educated in parallel with the overall curriculum with better availing of training effectiveness and determining of explicit ecodriving principles and evaluation criteria; tips of ecodriving should be defined in a better way. There was one opinion that if a car operation is right, it does not take place without understanding of economic driving.

4 respondents were for integrated education on ecodriving of learner drivers. One respondent was for module training and after a driver has already developed some skills. The indicated advantages of integrated training are as follows: it is easier for the learner drivers to master the benefit of ecodriving; since the very start a driver learns economic/ecologic driving; it would be easier to teach this way. The advantage of module training is that lots of information which probably would be easier absorbed is transferred at a time. No advantages of module training have been discerned by one respondent. Another one expressed doubts whether anyone would choose it if it was elective as a subject.

A potential conflict between education and examination of ecodriving may arise when the same subject is treated in a different way by teachers and examiners. In principle, though, if curricula are adjusted in the right manner, no conflicts should be (cannot be) expected.

For the purpose of harmonisation between driving education and examination, unanimous education should be primarily available for the lecturers and examiners of driving schools; general discussion about ecodriving education should be initiated; and evaluation criteria of education and testing errors should be coordinated and thorough approach of drivers’ education should be undertaken.

Suggestions in regard to the increase of importance of ecodriving at driving exams: as one of evaluation elements there should be a certain influence of ecodriving on the evaluation; instead of being the main one, it should be a constituent of error evaluation criterion. A doubt was expressed by one respondent: drivers undergo an excessive stress during examination so it is difficult to suggest anything in this respect. One respondent was of the opinion that economic driving should be a wish expressed by a diver and not just obligation to pass the exam.

The best didactic method to transfer the principles of ecodriving: theory first and practice afterwards; by demonstrating influence of one or another driving style on fuel consumption to a driver; by showing benefit of ecodriving to learner drivers; by changing the drivers’ attitude towards driving aiming to achieve that a driver is motivated to learn the entire curriculum proposed by driving schools rather than its part sufficient to pass exams.

Part C. Ecodriving for licensed drivers

Respondents doubted about a high demand rate of ecodriving course in Lithuania. One of the reasons for that is the shortage of driving culture and attitude towards ecodriving.

In order ecodriving is enhanced among the licensed drivers, ecodriving should be promoted and information disseminated, and a certain pressure should be exercised on drivers including education, so that drivers perceive the benefits of it. Irrespective of the availability of those who wish to proceed, limitations are imposed due to limited financial facilities and promotion at the national level.

Teaching of licensed drivers about ecodriving might be integrated into driving schools in the form of individual course, like an extra or individual module.

The following are potential target groups, which can be relevant for marketing ecodriving and the related business activities (marketing): transport companies, cargo carrier companies; average (or higher than average) income higher education individuals with high level of awareness.

A variety of day courses proposed by car dealers on the promotion basis or courses advertised via different activities of automobile clubs (like the present ecodriving course for journalists) and the like may become the source of income for ecodriving.

There are no restraints for different groups of licensed drivers to practice ecodriving, however moderate extent of publicity and low promotion of ecodriving is witnessed; the majority of drivers are
forced to hurry up in an irrational way; missing financial sources; shortage in willingness to study/learn; outdated vehicle fleet; no national strategy towards ecodriving; no privileges; low level of awareness.

- No analyses have been performed in regard to drivers' opposing ecodriving. Neither respondent could name any. There is just a shortage of information and not everyone is knowledgeable of that; besides, shortage of culture and awareness has been pointed out (young drivers are mainly interested in speed and powerful cars).

- The main benefit of ecodriving for a driver: in the first place it is a financial benefit, fuel saving, protection of environment, less car accidents.

- Information on ecodriving could be disseminated via mass media, popular shows and future drivers (they are susceptible to information and transfer it to their parents).

- The benefit of ecodriving is similar for all target groups. To the opinion of one respondent large transport companies would feel the benefit of ecodriving in particular (reduced fuel consumption, reduced number of breakdowns of vehicles).

- Suggestion of ecodriving courses at driving schools would be useful (sensible). 2 respondents answered that there would be a need of these. One of them envisaged the demand for the courses in the future while no demand for such course was projected by one respondent.

- It is complicated to state the price of one hour (one-to-one) training. It may range between 10–30 €/hr.

- Problems to be expected in the course of ecodriving trainings for licensed drivers: negative attitude of drivers, failure to grasp the idea itself, wrong driving.

- What requirements must be fulfilled to convince driving school to start providing such training activities. One respondent replied that he would undertake the said training only in the event of mandatory requirements. Another two answered that there was no need in convincing them. They would go for it if there are those inclined to learn and if a serious partner is available to get knowledge.

Part D. Future outlook

- One of ecodriving aspects mentioned quite often and which would need further clarification is driving at low engine speed (the way it affects the car exploitation, gear 5 gets out of order). More clarifications would also be required in regard to anticipatory driving, trip planning and selection of an adequate route.

- To the opinion of two respondents there should be no challenges for ecodriving to be faced in the future. The following challenges have been listed – willingness to learn, ability to attract the licensed driver (to persuade him that it is necessary and useful, that it is not a shameful style of driving).

- The respondents consider many-sided development of ecodriving, i.e. technically, didactically and thematically. Nevertheless, changing vehicle technologies should be distinguished to which the ecodriving tips have to be adjusted.

- The advantages of ecodriving certification procedures would include uniform qualification of all tutors and instructors and ability of adequate training of drivers. As for certification, training quality would be secured and it serves as a proof to drivers. A disadvantage is seen in negative attitude of the society due to excessive requirements. One respondent replied discerning no need for such procedures since the same instructors were able to teach.

- Quality standard for ecodriving training courses should define ecodriving rules and objectives, requirements and requirement evaluation, personnel, basis and continuous improvement to the maximum extent.

- 4 out of 5 respondents replied that they would participate at qualification training of instructors. Their participation would be stimulated by a chance to get more knowledge and a wish for tutors and instructors to improve. One respondent had no opinion on the issue (he would participate if he had time while common instructors would hardly go unless imposed by the school executives).
The price of course consented to be paid would depend on the proposed product, quality and curriculum (the stated prices ranged between 17 € (for half-day course); 116 € for 2 days course including practical training).

RECOMMENDATIONS

- In general driving instructors have motivation to improve their ecodriving knowledge and skills. In Lithuania ecodriving requirements for learner drivers’ education have been tightened since 1st September 2010. It increases motivation to improve their qualification. However the biggest impact can be made by the heads of driving schools. It is their interest to have highly qualified instructors in their schools. Thus motivated heads of driving schools are willing to pay for training courses and can influence driving instructors to participate in such trainings.

- In order to improve quality of education of learner drivers and motivate learner drivers to learn and practise ecodriving it should be integrated into examination system while harmonize driving schools curricula and examination requirements and setting clear criteria how ecodriving knowledge and abilities can be examined.

- Ecodriving has to be effectively incorporated into driving instructors’ education and qualification system. There is a need for special courses on ecodriving in general and on didactical methods/measures how to teach ecodriving. There is a need to change prejudice of the driving instructors that ecodriving can be taught only when a person already knows how to drive a car.

- State regulation can make influence on driving instructors. Quality of ecodriving activities in driving schools depends on the quality of state supervision of the implementation of legal requirements.

- There is a need for consolidated material (officially approved) about ecodriving for driving schools.

- The main factors which could motivate driving instructors (or heads of driving schools) to participate in ecodriving training courses:
  - Reasonable price;
  - Quality of the training programme (it should be very clear and have explicit added value for the instructors);
  - Qualification of the trainers (they should be highly qualified and experienced).

- In order driving schools start providing training courses for licensed drivers, demand of such courses should be created. Financial support from governmental or other programmes, information dissemination campaigns on state level could create demand for training courses for licensed drivers.

9.2. Driving examiners

The main benefits of ecodriving identified by driving examiners: reduction of fuel consumption and fuel costs, improvement of driving safety and level of driving culture, protection of environment.

The main obstacles of ecodriving identified by driving examiners: ecodriving is not fashionable, limited availability of information, there is no consolidated training material, lack of harmonisation between education and examination.

Part A. Fundamentals concerning Ecodriving

- Ecodriving was described in a different way by respondents. One respondent considered it to be a philosophy, another one treated it to be a combination of attitude and technique (auto technology, driving technique). The third respondent regarded it environment saving driving, but in the first place maintained it to be a decision whether I really need to take a car?

- To the consideration of examiners ecodriving can be viewed as a relevant subject in their profession. One respondent stated ecodriving to be of utmost importance for his profession. There are certain doubts whether it is not too early to start teaching learner drivers about ecodriving on top of all subjects on driving. But now the opinion changes and one tends to think that probably moulding of
skills at the very start before a driver is free of bad habits would be expedient. It is planned to start with integration of ecodriving into the exam in theory.

- All respondents regard ecodriving as useful since it preserves environment, reduces fuel consumption and fuel costs and improves driving safety and level of driving culture.

- Incentives for drivers to practice ecodriving include: the saved fuel, economic benefit (expensive fuel vs. low income), driving culture, protection of environment. Though it was stated by one respondent that it is too early to speak about awareness and safety in the country yet.

- No problems associated with ecodriving have been highlighted except for a mention about limited availability of information on it and ecodriving being unfashionable.

- In principle there are no prejudices against ecodriving in the examiners’ community. However, they would doubt about the existence of a strong and stimulating relation of it. It would be complicated to alter elder instructors.

**Part B. Ecodriving for learner drivers / driving schools**

- Examiners maintained that ecodriving was not a part of the curriculum at the driving schools. They think it would be meaningful to integrate ecodriving into the curricula of driver education since the protection of environment must be a priority, besides it has direct relation with safe driving.

- Ecodriving is not directly included into drivers’ test in Lithuania. Difference in opinions was heard about the significance of failure to pass an exam due to inadequate application of ecodriving. One respondent expressed a positive opinion while another one stated unless it made a larger share of the mistake made. The third respondent was negative (it would be too cruel).

- Uniform requirements for initial training and examination must be defined before ecodriving is included into exams.

- The following ecodriving tips of relevance to the education of learner drivers have been listed: acceleration, switch off engine at stops, anticipatory driving or all main aspects of ecodriving (5 rules – proper gear shifting, speed, anticipatory driving, check of air pressure in types, driving downhill with a gear on).

- For the purpose of integration of ecodriving into the education and testing of learner drivers the ecodriving tips should be included into the legislation on driving education and into evaluation criteria. Some part of an exam may serve for testing of ecodriving skills.

- To the opinion of driving instructors module training is more expedient since it is easier to grasp the essence of ecodriving and it is easier to learn when some driving skills are gained. For the time being training duration is too short to undertake parallel training of ecodriving along with initial training course. Moreover, the learner would not be able to adopt too much information. One respondent thinks integrated education to be more effective as continuous repetition brings more benefit.

**Part C. Ecodriving in driving examination**

- To the consideration of instructors the examined drivers do not understand the meaning of ecodriving at all and pay no attention to it – passing of exam is the only thing of importance to them.

- In Lithuania ecodriving is called economic driving. There are no regulations (instructions) on how environment friendly driving should be evaluated. However, advices/recommendations are present but they differ from source to source.

- There is no direct evaluation of Ecodriving aspects at an exam and they are not included into exams. Instructors think that it is possible to evaluate all basic ecodriving abilities at an exam only general regulations enforcing this are necessary.

- Problems faced in regard to integration of ecodriving into education and examination: it is not defined in the procedures of initial training of drivers and procedures of examining; acceptance by the society (its awareness); instructors should be of adequate qualification; consciousness of the consumer (he has to demand quality of education).

- There should be no conflicts between ecodriving training and examining. Nevertheless, a probability is always present. Sometimes there is no concurrence in curriculum and evaluation criteria.
There is no consolidated training material to train ecodriving. It is stated in the legislation what shall be taught but there is no way describing about how to teach. Everything is in need of harmonisation.

Part D. Future outlook

- Further clarification would be required for the following aspects of ecodriving: anticipatory driving (watching the traffic well ahead), use the vehicle’s momentum. In general more attention should be drawn to ecology to make an individual understand the need of it.

- There should be no challenges for ecodriving to be faced in the future unless the changing car technologies force the alteration of ecodriving aspects.

- Development of ecodriving should take the technical, didactic and thematic trend. Ecodriving should be integrated into the system of education so that training starts at a secondary school.

- Advantages of ecodriving certification procedures: official, single ecodriving regulations to be relied on by the entire society; easier decision-making and integration/teaching of ecodriving at driving schools or other institutions.

- Advantages of ecodriving qualification procedures: instructors would have attended lectures and gained the respective information; a possibility to officially improve qualification of ecodriving instructor.

- Ecodriving principles shall be defined in ecodriving quality standard.

- Ecodriving instructors and examiners should hold a respective qualification certificate. Their practical and theory knowledge should be tested. Pedagogical skills and knowledge of instructor are of importance.

- Ecodriving instructors and examiners should be educated by a qualified tutor. Upon hearing a course of lectures each instructor should be estimated. Periodic ecodriving qualification improvement courses should be on.

- The respondents would participate at ecodriving qualification trainings. Their participation at the said trainings would be stimulated by curiosity, certificate to be obtained (it might become a must sooner or later) qualification improvement prospects and fresh knowledge.

- The price of ecodriving courses would depend on the benefit of such courses. However public procurement procedure should be initiated (as they are a state enterprise. Maximum expenses with practical training inclusive made 260 €/person (one day's course, 4 hours of theory + 4 hours of practical training).

RECOMMENDATIONS

- In general driving examiners have motivation to improve their ecodriving knowledge and skills. They would be interested in certified training courses (possibility to get certificate).

- In Lithuania ecodriving requirements for learner drivers’ education have been tightened since 1st September 2010. However ecodriving is not included into examination at the moment. Therefore in order to include driving examiners into ecodriving enhancement process ecodriving has to be included into examination system.

- There is a gap between driving schools and examination. Uniform requirements for initial training and examination must be clarified. Clear criteria how ecodriving knowledge and abilities can be examined have to be set.

- Ecodriving has to be effectively incorporated into driving examiners education and qualification system.

- There is a need for consolidated material (officially approved) about ecodriving.

- The main factors which could motivate examiners to participate in ecodriving training courses:
  - Quality of the training programme (it should be very clear and have explicit added value for the examiners);
  - Qualification of the trainers (they should be highly qualified and experienced).
9.3. Policy makers

The main benefits of ecodriving identified by policy makers: reduction of pollution, saving of expenses.

The main obstacles of ecodriving identified by policy makers: investments needed, old vehicles fleet, awareness of society, shortage of programmes stimulating the procurement of cleaner cars, insufficiency of trainings and knowledge, habits of drivers.

Part A. Fundamentals concerning Ecodriving

- Ecodriving is understood as the driving style and car technology as well as philosophy (driving aimed at saving of environment and safe driving).

- For one respondent ecodriving was directly connected with his profession (in charge of elaboration of legislation regulating initial training of learner drivers and partial enforcing of this legislation). The other two stated their indirect relation with ecodriving (ecodriving as a measure of increase of energy efficiency and mitigation of climate change).

- Respondents indicated that they retrieved information on ecodriving from internet, from assignments dealing with the EU legislation at the EU institutions and from international conferences.

- The basic ecodriving aspects. One respondent identified that a driver must understand the direct influence of his actions on fuel consumption by his car and the extent of emissions to the nature. Proper preparation of a car is important. One cannot influence too much in the event of an automatic gearbox. In case of mechanical gearbox: early gear shifting; switch off engine at stops; perfectly (stress-free) flowing with the traffic; check tyre pressure regularly; use low-friction oil; avoid unnecessary loading; route planning, selection of alternative fuel. The other respondent identified: driving at low engine speed; early gear shifting; switch off engine at stops; perfectly (stress-free) flowing with the traffic; use engine’s fuel cut-off whenever possible; check tyre pressure regularly. The last respondent identified: anticipatory driving (watching the traffic well ahead); use the vehicle’s momentum to avoid unnecessary breaking and acceleration; avoid unnecessary loading.

- Ecodriving is useful as it reduces pollution and saves financial sources.

- The key problem associated with ecodriving is the necessity of investments in order to achieve it (the mean age of the Lithuanian vehicle fleet is 14 years; only every second vehicle succeeds in passing the technical checks from the first time; only the newer car can be equipped with extra devices for gear shifting, etc.); awareness of individuals, shortage of programmes stimulating the procurement of cleaner cars; insufficiency of trainings and knowledge on how to do it; limited understanding of people about car technology, poor level of knowing ones own car – if a person fails to understand his car, he may wreck it and make damage as a result of ignorance.

- Ecodriving is not yet an entirely political issue but it becomes more and more pending every year. High-level conference took place this year where a decision was taken to exercise all attempts so that eco culture and ecological cars became more accessible and turned into an inseparable constituent of culture of the entire traffic. At present active steps are taken to make ecodriving more and more popular. Selection between alternative transport modes should also be stimulated (public transport, bikes). All possible ways will be searched for to spur the manufacture of ecological vehicles.

- The measures like alteration of driving behaviour (e.g. in terms of environment protection) are positive, though more practical information on the topic is needed for an individual.

- The national policy of energy efficiency and climate change fails to contain ecodriving so far (nevertheless there are plans to include it into the new programmes). The said targets cannot be achieved without promotion of ecodriving and popularisation of electro mobiles.

- National programmes on the promotion of ecodriving are still unavailable.

Part B. Ecodriving for learner drivers / driving schools

- 2 respondents discerned direct benefit resulting from the integration of ecodriving into the training of learner drivers. Safe driving is also meant by ecodriving. One respondent opposed the statement
saying that ecodriving was too early to teach the learner drivers (mastering of how to drive should be of utmost importance).

- The basic problem seen in the integration of ecodriving into the system of education is the willingness of instructors and sufficiency of their knowledge to train the future drivers. Most of instructors are not inclined to teach the subjects they do not believe in themselves (the future drivers can hardly drive not to mention ecodriving). To break the ice, the permission has been given to teach driving with a family member (to improve driving abilities). In this case an instructor can provide more knowledge. Testing of instructor knowledge will be performed, qualification improvement courses will be launched and expertise carried out (the availability of database, the method to be applied).

**Part C. Ecodriving for licensed drivers**

- Mass trainings on ecodriving are prevented by the unavailability of legal regulation; readiness of driving schools; shortage of information; changing habits it is not that easy; it costs money; there are no special training institutions.

- However costs turn to be as pending as the awareness of people. Increasing fuel prices force to think about what to be done to reduce the costs. Then ecodriving and more economic cars are focused on. There should be the ones wishing to attend trainings if a product is really good. Even now people agree to spend more on an economic car. If they are able to make sure that savings are realistic, the product would become marketable.

- Positive benefit of ecodriving for policy and society is observed – it will add to the resolution of environmental problems and energy efficiency. To the opinion of one respondent only a minor share of drivers are knowledgeable of their car thus the benefit will be experienced by them alone.

- The topic of ecodriving is far from being exhausted and investigated in full. It is just the very start of it in Lithuania. The tendency of this year points at the procurement of more economic cars by individuals, i.e. less powerful motor and lower class.

- For ecodriving to become a mass phenomenon methods should be searched for to teach drivers of ecodriving; moreover, economic levers, educational means and stimulation programmes are needed to make the drivers believe in the advantages of ecodriving. One of the alternatives might be a significant reduction in insurance contribution for the drivers having passed ecodriving course and having driven without any accidents or violations of administrative law for an entire year.

- Elaboration of the national Traffic Safety Programme 2011–2015 including the respective measures to stimulate ecodriving is ongoing at the Ministry of Transport and Communications.

- Ecodriving training courses where theoretical and practical subjects are taught should be directed towards the result. The driver attending the course should be able to compare fuel consumption resulting from the application of ecodriving principles with the base case (no application).

**Part D. Future outlook**

- One respondent expressed opinion that in Lithuania there is a niche for the training of people. Effective initial training of drivers at an appropriate school is required. In Lithuania people need to be explained everything in a systematic and exhaustive manner (including principles, technologies and devices). It was indicated by one respondent that an explanation is needed on how equilibrium should be found between safety and ecodriving.

- Potential challenges faced by ecodriving: inactivity of the state authorities, inertness of the society.

- Opinions differed in regard to the future of ecodriving. One respondent considered that in 10 years, no matter that ecodriving would not become 100% more popular, the greater majority of people would know about ecodriving and about the way of economic driving of a car. To the opinion of another respondent ecodriving would become a part of driving some day. The third respondent thought that there would always be those in favour of it and against it.

- Adequate conditions shall be available for the sake of stimulation of ecodriving. People are not always inclined to immediately rush at positive things. At the very start it would be advantageous to
create the system of bonification of traffic actors and vehicles, including legal framework and system of information.

RECOMMENDATIONS

- In principle attitude towards ecodriving is positive. Ecodriving is linked to safe driving. It is regarded as an energy efficiency or climate change mitigation measure. However activities are in the initial stage:
  - Since 1\textsuperscript{st} September 2010 the requirements for learner drivers education have been tightened;
  - It is planned to include ecodriving into safe driving programme;
  - It is planned to make bigger promotion of ecodriving.
- There is a need for financial sources in order to support and promote ecodriving. However financial possibilities are limited at the moment.
- Mandatory requirements on ecodriving at European Union level could promote wider ecodriving activities.
- Capacity building to policy makers would be beneficial. There are opinions that it is not in line with safe driving. And in general there is a need for more comprehensive explanations about ecodriving theory and practise.

9.4. Energy agencies / environmental research institutes / universities / academies

The main benefits of ecodriving identified: reduction of fuel consumption, fuel expenses, adverse impact on environment and energy dependency, new business opportunities, improved quality of urban air, safe driving.

The main obstacles of ecodriving identified: lack of financial resources, low awareness of drivers, and inconvenience to the licensed drivers.

Part A. Fundamentals concerning Ecodriving

- A definition of ecodriving given by the respondents dealt with vehicles technology and driving techniques; driving skills and attitude.
- Two respondents noted that ecodriving was related with their profession due to its being one of energy saving measures. One respondent stated no direct relation between ecodriving and his profession (he is involved in environment quality analyses and environmental impact assessment (transport inclusive)).
- The fundamental tips of ecodriving named by at least 2 respondents were: anticipatory driving (watching the traffic well ahead); checking of tyre pressure regularly. Also perfectly (stress-free) flowing with the traffic; use engine's fuel cut-off whenever possible; use alternative transport modes; use the vehicle's momentum to avoid unnecessary breaking and acceleration and switch off engine at stops have been mentioned.
- Ecodriving is beneficial as it reduces fuel consumption, cuts fuel expenses and reduces adverse impact on environment. Benefit for the state as less fuel is imported and less money for fuel import is lost.
- Problems concerning ecodriving – may reduce safety (direct application of some tips, e.g. driving at optimal speed) and pose inconveniences to the licensed drivers. Another problem is that drivers are unaware of advantages of ecodriving.

Part B. Ecodriving as business case

- Differentiation of special benefits of ecodriving for different target groups:
- Transport companies – financial benefit due to direct expenditures borne by them. It may serve as a step in the implementation of ISO 14000;
- Customers - saved money for fuel, but little information on this is;
- Politicians - discharge of their obligations in regard to CO\textsubscript{2} emissions; customers pay less;
- Business - implementation of measures in regard to CO\textsubscript{2} emissions is associated with emerging need for extra services.

- It is doubtful whether ecodriving is a potential business area unless mandatory requirements for training are imposed (otherwise demand would be vague and it won't pay back) or it may become a constituent part of some other business. More use would be derived from information campaigns.
- Obstacles faced/expected in implementing ecodriving-related activities – shortage of information about tangible benefit (e.g. what are fuel savings) gained as result of application of ecodriving tips; awareness, finances. Legal framework should be available.
- Ecodriving allows reduction of CO\textsubscript{2} emissions and it is considered a proper / significant measure for the transport sector. Integration of ecodriving into driving course should be expedient. To the opinion of one respondent savings would not be that extensive.
- The respondents could not indicate political initiatives or restraints concerning the expansion of ecodriving.
- It was noted by one respondent that protection of environment as motivation tended to evolve in Lithuania (during the recent 5 years in particular). To the opinion of the other two respondents the awareness is too low (people think very little about it). The critical issue is saving of funds. People are influenced by environment via fuel prices, but in an indirect way.
- To the opinion of two respondents issues of environment protection make influence within the culture. One respondent said no.
- Participation at one-day course would be problematic for drivers since people have no time or wish for this. This way to present information would be expedient for learner drivers and professional drivers.
- Radio broadcasting of information (e.g. will listen while driving a car), advices, basic principles, driving courses, elements explained when driving is taught are considered as didactical factors relevant for sustainable intervention into driving behaviour.
- No objective data/researches concerning the acceptance of ecodriving by the society (consumers) are present. Probably the society would react positively, but the major part of it has no information on the subject at all.
- Benefits of ecodriving to consumer – fuel savings, safe driving, reduced costs, minimisation of emissions (total, CO\textsubscript{2}), improved quality of urban air.
- Primarily the customers should be informed about fuel savings and reduced car depreciation.
- It is considered that licensed drivers would hardly pay for ecodriving courses. Probably companies would be inclined to pay.
- Price of one-hour 1:1 training course to be acceptable to the Lithuanian market would be 15–30 €.
- More extensive dissemination of information, mandatory requirements for getting license, subsidies/exemptions for attendance of driving courses would be needed to implement ecodriving.
- Issues of theory and practice should be highlighted in quality standard of ecodriving course.

**Part C. Future outlook**

- Aspects of ecodriving in need of further clarification are the ones suitable for a car with automatic gearbox; more complex technological processes – oils, pressure.
- Potential challenges to be faced by ecodriving in the future – in the event of mandatory training opposition from the society may spring up in regard to extra expenses to be borne.
- Technical and didactic aspects of ecodriving shall develop in parallel. Development of transport technologies shall be integrated with trainings (information dissemination). Thematically – more detailed analyses on benefits to the protection of environment derived from ecodriving are needed.
One should be directed towards the largest savings and potential. Not many changes will be undergone from technical viewpoint unless a car is changed.

- Procedures of ecodriving qualification and certification would be useful. Training material must be prepared and integrated into the present training course of learner drivers. Highly experienced tutors should train (practical experience rather than theoretical), who are able to draw examples; data and specialists of that particular area.
- Quality standard of ecodriving training course should describe all basic procedures and order of their implementation.
- Requirements for a successful marketing strategy – promotion and publication of information on potential benefits.
- Forecast regarding future development of ecodriving in Lithuania. It is a new area with positive perspectives and high potential. Technical changes are expensive while behaviour can do a lot. The first results can probably be expected in 3–4 years (after an active information campaign is launched). People will hardly be interested in this on their own.

RECOMMENDATIONS

- In order to enhance activities of energy agencies and scientific organisations, demand for research in ecodriving field should be created on the state level.
- There is a need for more information and knowledge in field. State level programmes, subsidies could create demand for the services.
- Capacity building initiations would be beneficial. There is a need for more information on technological aspects.

9.5. Fleet operators

The main benefits of ecodriving identified by fleet operators: climate change mitigation, reduction of the company costs, better mastering of a car, social image of a company.

The main obstacles of ecodriving identified by fleet operators: low awareness, lack of information, lack of motivation, driving habits.

Part A. Fundamentals concerning Ecodriving

- Ecodriving by the respondents has been described from technical viewpoint – ecological technologies of a car and driving techniques.
- It has been indicated by all respondents that ecodriving is significant to all, not just to any specific profession. One respondent stated that the company-owned cars should be utilised in a rational way and properly maintained; people must understand the right way of a car tending irrespective of the fact that it was not one's own property. The second respondent informed ecodriving to be connected with observing the traffic rules however economic driving was not always succeeded at their work as often they needed to hurry up for the sake of a passenger. If possible, though they drive in an economic manner. The third respondent indicated no direct relation of their work and ecodriving, but in principle ecodriving should be applied. They are an ecological enterprise with ecological products and ecological attitude towards work.
- The most relevant Ecodriving tips: rational car use, smooth acceleration and braking; use the vehicle’s momentum; perfectly (stress-free) flowing with the traffic; eco tyres, alternative transport modes; anticipatory driving.
- Ecodriving is useful in regard to climate change mitigation, reduction of the company costs, better mastering of a car.
- One respondent stated minimum environmental and financial benefit since to his opinion not that much fuel could be saved. Probably it is so at the company's level. Certain behaviour should be developed in order more savings are achieved. It is a lengthy process and not everyone is in need of
Fuel prices may alter during the time span in question. He does not think that this would ever be relevant for everyone. At companies it is associated with control and accurate measurements.

- It was indicated by one respondent that sometimes ecodriving interferes with safe driving (e.g. switch off engine at stops). No problems have been indicated by the remaining respondents.
- 2 out of 3 respondents have not participated at ecodriving trainings. One informed of his participation at eco-rallies and discussion of a proposal on ecodriving trainings is ongoing at the company.

**Part B. Ecodriving as business case**

- According to the respondents ecodriving could be a potential business case. Not separately, because of the missing demand, but at driving schools.
- To develop ecodriving as business case one needs education, more public information, demonstration of benefits, advertising and good marketing.
- One respondent stated that the car industry took the right direction by creating alternative source-driven vehicles since the fossil fuel would end some day. To his opinion ecodriving would hardly become a mass phenomenon. It depends a lot upon technical condition of a car. An ideal condition should be maintained as far as it pays. Expenses matter. More potential is seen in ecological vehicles.
- Potential benefit of ecodriving for the company: saved fuel, rational use of car resources, lower CO₂ emissions.
- One respondent replied that he would not send his employees/drivers to courses (he considered the drivers being knowledgeable of cars from practice). It might be handed in to the employees in a form of a written document. At work of such specifics 20 % fuel savings would be difficult to achieve. It was maintained by another respondent that he would send his employees to the course if they were eager to attend. The third respondent viewed it to be as an additional promotion of the company to state about ecological driving of its employees, besides, fuel savings would be achieved.
- 2 out of 3 respondents indicated that actual fuel savings might amount to 20–25 %, but it would depend upon psychology of people and general policy of remuneration. One respondent answered that the savings would be minimal.
- The form of course integration would depend on the course duration. In the event of short term courses, they may take place during working hours. Optimal training to drive may take one day per person.
- It is difficult to name a reasonable price payable for short training (one to one) of the fundamental ecodriving principles/tips. One respondent stated 230 €. One respondent would probably be inclined to pay for one set of documents.
- Monitoring of fuel consumption by 2 respondents out of 3 is performed this way – car mileage and fuel consumption are assessed (comparison of fuel norm). In one of these companies car related expenses were attributed to an actual individual and in the other one - not. One of the inquired respondents replied that if fuel norms were exceeded by someone, that person was asked to explain since this was against the company's philosophy. Another respondent stated that in principle the existing system failed to motivate the direct change of driving style. One respondent answered seeing no benefit in fuel consumption monitoring.
- Participation at ecodriving trainings and sustainable implementation of ecodriving principles should be supported via education.

**RECOMMENDATIONS**

- There are doubts about real potential benefits of ecodriving, about its compliance with safe driving. Therefore benefits of ecodriving should be shown and proved to the fleet operators in a very clear form.
- It is easier to influence socially responsible companies. They have motivation to practise ecodriving as it is inline with their company policy.
Wide scale information dissemination and information campaigns, advertisements of the trainings are required at state level.

Governmental programmes, subsidies could encourage / support fleet operators to participate in ecodriving activities / trainings.

Optimal duration for training courses could be 1 day and at a reasonable price.

Ecodriving principles should be included into general education system.

9.6. Car Dealers / Leasing Organisations

The main benefits of ecodriving identified by car dealers leasing organisations: financial, social, environmental, cleaner air, improved health of people.

The main obstacles of ecodriving identified by car dealers and leasing organisations: missing national policy, age of the car fleet, mentality of people, inadequate attention from driving schools, low awareness and consciousness of people.

Part A. Fundamentals concerning Ecodriving

- Ecodriving is defined technically and philosophically – to drive ecologically, safely, reasonably and effectively. 2 respondents named it as driver’s skills.
- Ecodriving is related with the profession of respondents (although one respondent stressed only the technical side of a car).
- A car as an engineering device has influence on ecological driving. Manufacturers offer the cars equipped with the state-of-the art technologies and more ecological cars. Manual of car driving including advices/tips on how to drive. Participation at eco-rallies has been mentioned by respondents.
- One respondent informed that they inform their customers about car parameters, fuel consumption and emissions (they are obliged to do that) and advise them on correct driving. Customers have complaints in regard to difference between actual and declared consumption. However not everyone is interested in advices or recommendations how to drive the car.
- One respondent carries out ecodriving trainings. The activities started in 2010. It is an experimental project. At the very start it was difficult to imagine what should be expected out of the market and what should be done. Observations were concentrated on the presence of interest in it and a need of it. Today it is evident that the subject is topical and necessary. There is an interest expressed by the large enterprises which want to handle the transport fleet, reduce operation costs and fuel consumption. These are the companies where social responsibility does count.
- According to the respondents all ecodriving tips are equally important and they should be applied as a whole. Individual aspects may be important for marketing. Understanding is important for a driver and adaptation to behave differently than accustomed. The following ecodriving tips have been distinguished: perfectly (stress-free) flowing with the traffic; rational and fast start by developing a required speed; tyres are more important in a motorway. Age and technical conditions of a vehicle do matter.
- Ecodriving brings direct benefit to a driver in terms of finances; from the social and environmental impact viewpoint; it is important to the state in regard to cleaner air and to people due to the improved health.
- The below problems have been listed by the respondents:
  - National policy missing as for the modernisation of vehicle fleet. Extremely outdated car fleet is observed in Lithuania. Ecodriving is unpopular at the state institutions and no benefit of it is pointed out;
  - Mentality of people where eco principle is often failed. Just a minor share of society goes for eco things. It is viewed as fashion to someone - it is in vogue at the moment. No adequate attention is paid to it by driving schools.
People do not think that savings are possible (savings are achieved at the expense of safety, health, no insurance, failure to attend technical testing of vehicles, failure to change tyres and oils, inclination to buy old cars);

There is no systematic education and teaching in the system of learner drivers trainings.

**Part B. Ecodriving as business case**

- One respondent replied that ecodriving could be a business case while another 3 respondents did not see ecodriving as one due to complexity of its realisation and unavailability of measures to make the drivers learn (state regulation would be necessary). According to one respondent interest in it is growing since it is interesting and relevant. Ecodriving may turn into a business case in several years. A lot will depend on the state regulation and proper attention. They would wish that vehicle fleet is renewed.

- Ecodriving may serve as a useful marketing instrument. Manufacturers of the so-called greener cars make use of it. The majority expressed doubt as for significant benefit to the sellers in the present Lithuania. To the opinion of one respondent it is a topic which may help to develop a mutual communication with the companies which form the vehicle fleet and feel socially responsible.

- The respondents did not see any potential benefits in ecodriving for their business interests though it was mentioned that more ecological cars could be sold.

- State support (regulation, privileges/exemptions), import of more ecological cars are necessary to extend/ build up ecodriving as a business case and driving schools should propose courses for the licensed drivers.

- Different activities are performed by car dealers – Ecodriving Academy is established, participation at eco-rallies and single actions take place, buyers are advised.

- It was indicated by one respondent that fuel saving trainings might serve as tool for customer relationship management and for reaching new customers. To the opinion of others little benefit would be achieved and little interest would be exercised in it.

- Car manufacturers offer (promote) more ecological cars. One of the respondents noted about the developed ecodrive programme and the related follow-up activities. Ecodrive fleet programme is also available and intended for automobile fleets so that the company executives are enabled to analyse the data achieved by different drivers and observe the way they drive. The tool is available for new cars only.

- Quality requirements of ecodriving trainings: preparedness of instructors, competence to prove the need and financial benefits.

- Customers derive financial and psychological benefit from ecodriving (contribution to environment protection).

- Requirements for short-time ecodriving courses: the fundamental ecodriving tips and their need should be taught with an emphasis on the pollution of environment.

- Car dealers have nothing against ecodriving.

- As from the customers' side awareness is missing and more powerful cars are preferred; insufficient information and ignorance of customers. One respondent informed that those buying more expensive cars at least listen to the provided information while the attitude of those driving older cars is different.

- Ecodriving is accepted by customers in a different way - there is either need, interest or complete indifference is felt. Additional inquiries in regard to ecodriving were observed by one respondent alone upon initiation of ecodriving training activities. However, it had nothing to do with an increased number of customers. The start of ecodriving training activities coincided with economic downturn. Slight increase in a number of customers is being witnessed as a result of improving economy. Younger people attending the trainings will probably visit the dealer company to buy a new car, when afforded.

- Fuel consumption is a pending issue for car sales. Customers are interested in the car parameters and check the conformity with the declared parameters. Nevertheless economic cars are more expensive and no financial support is available. Economic balance currently tends towards regular cars. Slight changes in the attitude are witnessed. A number of more intellectual and educated young
customers increase and they opt for small cars due to fuel consumption, parking space and lower operational costs.

- Insignificant increase in the environmental awareness of customers is observed. A special inquiry would be needed for the purpose.

- Ecodriving training course is a proper measure to reduce difference between minimum fuel consumption set by experts in car manuals and average fuel demand by a customer leading to reduced number of customer complaints. A common example might be eco-rally of this year where 5 new cars of the same model participated. As a result fuel consumption by the cars differed a lot. Nevertheless, it is not equipment that always matters. A separator sitting between the seat and wheel is of utmost importance.

**Part C. Future outlook**

- In general, everyone is still in need of more clarity in regard to ecodriving. It is still difficult for people to grasp what it is. Those who attend ecodriving lecture barely know what should be expected. After lectures they finally understand that it is interesting, venturesome and important. One should be able to transfer knowledge in a persuasive manner and experience is required for this. It was pointed out by one respondent that extra explanations are required for trip planning issue.

- Potential challenges to be faced by ecodriving in the future: rejection (driving culture must change); the growing level of welfare may minimise the financial significance; rapid changes in technologies (different handling of cars equipped with new technologies).

- As for the future development of ecodriving it was indicated by the respondents that public education was required and integration of ecodriving into curricula of driving schools (in the run of time it may become a part of a subject to be taught at gymnasiums). From technical viewpoint the entire industry turns towards the direction of ecodriving. Thematically – general trainings, specialised trainings and trainings based on different cars may be initiated.

- Requirements for a successful marketing strategy: demonstration of benefit; seeking for people interested in the subject and telling them what they are eager to know (some of them are interested in green ideas while the other have a pragmatic viewpoint); at least a symbolic stimulation by the government to purchase an environment friendly car.

- 4 respondents think that stimulation at the national level and respective policy is required for the future development of ecodriving. 1 respondent thinks that the EU may force the state to take the related measures. 1 respondent considers it to become more and more popular. Ecodriving is a pending and interesting subject worthwhile developing.

- Requirements for quality standard of ecodriving training courses: course structure (theory, praxis, testing); qualification and experience of tutors (they must believe in what they teach, are experienced and are able to give examples).

**RECOMMENDATIONS**

- Car dealers already partly involved in ecodriving activities via European Union legal requirements on reduction of CO₂ emissions and requirements to present information on fuel consumption and CO₂ emissions of the vehicles on sale and reduce. Car dealers / leasing organisations would get involved in more active ecodriving activities if they saw demand for such services. Demand can be created via state level actions:
  - Mandatory ecodriving training for licensed drivers;
  - Wider information dissemination campaigns could motivate society to train ecodriving;
  - Governmental programmes, subsidies could encourage, support society to train ecodriving.
9.7. Automobile clubs and training organisations

The main benefits of ecodriving identified by automobile clubs: fuel and financial savings, reduction of environmental pollution.

The main obstacles of ecodriving identified by automobile clubs: low interest and unwillingness of people to learn and pay for the trainings, lack of information, lack of actions at state level.

Part A. Fundamentals concerning Ecodriving

- Ecodriving is understood as the whole of certain and right actions of a driver leading to the reduction of fuel consumption, which in its own turn reduces the rate of pollution emissions. Also, structure of a car and its proper preparation.
- Ecodriving is relevant for all professions. Low interest and unwillingness of people to learn despite of significant savings was stressed by one respondent.
- All respondents are involved in ecodriving trainings at least to some extent.
- The basic principle of ecodriving is to think about ecodriving and not hurry. All tips are important. One respondent stated that he would abstain in regard to driving at low engine speed.
- All consider ecodriving beneficial since it leads to money saving and abatement of environment pollution.
- Ecodriving is the safest way to drive unless information is presented in a wrong way. Traffic planning is a problem (resulting in unnecessary waste of a certain share of fuel) as well as roads (gravel rods are still numerous) and old cars (more attention to fuel saving is paid to newer cars).

Part B. Ecodriving as business case

- Ecodriving is considered a potential though non-profitable business case (at least for the time being). More dissemination, state actions and financial support are necessary. One respondent indicated that they would opt for ecodriving in the event of demand availability.
- According to one respondent training is very useful and it may evolve into a business case. The way it is conducted matters a lot (it must be interesting to a customer). In the event of non-mandatory training this kind of business can solely be launched by a charismatic person having sufficient experience of life and able to tell a lot.
- Attitude of the state and the related enforcing law shall be present to develop ecodriving as business case. Promotion and propaganda are needed to persuade people and explain the benefit of it. There is no mass striving for that though purposive people are present. As a matter of fact the EcoDrive Academy is attended by quite a number of individuals.
- All rally programmes include a share of economy driving. Also, a part is connected with the principles of safe driving – tyre pressure checks, proper handling of motor to avoid excess fuel.
- Association of Lithuania Automobilists together with FIA have publicised a booklet “Let’s make the cars green”.
- Consumers are not opposed to ecodriving though no one is inclined to pay money for this.
- Respondent giving lectures on ecodriving stated that while tutoring he emphasised fuel economy which is more easily grasped by individuals. Benefit is regard to pollution minimisation is a sequel to this. He relates ecodriving to safe driving.
- Target groups: individuals with different, positive thinking and in search for something; broad scale of interests automobile users; companies inclined to save costs and having large vehicle fleets.

Part C. Future outlook

- Aspects of Ecodriving in need of further clarification: driving at low engine speed (why does it save), eco-tyres (how is it in line with safety). One of the main problems is that no information collected in one place.
In the future ecodriving will be particularly linked with car technology. The change in technologies will lead to adaptation of driver's behaviour. In their core the ecodriving tips are the same, however, certain nuances are present which one has to be aware of. Traffic control and traffic congestion is an important issue.

Ecodriving development in the future is connected with industry – the way how to catch up with all technological changes. People need more information and persuasion. They have to understand that along with earning more they should think of spending less. There is a tangible difference at the present fuel prices. The state should pay more attention and actual requirements must be prescribed in the related legislation.

2 respondents expressed positive opinion towards ecodriving qualification and certification. It would prove adequate qualification of tutors. The level of knowledge of some people call for re-training to drive as they have been taught wrongly at driving schools (safety related). One respondent said that these procedures were unnecessary (market would make a selection) and inefficient; no improvement of service quality except for becoming more expensive.

Quality standard of ecodriving training courses: explicit curriculum should be present. It should be integrated into the examination tasks.

Requirements for a successful marketing strategy: adequate means should be held (programme/curriculum of interest, webpage), people must be invited to attend, market search for the interested people who can pay (people are willing to learn, but not all companies have money for that), good recommendations should be strived at.

Future development of ecodriving in Lithuania will depend on the actions to be undertaken by the state and placing of eco-cars on the market. If the measure is enforced by law and state will allocate funds, it will be in favour of ecodriving and there will be a demand for it.

RECOMMENDATIONS

Automobile clubs would get involved in ecodriving activities if they saw demand for such services. Demand can be created via state level actions:

- Mandatory ecodriving training for licensed drivers;
- Wider information dissemination campaigns could motivate society to train ecodriving;
- Governmental programmes, subsidies could encourage, support society to train ecodriving.

9.8. Drivers

Learner drivers

First of all the benefits of ecodriving have to be clearly presented and proved to the learner drivers. There was a proposal that learner drivers could compete among each other who drives at lower fuel consumption in the group.

Priority is given to the integrated approach of ecodriving education.

Ecodriving should be included not just in education system but also into examination system.

Licensed drivers

Prevailing negative attitude towards ecodriving should be changed. The idea has to be presented very clearly. It should be explained that ecodriving is safe driving.

Seeking to attract licensed drivers the biggest potential is seen in people with higher education, higher than average income should be addressed. Also transport companies.

Financial support at state level could encourage licensed drivers to take part in ecodriving trainings.

Good marketing strategy of the provider of ecodriving trainings is required: attractive product, charismatic trainers.
### 9.9. Summary

#### Table 9.1. Classification of obstacles.

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Financial</td>
<td>People lack or are not eager to spend money on ecodriving trainings</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Consciousness</td>
<td>People do not feel responsibility for environment</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Awareness</td>
<td>People do not know about real benefits of ecodriving</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Lack of actions at state level</td>
<td>There are no financial incentives, promotional actions, information campaigns on state level</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Information sources</td>
<td>There is no reliable, comprehensive information about ecodriving in one place (especially in Lithuanian language)</td>
<td>2</td>
</tr>
<tr>
<td>6.</td>
<td>Knowledge, expertise</td>
<td>There is lack of experts who could appropriately teach ecodriving</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>Habits</td>
<td>It is difficult to change driving habits (especially for drivers driving for many years)</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>Driving culture</td>
<td>National driving culture is to some extent opposite to ecodriving</td>
<td>2</td>
</tr>
<tr>
<td>9.</td>
<td>Attitude of learner drivers</td>
<td>Learner drivers are interested in getting license and not in learning ecodriving</td>
<td>2</td>
</tr>
<tr>
<td>10.</td>
<td>Age of transport fleet</td>
<td>Lithuanian transport fleet is old (in 2008 84% of passenger cars were older than 10 years)</td>
<td>2</td>
</tr>
<tr>
<td>11.</td>
<td>Comfort</td>
<td>Some people choose bigger, more powerful vehicles (they want to enjoy speed)</td>
<td>3</td>
</tr>
<tr>
<td>12.</td>
<td>Driving schools preparation for teaching</td>
<td>Driving schools are not ready to teach ecodriving at appropriate level (lack of information, expertise, experience)</td>
<td>3</td>
</tr>
<tr>
<td>13.</td>
<td>Attitude of instructors</td>
<td>Some driving instructors lack knowledge and do not think ecodriving is important</td>
<td>3</td>
</tr>
<tr>
<td>14.</td>
<td>Legal</td>
<td>There are no requirements to learn ecodriving for licensed drivers. Ecodriving is not included into examination of learner drivers</td>
<td>3</td>
</tr>
<tr>
<td>15.</td>
<td>Familiarity with a car</td>
<td>Lack of knowledge about the car restricts possibilities of application of ecodriving tips</td>
<td>3</td>
</tr>
<tr>
<td>16.</td>
<td>Lack of time for learner drivers education</td>
<td>Insufficient time to teach appropriately ecodriving tips during learner drivers training courses</td>
<td>3</td>
</tr>
<tr>
<td>17.</td>
<td>Traffic management</td>
<td>Inappropriate traffic management restricts application of ecodriving tips</td>
<td>3</td>
</tr>
</tbody>
</table>
### Table 9.2. Classification of benefits.

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Financial (for drivers)</td>
<td>Application of ecodriving leads to saving of money</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Safety</td>
<td>Ecodriving means safe driving (less accidents)</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Fuel saving</td>
<td>Application of ecodriving leads to saving of fuel</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Environmental</td>
<td>Application of ecodriving leads to reduction of emissions (CO$_2$ and other pollutants)</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Air quality in cities</td>
<td>Application of ecodriving leads to better air quality in cities</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Driving culture</td>
<td>Ecodriving increases culture of driving (improves drivers’ behaviour)</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Depreciation</td>
<td>Application of ecodriving leads to slower depreciation of a car</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Energy independence</td>
<td>Application of ecodriving leads to saving of fuel. Thus demand of fuel import decreases</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Compliance with political obligations</td>
<td>Helps to comply with climate change and energy efficiency obligations for the Government</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>Image</td>
<td>Companies, natural persons can show that they are socially responsible</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>Health of society</td>
<td>Application of ecodriving leads to reduction of emissions. Thus air quality is improved and risk for human health is decreased</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>Familiarity with a car</td>
<td>Learning and application of ecodriving allows one to get more familiar with a car, its technology, possibilities, etc.</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>Financial (for business)</td>
<td>Promotion of ecodriving creates demand for additional services (ecodriving trainings, eco-tyres, etc.)</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>Development of ecological vehicles</td>
<td>Ecodriving supports development of more ecological vehicles</td>
<td>3</td>
</tr>
</tbody>
</table>
10. **Netherlands**

The people were willing to make some time to answer the questions, but the people thought it was a lot of questions. The people interviewed are all positive about Ecodriving, but they see some problems. The biggest problem is the image of Ecodriving. It is described as dull and boring. Also the cost of training they have any comments on. Some feel that such training should be subsidized. Another disadvantage may be that people currently no training would follow. The one hand the costs other hand it takes time for a training course.

General recommendations, how to enhance ecodriving activities in the country:

- Greatly improve the image of Ecodriving.
- Integrated approach with Ecodriving aspects.
- Convince the examiner Ecodriving is very useful.
- Driving instructors should teach Ecodriving as an integral subject.
- More attention for Ecodriving in driving lessons and driver test.
- More clarification on cars with non-fuel.

10.1. **Driving instructors**

There are any quality control and certification systems. The examinations for the certification will be conducted at the IBKI (Innovam Branchekwalificatie-instituut) (examination and certification for the mobility section) in Nieuwegein. The certification consists of a theoretical test (20 multiple choice questions in 30 minutes. 14 questions correctly answered is a requirement) and a practice ride (45 minutes for Cat. B or 60 minutes for Cat. C/D). The recertification process includes only a theoretical test (20 multiple choice questions, 30 minutes, at least 14 correctly answered). The certificate is valid for 5 years. Since April 2008 the certification system is implemented. There are now 431 trainers with a certificate.

Ecodriving is a subject in the profession of the driving instructors. They give already Ecodriving training. Of course they think Ecodriving is useful. It saves money and it is much better for the environment. Ecodriving is already a part of the driver’s test in the Netherlands. The most common prejudices against Ecodriving is the image. It is described as dull and boring. They also think that it is meaningful to integrate Ecodriving in the education of learner drivers, because you start at the base.

All aspects of Ecodriving are taught in the driving schools who were interviewed. They think it is very important to teach all aspects of Ecodriving. The biggest restraints for learners to practice Ecodriving is the image and no good information about the subject. The improvements are that is woven into the training. When you buy a new car that the buyers get a training (for free for example). They prefer a integrated approach with Ecodriving aspects, because Ecodriving is no longer seen as an isolated trick. And it will be interwoven throughout the program. The best didactical way to communicate Ecodriving is to do it in practice.

They all think Ecodriving for licensed drivers is a potential business case. To extend/build up this is to give good examples and good results. And to make people aware of it. To integrate Ecodriving activities in driving schools you have to give specificity trainings. The targets groups could be large fleets or leasing companies. To commercialize Ecodriving you have to give more trainings, events, business to business.

The most common prejudices on Ecodriving is that people/consumers think it is dull and boring. The major benefits of Ecodriving in the eye of the consumer is to save money and it is good for the environment. The best way to communicate the benefits is through employer.

There is a demand for Ecodriving training courses but not much. They give already trainings to consumers and companies. A view examples are: Virtual Trainer, e-learning, short duration training. The problems they expect are the costs and the time. They think a price between € 50,00 and € 99,00 is a good price for an 1-to-1 one-hour-training. The problems they expect in the course of Ecodriving trainings for licensed drivers are: the type of cars, too expensive it takes too much time.
The aspects of Ecodriving which need further clarification are the automotive, the safety. The challenges for the futures are the different kind of cars, different kind of engines. The advantages of Ecodriving certification procedures are that there is no overgrowth, there is more unity. Ecodriving should get a bigger place in the mindsetting of people. To archive it, there should be more publicity for example over the internet.

To encourage to participate the driving instructors is that it must be profitable.

RECOMMENDATIONS

- Greatly improve the image of Ecodriving.
- Integrated approach with Ecodriving aspects.

10.2. Driving examiners

There are about 25,000 drivers they examine per year. They also think Ecodriving is useful. Ecodriving contributes to traffic safety and climate and air quality targets. The potential incentives for drivers to practice Ecodriving are safer driving and cost savings. The general problems are probably that Ecodriving is hard to be judged, much harder than safety related issues. The most common prejudice is that not every examiner is convinced about the added value of Ecodriving yet. Safety is important and it is pretty obvious how it is toe be judged. For Ecodriving, this is much more difficult. Many examiners therefore avoid more or less examining Ecodriving related issues.

Driving instructors should teach Ecodriving as an integral subject together with traffic safety: it is the way how you have to operate your car. But unfortunately not all driving instructors teach it this way. Still many of them take it separately or do not spend much time on Ecodriving. The way of driving is “energiebewust rijden” = Energy conscious driving.

There are regulations to examine eco-friendly driving. CBR uses a standardised protocol and form for the drivers test. It includes several Ecodriving elements.

Timely gear shifting, proper gear use, coasting, anticipating driving and braking are the Ecodriving aspects during the examination. There are possibilities to asses Ecodriving in the driver’s test but it heavily depends on the examiner if he/she is willing to judge Ecodriving elements. They would like to have a more integral Ecodriving approach, not only separate elements. In the Netherlands Ecodriving is already integrated in the drive test. One of the problems is still the willingness and motivation of the examiners to thoroughly judge Ecodriving elements, like it was meant to be. The suggestions for a harmonisation of driving education and testing will be a joint education of instructors and examiners, or specific instructions for both and more explicit judgement of Ecodriving.

Instructors and examiners have different interpretations of Ecodriving elements. The challenges for Ecodriving could be the different expectations and interpretations of instructors and examiners.

To envolve Ecodriving in the future:

Didactically: More attention for Ecodriving in both, driving lessons and driver test. Ecodriving has to be judged more explicitly. Thematically: Include new technical developments, like hybrid, electric, natural gas and hydrogen. The advantages/disadvantages of a Ecodriving certification procedures are: for instructors and examiners there is no need for certification. The certification is related to the explicit testing of Ecodriving: solid testing will result in solid attention during driving lessons.

RECOMMENDATIONS

- Greatly improve the image of Ecodriving.
- Convince the examiner Ecodriving is very useful.
- Driving instructors should teach Ecodriving as an integral subject.
- More attention for Ecodriving in driving lessons and driver test.
10.3. Energy agencies / environmental research institutes / universities / academies

They also think Ecodriving is useful, because it saves fuel and contributes to climate and air quality targets. It also contributes to traffic safety and cost saving. The problems could be Ecodriving for caravans. The problems they see is to engaging people to apply is not easy. Licensed drivers have all kinds of prejudices against Ecodriving and they think there is no need to go through any kind of training courses. They are already skilled and experienced. After the training courses there is always the question how long the trainees will keep applying Ecodriving and to what extend.

The different special benefits for different targets groups are: private car drivers: traffic safety, cost savings, more comfort. Company car drivers: more comfort. Fleet owners: sustainable image, cost savings.

They all think Ecodriving is a potential business case. In the Netherlands there are already a lot of good practices which clearly show that Ecodriving can be a business case.

Within and also outside the Dutch national Ecodriving programme “Het Nieuwe Rijden” manifold and many activities have taken place. One of the recent developments is the initiative of CBR (body for distribution of drivers licences) and the Dutch ministry to optimise the teaching and testing of Ecodriving for learner drivers. From 01-10-2010 “Het Nieuwe Rijden” will be transferred from the public to the private sector. From NL Agency to the Institute for Sustainable Mobility (IvDM). This is the result of a matured product that is ready to handed over to the responsibilities of the automotive sector.

In the early 2000-ds Ecodriving was no issue at all. There were all kind of prejudices and no willingness to take up Ecodriving. Nowadays Ecodriving is an issue for licensed drivers, fleet owners and most organisations. Ecodriving is being pushed by the national Ecodriving programme “Het Nieuwe Rijden”. This concerns a long term programme involving significant budgets. The latest results/insights on the subject Ecodriving is that Ecodriving should try to cover also new technical developments like hybrids, electric, natural gas and hydrogen.

RECOMMENDATIONS

- Greatly improve the image of Ecodriving.

10.4. Car Dealers / Leasing Organisation

Ecodriving is a relevant subject in the Netherlands for car dealers and leasing organisations. They think Ecodriving is useful. The problems the see is the image of Ecodriving. The image of Ecodriving is dull and boring. The also think Ecodriving is a potential business case. They don’t think is a marketing instrument more a product. The potential benefits they see are the costs and the environment. The necessary measures are to prove the people the fuel savings.

They offer already Ecodriving programs. There are no blueprints available. Some use in house experts for Ecodriving trainings, some use external trainers. The quality requirements they need for a Ecodriving training are a proper certification system and an official training controlled by the government. The specific benefits of Ecodriving for their consumers are fuel savings and safety. Using internet is a good way to reach the consumers. There is a variety of different trainings. The requirements for short duration trainings are to make it arguable that Ecodriving is not dull and boring. In major events they invite big clients and they and they give some Ecodriving trainings. The customers/clients like it and they think it is useful. The sales personnel of the companies took also part in Ecodriving training mostly together with clients. Again the image is the most common prejudice against Ecodriving in the dealer’s community.

The customers have the same opinion. They see it also as an additional investment. The fuel consumption is a relevant subject in selling/leasing cares. There is an increase of awareness for environmental issues. The aspects which need more clarification is that people need to be more aware of Ecodriving and the benefits should be explained well. The requirement for a successful
marketing strategy is to improve the image. The quality standards of Ecodriving are: certification, ISO certification, a validated training and examination of the government.

RECOMMENDATIONS

- Greatly improve the image of Ecodriving.
- Convince them that Ecodriving can also be a marketing instrument.

10.5. Automobile clubs

Ecodriving is a relevant subject by the automobile club, especially because of the cost savings and the environment. They also think it is useful because of the safety and it provides consumers money. The problems they see is Ecodriving by caravan. They also think Ecodriving is a potential business case. For their business interests they think about less breakdowns and that means less costs. To extend/build up Ecodriving as a business case is to give Eco driving trainings in an accessible way and return to regular. The automobile clubs give already Ecodriving trainings. On the road or track training, even they are developing an e-learning program.

Applying Ecodriving on cars with non-fuel is an aspect which needs more clarification. The challenge of Ecodriving will be to increase the percentage of operators. The prognosis will be that Ecodriving goes automatically in the future.

RECOMMENDATIONS

- Greatly improve the image of Ecodriving.
- More clarification on cars with non-fuel.

10.6. Insurance companies

Ecodriving is a relevant subject by the insurance company. They don’t see any problems with Ecodriving. They also see Ecodriving as a potential business case. They think it is more a business case for big enterprises, fewer for individuals. At the moment they are only know online assessments. Other insurance companies are active in the Ecodriving sector. The potential benefits for the business interests are reducing the costs. The benefits for the insurance sector are more safety. They also think the cost saving effects of Ecodriving training will be considerable. The common general attitude is very positive. They don’t have in-house programs, which reward the participation in real-world Ecodriving trainings, because they think it is dangerous.

The aspects of Ecodriving which need more clarification is that they would like to see more widening of the existing issues. The challenges in the future would be the new cars. To involve Ecodriving is to reach a lot of people by for example internet to do online trainings.

RECOMMENDATIONS

- Greatly improve the image of Ecodriving.
- More widening of the existing issues.
### 10.7. Summary

**Table 10.1. Classification of obstacles.**

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Image</td>
<td>The image is not good. The consumer thinks it is dull and boring.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Time</td>
<td>Consumers don’t want to waste too much time on it.</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Costs</td>
<td>Consumers don’t want to spend the money for this.</td>
<td>3</td>
</tr>
</tbody>
</table>

**Table 10.2. Classification of benefits.**

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cost savings</td>
<td>Long time fuel saving</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Environment</td>
<td>Less CO\textsubscript{2} emission</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Safety</td>
<td>Less damages and fuss</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Calmness</td>
<td>Eco driving leads to a calm way of driving</td>
<td>2</td>
</tr>
</tbody>
</table>
11. Poland

After 10 years of the ecodriving popularization, its effects are meager, at least from the Polish perspective. Only a handful of enthusiasts (several thousand people in Poland, at best) personally participated in the ecodriving training courses held for passenger car and commercial vehicle drivers. The number of people who learned ecodriving from the Internet and press resources is unknown. There are only few enterprises which require their staff to know and follow the ecodriving principles when operating their company vehicles. Polish driving training curricula and driving licence test criteria are void of this driving technique.

Since 2000, however, the economical driving instructions have been given to “big truck drivers” by the Polish representatives of DAF, MAN, Mercedes and Scania, as well as by the Polish coach and bus manufacturer Solaris. Ecodriving has also been included in the obligatory training curricula for preliminary and periodic qualification of truck and bus drivers ([The Resolution of the Ministry of Infrastructure1) of July 2 2008 on the drivers professionally performing carriage by road2, Annex no. 1 and 2 (Polish Journal of Laws, July 14 2008)].

During the interviews instructors and examiners were interested in the subject as they have already noticed the benefits of implementing the driving rules.

On the other side there is rather small interest of other stakeholders in the subject.

All interviewed stakeholders have underlined almost the same ways to enhance ecodriving.

The main points regards: preparation and implementation of the relative law, trainings, financial incentives from government side, certifications to ensure the best quality and national communication campaign.

According to the interviewees there are some obstacles like bad habits among the drivers, which can make the introduction of Ecodriving more difficult but showing the benefits is the best way to overcome those barriers.

11.1. Driving instructors

The instructors who were interviewed train tens of future drivers every year. All of them considered Ecodriving more as a driving technique than a philosophy. Most of them thought that Ecodriving was a relevant subject for their profession and they have been familiar with the subject for at least several years. But there were also people who did not consider Ecodriving as relevant subject in their job. The ecological motives, as well as the promise of a safer traffic by ecodriving, are usually not taken seriously by drivers, despite the usually enthusiastic opinions of those who have learned and been applying these driving principles in real life.

Quality Control and Certification system for Ecodriving instructors does not exist in Poland, but the instructors noticed the need for its creation. The main arguments were:

- the certification system would help to choose the best driving schools and the best instructors,
- the certification system would help to ensure the quality of the trainings.

The instructors noted that the knowledge about the ecodriving is very useful because it allows:

- lower the fuel consumption,
- reduce operating costs,
- help to protect the environment,
- improve traffic flow,
- improve driving culture,
- improve security.

The main problems with implementation of ecodriving rules are:
- lack of experience among the beginners (they stressed that the ecodriving rules are the most effective when a driver gets more experience with driving),
- additional cost of ecodriving lessons,
- lack of knowledge and awareness about positive effects of ecodriving among drivers,
- lack of knowledge among the instructors.

Generally speaking, the driving instructors noticed the need of implementing Ecodriving rules and they did not observe any particular obstacles against ecodriving among professional instructors. The opponents of ecodriving also threaten that anyone who saves 1000 zlotys (€250) on fuel will have to spend 4000 zlotys (€1000) on an engine overhaul. These opinions clash with equally heated arguments of "tyre burners", who state that ecodriving kills the joy of driving cars, that it is something for elderly persons and that if there were more ecodrivers, they would completely jam up the roads with their "sluggish driving".

In Poland the Ecodriving is not part of driving school curriculum. However, the instructors thought it is meaningful to integrate Ecodriving in education of learner drivers. The main reasons are as above. The instructors emphasized that although Ecodriving is not the part of driving school curriculum they already show the future drivers how to put the ecodriving rules into practice.

Similarly, the Ecodriving is not a part of driving tests in Poland. However, in this aspect the opinions were divided. Most of the instructors thought that Ecodriving should be the subject of driving exam but not all of them pointed out that the result of the exam should depend on use of ecodriving rules.

The most important aspects of Ecodriving in the teaching process according the instructors are:
- reasonable use of electrical devices, for example additional lights,
- going with the same speed when possible,
- using the highest possible gear,
- checking tire pressure,
- stopping the engine when applicable,
- starting the engine without using the accelerator.

In the instructor's opinion there were some problems in Ecodriving teaching process, but it was quite common if we took into consideration the learning process as a whole. Among the others they pointed out:
- recklessness of other drivers,
- bad habits,
- economic thinking during driving.

Almost all of the interviewers said that an integrated approach to Ecodriving education would be the most beneficial for future drivers. However, they pointed out that it would be difficult to add new issues without adding additional hours of practice to the driving course (the driving course consists of 30 hours of practical lessons). According to the instructors, the best didactical way to communicate Ecodriving is to start with the theory and then put the theory into practice, it means to show the benefits of Ecodriving in practice.

The instructors who teach Ecodriving should pass the state exam and have some experience in the subject.

To increase the importance of Ecodriving during the driving exam the instructors suggested to include Ecodriving issues to the school's curriculum and to the exam and preparation of the law regulations. Before Ecodriving would be included to exam they suggested that using Ecodriving rules during the exam should be taken as additional points in the total score.

All of the instructors considered the Ecodriving for licensed drivers as a potential business case. They think that the financial support of Ecodriving courses for licensed drivers is the best way to encourage driving schools to integrate education of learner drivers into course curriculum.

The most relevant target groups for marketing Ecodriving and related business activities are:
• sales representatives,
• professional drivers,
• people who drive a lot within the city.

The interviewers mentioned that the best activities to commercialize Ecodriving are:

- advertisements in the newspapers, radio and television,
- Internet activities,
- events like “open days” or “day with ecodriving” to promote the idea.

Not all of the instructors noticed the prejudices on Ecodriving within the consumers. The main problems with introducing Ecodriving they pointed out were:

- lack of knowledge about Ecodriving,
- habits,
- aversion to the new approach,
- everyday problems like traffic jams on the road.

According to the instructors the drivers noticed the advantages of Ecodriving. They pointed out:

- reduction of fuel consumption,
- reduction of operating costs,
- noise reduction,
- protection of the environment,
- improvement of traffic flow,
- improvement of driving culture,
- improvement of security.

Generally speaking, the instructors were open to the possibilities which would be given by the instructor qualification training on Ecodriving. The promotional price was considered as one of the factors which could convince the potential participants to take part in such course.

RECOMMENDATIONS

- The main problems with introducing Ecodriving the driving instructors pointed out were:
  - lack of knowledge about Ecodriving,
  - habits,
  - aversion to the new approach,
  - everyday problems like traffic jams on the road.

- In the instructor’s opinion there are some problems in Ecodriving teaching process, but it is quite common if we took into consideration the learning process as a whole. Among the others they pointed out:
  - recklessness of other drivers,
  - bad habits,
  - economic thinking during driving.

- The best didactical way to communicate Ecodriving is to show the benefits of Ecodriving in practice.

- The financial support of Ecodriving courses for licensed drivers is the best way to encourage driving schools to integrate education of learner drivers into course curriculum.
- Low price and good quality of the courses for licensed drivers is the best way to encourage drivers to take part in such courses.
- The most relevant target groups for marketing Eco-driving and related business activities are:
  - sales representatives,
  - professional drivers,
  - people who drive a lot within the city.
- The interviewers mentioned that the best activities to commercialize Eco-driving are:
  - advertisements in the newspapers, radio and television,
  - Internet activities,
  - events like “open days” or “day with eco-driving” to promote the idea.
- There is a need to create the quality control and certification system for Eco-driving instructors as:
  - the certification system would help to choose the best driving schools and the best instructors,
  - the certification system would help to ensure the quality of the trainings.

11.2. Driving examiners

We received 5 responses to our questionnaire. Each of them examine between 100-200 of learner drivers per year.

They define Eco-driving as car technology and driving techniques although some of them see the elements of philosophy.

All of them are engaged in the field of eco-driving for at least few years. They think Eco-driving is useful because it:

- lowers the fuel consumption,
- reduces operating costs,
- helps to protect the environment,
- improves traffic flow,
- improves driving culture,
- improves security.

There are no incentives for drivers to practice Eco-driving. If they use the Eco-driving rules, it is because they are aware of advantages they give.

The examiners see the problem with implementing of the Eco-driving rules. The main reason is lack of deep knowledge among instructors and also lack of the Eco-driving in curriculum of learner drivers.

All of them see the need of integrating Eco-driving in the education of learner drivers. As the main reasons they consider:

- underlining the role of the driver in the process of driving economics and ecology,
- necessity of rising awareness of economic and safe driving.

Almost all of them think that the result of the driving exam should depend on the use of Eco-driving rules. To be able to implement this, it is necessary to change the law, in particular the ordinance which regulates the exam rules as well as the consciousness of the responsible people.

Only one examiner met the people who consciously used the Eco-driving during the exam.

The most important aspects of Eco-driving in the teaching process according the examiners are:

- avoiding driving on neutral gear,
- braking with engine,
- perfectly flowing with the traffic,
- anticipatory driving (watching the traffic well ahead),
- using the highest possible gear,
- checking tire pressure,
- stopping the engine when applicable,
- starting the engine without using the accelerator.

The opinions on the modular or integrated approach of training were divided. Some examiners think that the modular approach is better as it allows better concentration on particular issues. Those who chose the integrated approach pointed out that it gave possibility to contact or to train much more people. Two of the examiners said that modular approach is better for experienced drivers as it can improve qualifications and change bad habits. One the other hand, the integrated approach is better for learners.

Ecodriving is not a part of driving exam in Poland. There is no regulation how to examine eco-friendly driving, so these aspects are not assessed during the examination.

According to examiners the main problems with integration of Ecodriving in the education and examination of learner drivers in Poland are:
- lack of the regulations,
- lack of awareness and knowledge,
- increase of driving course price,
- limited time of driving course.

The examiners pointed out the need of Ecodriving certification procedures. They listed the advantages and disadvantages of certification procedures as follows:

1. advantages:
   a. increase of awareness,
   b. increase of instructors’ qualifications,
   c. uniform training system,

2. disadvantages:
   a. problems with implementation.

The examiners drew the attention to the fact that the certificates should give some benefits like reduction of costs of insurance, new job possibilities etc.

Uniform training process is the main advantage of introduction of Ecodriving qualification procedures.

According to the examiners the uniform program of training, the best qualifications, long experience should be necessary requirements for Ecodriving instructors and examiners.

In this context the instructors and examiners should attend the special training course (theoretical and practical) and selection criteria for future examiners and instructors should be tightened. All of this should be regulated by law.

All of the examiners were interested in participation in a qualification training on Ecodriving. The best motivation for them will be the high level of training and the possibility of getting new qualifications. The reasonable price would be between 40 and 75 euro.

**RECOMMENDATIONS**

- The driving examiners pointed out that there were no incentives for drivers to practice Ecodriving. If they use the Ecodriving rules, it is because they are aware of advantages they give.
- The main problems with integration of Ecodriving in the education and examination of learner drivers in Poland are:
  - lack of the regulations,
- lack of awareness and knowledge,
- increase of driving course price,
- limited time of driving course.

- The driving examiners see the need of integrating Ecodriving in the education of learner drivers it:
  - underlining the role of the driver in the process of driving economics and ecology,
  - necessity of rising awareness of economic and safe driving.

- The examiners pointed out the need of Ecodriving certification procedures. The examiners drew the attention to the fact that the certificates should give some benefits like reduction of costs of insurance, new job possibilities etc. Uniform training process is the main advantage of introduction of Ecodriving qualification procedures.

### 11.3. Policy makers

The person who was interviewed was the representative of the Ministry of Infrastructure and at the same time the member of the National Council for Road Traffic Safety. The Ministry is responsible for all issues related to the process of driving teaching.

According to his opinion Ecodriving is the car technology and driving techniques. He has been familiar with the subject for 20 years as the Ecodriving is very important issue in the context of road safety.

He thought he knew the issue deeply basing on his own experience. According him the main rules of Ecodriving are:
- going with the same speed when possible,
- going with reasonable speed.

In his opinion the Ecodriving is useful as it gives the economical benefits, such as:
- lowering the fuel consumption,
- reduction of the operating costs,
- environment protection,
- security improvement.

On the other hand he thinks that the use of Ecodriving rules should be reasonable and depends of the road conditions.

The expert thought that integration of the Ecodriving into school curriculum is important as it would give lots of benefits, like:
- improvement of security,
- improvement of the environment,
- savings.

In his opinion the Ecodriving should be integrated mostly by increasing the awareness of the drivers and learners about the benefits.

According to the expert the knowledge about Ecodriving is quite underrepresented and the rules are not used because of fast pace of life.

In the opinion of the expert the effects of the use of Ecodriving rules need future clarification.

He expects that the influence of Ecodriving on fuel use, operating costs, CO₂ emission should be examined deeply in the future.

### RECOMMENDATIONS

- Integration of the Ecodriving into school curriculum is important as it would give lots of benefits, like:
- lower fuel consumption,
- reduction of the operating costs,
- environment protection,
- security improvement.

- Use of Ecodriving rules should be reasonable and depends on the road conditions.
- Ecodriving should be integrated mostly by increasing the awareness of the drivers and learners about the benefits.

11.4. Energy agencies / environmental research institutes / universities / academies

The interviewed person was the educator, working in the Practical Education Centre. According to her opinion Ecodriving is more of a philosophy than a technical issue. She has been familiar with the subject for around 7 years. She is the mechanics teacher at a technical college.

In her opinion the most important rules of Ecodriving are:
- decreasing the driving influence on the environment,
- economic driving,
- taking into consideration real necessity of using the car,
- choosing good car when changing it,
- paying attention to the place and method of washing the car and changing oil.

She thought that Ecodriving should be a standard and it needs to be announced to the publicity as something very trendy.

According to her, the benefits of using Ecodriving for different target groups would be:
- for city inhabitants – cleaner air and fewer cars in the city centre,
- for young drivers – more responsibility,
- for administration – cleaner environment, healthy people.

She thought that Ecodriving could be a potential business case if there was a special financial incentive which helped to limit the cost of the trainings.

She told us that there were three main Ecodriving activities which were currently in process in her business field:
- technical solutions limiting fuel consumption,
- catalytic converters,
- old cars replacement.

The main obstacles with implementing Ecodriving activities are:
- small interest of authority,
- bad attitude of old drivers (“they think nobody drives better”).

In her opinion it is very important to use soft measures like Ecodriving for CO₂ reduction, although it would not be easy to change people's attitude and habits. Additionally, there are no state activities related to Ecodriving and, even more, the activities related to environment and climate protection are rather chaotic.

In this aspect environmental protection is not a motivational factor in Poland and in the expert's opinion the environmental awareness is rather small. Due to this fact it seems to be very important to inform people, e.g. in the form of promotional campaigns and teach the young people from the first years at school.
According to our expert the main benefits of Ecodriving for drivers are:
- financial benefits,
- safeness,
- image building as environmental friendly.

Financial benefits could persuade drivers to use Ecodriving.

In her opinion the drivers in Poland could pay for the trainings if they saw it would be paid back for example in form of tax deduction. 10-15 euro would be a reasonable price for a one-hour 1:1 training.

The necessary activities for a mass roll-out of Ecodriving should be as follows:
- law regulations,
- promotion of Ecodriving.

The real-world Ecodriving training course should meet the following quality standards:
- competence,
- good organisation,
- friendly conditions,
- easy access.

In the opinion of the expert technical solutions and driving techniques need further clarification. Different kinds of fuel could be a challenge for Ecodriving in the future.

Thinking about future Ecodriving we have to take into consideration:
- technically: the life costs analysis, promotion of the environmental friendly materials and reuse of the materials as well as utilisation,
- didactically: holistic approaches to education; Ecodriving should be element of sustainable development,
- thematically: mentioning Ecodriving briefly, but repeatedly.

In her opinion it is very important to consult the qualification and certification procedures before their implementation.

RECOMMENDATIONS

- Ecodriving should be a standard and it needs to be announced to the publicity as something very trendy.
- The benefits of using Ecodriving, which should be pointed out in the campaign for different target groups can vary as:
  - for city inhabitants – cleaner air and fewer cars in the city centre,
  - for young drivers – more responsibility,
  - for administration – cleaner environment, healthy people.
- Ecodriving could be a potential business case if there is a special financial incentive which helps to limit the cost of the trainings.
- Financial benefits could persuade drivers to use Ecodriving.
- The main obstacles with implementing Ecodriving activities are:
  - small interest of authority,
  - bad attitude of old drivers (“they think nobody drives better”).
- The necessary activities for a mass roll-out of Ecodriving should be as follows:
  - law regulations,
11.5. **Automobile clubs**

The interviewed person was the chairman of the Environmental Protection Commission in Polish Motor Union.

According to her knowledge Ecodriving was more about technicalities then philosophy. It is relevant issue in her profession in the context of safety of road traffic. Every day she uses a standard car but her work is related to motor sports where rules and regulations of environmental protection are systematically introduced.

She has been interested in Ecodriving theme for five years.

In her opinion the most important Ecodriving principles were:

- buying green (ecological) products,
- not warming the engine before driving,
- using air conditioning only when really needed,
- going with the same speed when possible, accelerate gently,
- avoid driving on neutral gear,
- braking with engine.

According to her Ecodriving is useful as it:

- reduces the harmful impact of cars on the environment,
- lowers fuel consumption,
- lowers operating costs,
- often means shorter travel time,
- offers higher level of security,
- means less stress during driving.

She did not noticed any problems with Ecodriving.

She thought that Ecodriving was a potential business case, but only if the general public noticed the Ecodriving benefits. For example, for business sector using Ecodriving rules means lower operating costs.

Similarly to other interviewed people she noticed lack of understanding from decision makers and lack of awareness among drivers.

In her opinion there were no political incentives related to Ecodriving. In this context the awareness about environmental issues is not very high as compared to the West European countries. In Poland there is a lot of environmental regulations but they are not enforced. In this context the environmental issues are very important.

She thoughts that Ecodriving could be the answer of drivers’ problems as it could lower the aggression on the road and improve the road safety. However, reaching it needs raising awareness among future drivers about benefits resulting from economic driving. Nowadays few drivers use the Ecodriving in practice as they are not aware about benefits like:

- low operating costs,
- higher safeness,
- more comfortable driving.

According to her drivers would be ready to pay for ecodriving course and reasonable price seemed to be around 50 euro for a one-hour 1:1 training.

The successful mass campaign seems to be the best and necessary activity for a mass roll-out of Ecodriving.
The real-world Ecodriving training course should meet the following quality standards:
- good presentations,
- practical driving to show the benefits.

In her opinion Ecodriving should pay more attention to the ecological and safety aspects in the future. The main challenge will be new fuel solutions.

She thought that Ecodriving would be obligatory in Poland in the nearest future.

RECOMMENDATIONS

- Ecodriving will be a potential business case, but only if the general public noticed the Ecodriving benefits. For example, for business sector using Ecodriving rules means lower operating costs.

- The main obstacles to introduction of Ecodriving are:
  - lack of understanding from decision makers,
  - lack of awareness among drivers,
  - lack of political incentives related to Ecodriving.

- The successful mass campaign seems to be the best and necessary activity for a mass roll-out of Ecodriving.
11.6. Summary

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lack of the regulation</td>
<td>The integration of Ecodriving in driving school curriculum and driving exam be should regulated by law</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Know-how of trainers</td>
<td>There are differences in the skills of trainers (certification needed as well as training of trainers)</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Know-how of examiners</td>
<td>There are differences in the skills of examiners (certification needed as well as training of examiners)</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Additional Costs</td>
<td>Integration of Ecodriving to driving course curriculum will increase its price</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Lack of financial subsidies</td>
<td>Integration of Ecodriving to driving course curriculum will increase its price</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Lack of awareness</td>
<td>Drivers do not know about real benefits of ecodriving</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Limited time of driving course</td>
<td>The time of the driving course is rather limited. It is impossible to add additional aspects to the curriculum without additional hours</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Habits</td>
<td>Difficulties in changing driving habits</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low the fuel consumption</td>
<td>Using of ecodriving lower fuel consumption</td>
<td>1nt</td>
</tr>
<tr>
<td>2</td>
<td>Reduction of the operating costs</td>
<td>Ecodriving means to pay more attention to the condition of vehicles</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Protection of the environment</td>
<td>Ecodriving reduces CO(_2) emission</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Improvement of traffic flow</td>
<td>Ecodriving means more attention to the condition on the road, driving with the same speed when possible</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Improvement of driving culture</td>
<td>Ecodriving means to pay more attention to the other people on the road</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Improvement of security</td>
<td>Ecodriving means more attention to the condition of vehicles and on the road</td>
<td>1</td>
</tr>
</tbody>
</table>
12. Spain

As part of the working package number 2 of the ECOWILL project, the RACC had to carry out a series of interviews in Spain, based on previously provided questionnaires which made reference to the topic of ecodriving within the scope of the application (Task 3). This activity was carried out on a national level and with a varied participation of companies (wherever possible), achieving interesting results for the content of this report.

As a note, we should add that despite enjoying quite a positive reception by some stakeholders as regards the development of the ECOWILL targets, there was also a certain unwillingness shown by others, which created agenda problems to draw-up this report, which lead us to act in a more agile way.

Thus, the questionnaires were completed in two different ways: The first was the desired way, i.e. based on personal interviews during which the topics and targets of the project were discussed; and the second was via electronic mail in order to receive the responses to the proposed questionnaire, according to the type of stakeholder.

We should also mention that after gathering the information, we noticed the significant role of the lack of interest of certain governmental bodies in the development of ecodriving in legal terms, which goes against the tasks which are currently developed by them, i.e. training their examiner staff in ecodriving to boost the implementation, thus creating a major time obstacle. A problem of general concern is also the lack of standardization among the ecodriving courses in driving schools, and the courses imparted by other agents, which has been generated due to the lack of a certification and quality control of the topics imparted and of the companies carrying out these courses. Last but not least, it is interesting to highlight that the different agents consider the society’s lack of awareness on environmental issues (may be due to a lack of knowledge) as an obstacle, and that drivers are little interested in improving this fact through ecodriving (as they do not know about this method).

On the other hand, several stakeholders have detected certain benefits: fuel savings and the consequent economic savings, reduction of the CO2 emissions to the atmosphere and reduction of the road accidents due to the increase in road safety implied in ecodriving. Most of those interviewed agree on the fact that ecodriving is a business model to be run in the future by all those who comply with the minimum certifications. Likewise, it becomes clear that there are a series of stakeholders that consider the use of these driving techniques a motivation for their staff while carrying out their tasks, either teaching their application (instructors) or applying them in their job (fleet drivers).

All of the groups interviewed show a large general interest in the implementation of ecodriving, although all of them have identified certain obstacles that would hinder the implementation, and this is why they have provided recommendations to be able to overcome them.

The most widespread and the main recommendation is to change the current regulations in order to include the new ecodriving techniques. Once this has been made, the intention is to change the assessment parameters for novice drivers so that all groups involved in driver training can standardize their criteria and thus avoid a contradiction between the instructions given during the training lessons and what is expected by examiners.

This standardization of criteria among all involved parties is the second most important recommendation made by the different groups.

Another very widespread recommendation is the need to raise the awareness among citizens about the need to integrate ecodriving especially in the habits of licensed drivers, whose will to assimilate new concepts is lower, due to the customs adopted during the years they have been driving. The development of massive dissemination campaigns is a recommendation that appears repeatedly.

Lastly, on an overall level and related to the above paragraph, it is recommended to provide financial support to carry-out the training courses for licensed drivers.

On an individual level, both instructors and examiners highlight the need to standardise criteria and to certify their training, which should be carried out by the instructors themselves.

Policy makers focus their recommendations on the regulation of ecodriving.
Energy agencies highlight the development of awareness campaigns for citizens, to make the need and the benefits of ecodriving known.

Fleet operators are concerned about the costs and the materialization of the training as such, and recommend financial support, as well as a larger course offer and more flexibility with the option of online training in a near future.

Car dealers suggest raising awareness and implementing new car technologies.

Last but not least, automobile clubs would focus their efforts in regulations and communications in different fields.

Below we offer a summary of the obstacles and benefits found during the interviews for each of the groups. They are also classified according to their relevance as regards the implementation of ecodriving in the respective working environment. As well, recommendations, how to enhance ecodriving activities in the country are provided for each target group.

### 12.1. Driving instructors

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle (Short description)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The question about the interest in ecodriving within the profession of a driving instructor showed that there is a certain interest but at the same time there is a lack of technical knowledge.</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>The general problem mostly related to ecodriving is the concern about the behaviour of licensed drivers who are reluctant to change the habits adopted during their experience at the wheel.</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Another general problem is the lacking knowledge about this driving technique among drivers.</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>As regards prejudices among the most common driving schools, there seems to be some difficulty to combine this new praxis with the regulations currently followed by examiners.</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Driving school pupils do not perceive ecodriving as a need.</td>
<td>2</td>
</tr>
<tr>
<td>6.</td>
<td>The main problem for pupils when training ecodriving is that this is not valued during the exam and that it may even be counterproductive when trying to pass the exam, due to the examiners' lack of training.</td>
<td>1</td>
</tr>
<tr>
<td>7.</td>
<td>The main conflict between teaching and grading pupils is the lack of standardised criteria.</td>
<td>1</td>
</tr>
<tr>
<td>8.</td>
<td>There may be some problems trying to integrate ecodriving due to the insufficient level demanded from pupils.</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>As regards licensed-driver training, the conflicts are the price of the courses as well as the difficulty to change adopted habits.</td>
<td>1</td>
</tr>
</tbody>
</table>
BENEFITS IDENTIFIED:

<table>
<thead>
<tr>
<th>No</th>
<th>Benefits (Short description)</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The main general benefit is the improvement of road safety.</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>The second benefit suggested is the reduction of CO₂ emissions.</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Cost savings, more comfort and less stress at the wheel are considered as benefits for users.</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Savings and less road accidents are considered as benefits for car fleets.</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>For training companies the benefit is the business opportunity.</td>
<td>3</td>
</tr>
</tbody>
</table>

Part A: Fundamentals concerning Ecodriving

- The instructors interviewed are teaching around 300 drivers per year in Spain.
- Most instructors think that the Ecodriving is a very relevant subject and this interest is increasing every day.
- Actually doesn’t exist a Quality Control and Certification system for Ecodriving in Spain. All instructors think that is needed because the unification is the most important item to achieve.
- Instructors are involved in Ecodriving for 6 years and they see anticipated driving as the most relevant tips and also on time gear change and relaxed driving.
- The Ecodriving is absolutely necessary for instructors because implies a reduction of fuel consumption, costs, CO₂ emissions and an increase of security.
- Some problems are found in Ecodriving, there are different criteria in the different groups involved (instructors, examiners, administration). The drivers are not conscious about the Ecodriving benefits. It’s very difficult for the experimented drivers to change their driving habits.
- The most common prejudice against Ecodriving is the disbelief caused by the lack of information.

Part B: Ecodriving for learner drivers/driving schools

- The Ecodriving is currently not part of the driving school curriculum but the instructors think that it must be represents an increase of the security and a lot of benefits for the driver.
- Also, Ecodriving is not part of the drivers test. Some instructors think that security is most important than Ecodriving but in general they think that it should be evaluate in the test. Regulation and training of examiners is necessary to implement it.
- In general, none of the aspects of Ecodriving is currently taught in the driving schools in Spain so all the contents should be enhanced.
- The most relevant contents for the education of learner drivers are the relaxed driving and the respect with the other drivers but there are some restrains for learners because they don’t see Ecodriving as something useful to pass the test so they’re not motivated to practice it.
- Instructors suggest introducing Ecodriving into the qualification as the instruction of the instructors and examiners.
- The instructors prefer the integrated approach for the learner drivers and the modular one for the drivers with experience.
- The different criteria of the current normative in Spain and the Ecodriving techniques it’s the most important conflict between education and examination so a new normative and formation for the different actors it’s needed to get the harmonisation of driving education and testing.
- The translation of the application new driving techniques and cost savings is the preferred way to communicate Ecodriving.
Part C: Ecodriving for licensed drivers

- Instructors think that Ecodriving is a potential business case if there’s a good communication of his benefits. They consider there’s a lack of information in this issue.
- The commercial drivers are the most relevant target group for Ecodriving but the timing and costs are the major restraints to practice it.
- In the eyes of consumers the costs saving is the major benefit. Also the car maintenance and the increase of security are important issues. In the eyes of commercial drivers it’s the same but these benefits impact on the company.
- Instructors consider meaningful to offer Ecodriving training courses but the demand of such courses will depend on the economical aid they would receive.
- Instructors with experience in teaching Ecodriving made specific courses for private and commercial drivers and the prices were around 40-50 € per hour which is the most important problem selling Ecodriving courses but consider that is reasonable price.
- Information about costs saving is the basic requirement to convince drivers to pick up such courses.

Part D: Future Outlook

- The unification of criteria is the most demanded aspect by the instructors. Also the adaptation of new technologies applied to the driving is a challenge that Ecodriving have to face.
- Instructors think that Ecodriving has to evolve technically, didactically and thematically.
- The certification and qualification procedures will ensure quality training by properly trained personal.
- Instructors would participate in qualification training and the costs wouldn’t be a problem if the training worthwhile.

RECOMMENDATIONS

- The integration of ecodriving in driver training is required due the actual discrepancies between the curricula and testing (theoretical and practical) used to get the drivers license and the ecodriving top 5 hints (you can fail the practice exam if you use some ecodriving tips). This integration must be made under a legal format by the government.
- It is recommended a standardization of criteria by the time the administrations, instructors and examiners talks about ecodriving. It is known that some of these stakeholders have discrepancies about the standards needed to teach ecodriving in driving schools. Having this problem identified, then, it is proposed to do additional and joint training for instructors and examiners in order to harmonize the concept.
- A certification is needed for driving instructors in order to be able to have a good control over ecodriving contents and practices (quality). The interest over this question for driving instructors is a certification valid in Europe that helps to increase the curriculum and knowledge. For the driving instructors that do not want to participate on this, create in parallel a mandatory law that requires the certification to be able to work in a driving school.
- Instructors bet for a modular approach implementing ecodriving education for licensed drivers making them interested by deploying information (campaigns, leaflets and others) about the benefits carry by the use of ecodriving techniques. On the other hand an integral approach is preferred for novice drivers. This will need a modification of the actual legislation.
- More campaigns to raise the awareness over ecodriving are needed and should be focussed, in order to show ecodriving, as something necessary and beneficial. The administration must be part of these activities.
- More subventions of ecodriving courses (by governmental entities) for licensed drivers are needed in order to multiply the effect of ecodriving in different fields (road safety, environment, etc).
Special emphasis should be made over novice drivers on anticipating the behaviour of what other drivers would do during the practices of ecodriving. The way in which driving instructors cooperate with them while practicing is a priority to avoid the ecodriving hints turn into a dangerous technique. For this, is needed a standard regulations by the time the driver is trained.

12.2. Driving examiners

OBSTACLES IDENTIFIED:

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle (Short description)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>In general terms they consider it difficult for licensed drivers, who have already adopted habits along the years, to accept ecodriving.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Also in general terms, they consider that there is a lack of standardisation regarding ecodriving in driving schools and among examiners.</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>As regards the possible conflicts when assessing pupils, they consider that ecodriving may jeopardize safety in some situations if there is not enough experience available.</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>They consider that teaching this driving style is not generalised in driving schools.</td>
<td>3</td>
</tr>
</tbody>
</table>

BENEFITS IDENTIFIED:

<table>
<thead>
<tr>
<th>No</th>
<th>Benefits (Short description)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ecodriving is considered to be useful to improve the environment.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Ecodriving is considered to be useful to save fuel.</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>It is suggested that the main incentive to apply ecodriving is the cost saving it may imply for drivers.</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>Exploitation of ecodriving by different commercial entities, promoting social communication.</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>It will be possible to create tools that will allow for a standardization and assessment of the list of topics needed to get the driving license.</td>
<td>1</td>
</tr>
</tbody>
</table>

Part A: Fundamentals concerning Ecodriving

- Around 1000 learner drivers per year are examined for each examiner (that answered the interview) in Spain.
- Examiners define Ecodriving in a technical way and consider that the interest on this is increasing in Spain but they're not working on it by the moment.
- They consider that Ecodriving is useful and the costs saving are the major incentive for drivers to practice it.
- The difficulty for the experimented drivers to change his behaviour and the lack of information are the most important problems concerning Ecodriving.
- One of the prejudices against Ecodriving is the penalty of the change gear when the vehicle allows it perfectly.
Part B: Ecodriving for learner drivers / driving schools

- Examiners think that Ecodriving wasn’t part of the driving school curriculum but now it’s starting to appear and that it’s absolutely meaningful to do it to have drivers with an environmental awareness that increases the security at the same time.

- The Ecodriving is part of drivers test but with a low influence on the final result so a learner driver can’t fail the test by applying bad Ecodriving. Examiners think that it’s important to add some Ecodriving aspects but the security must have more weight in the rating. In this way, relevant for the education is that the driver should be able to know when the security is more important than the Ecodriving.

- Examiners think that a modular approach is better for drivers with experience and an integrated one for the learner drivers.

Part C: Ecodriving in driving examination

- The examiners think that the learner drivers don’t apply Ecodriving techniques and it is not a trivial question for them. When they address this way of driving they use efficient driving more than Ecodriving.

- They don’t know any regulation how to examine eco-friendly driving. During the test the aspects assessed are the on time gear change or the unnecessary accelerations.

- The Ecodriving aspects are not sufficiently specified in order to detect them and the security always is more important. Currently is difficult at all to assess Ecodriving abilities in the test.

- Examiners think that the Ecodriving techniques require some experience that the learner drivers don’t have.

- Finally, the conflicts between education and examination are the lack of harmonisation and they propose that the instructors and the examiners must be formed by the same persons.

Part D: Future Outlook

- Examiners think that Ecodriving must be added to the tips evaluated during the drivers test. At the same time, Ecodriving needs a wide communication to make users aware of his benefits.

- From examiners point of view the education of the instructors and examiners it’s a key thing. They’re willing to participate in qualification trainings to improve their job.

RECOMMENDATIONS

No recommendations were made relative this stakeholder, due all this people works for the policy makers (see section 12.3) which training was finished in October 2010 under ecodriving techniques.

Besides that, there are some recommendations the examiners made in order to get the implementation of ecodriving easier:

- Integration of ecodriving criteria in driver rating form test.

- Homologation and standardisation of the training for driving instructors and examiners in order to have a consistent education in driving schools and testing by the examiners.

- Some campaigns are needed focusing in ecodriving benefits:
  - Encouraging a change of attitude among drivers, highlighting the economic savings.
  - Prioritize safe driving and perfect it with ecodriving.
  - Funding of recycling courses for licensed drivers.
12.3. Policy makers

OBSTACLES IDENTIFIED:

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle (Short description)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ecodriving is a problem affecting different fields: political and social, as well as their processes (bureaucracy)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>The implementation may become complicated as regards funding and acquisition of the necessary knowledge, due to the large dispersion of the currently existing driving schools.</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>The lack of a law to certify the contents in driving schools</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>The lack of experience of driving school pupils when combining road safety and ecodriving.</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>The lack of communication about ecodriving by the strongest media is a significant obstacle.</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Driving school instructors do not have any motivation to include more topics in the training.</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>There is the need to communicate the role of society in environmental issues.</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>A difficult task involved in teaching ecodriving is the acceptance by licensed-drivers to change their usual driving style (especially for experienced drivers).</td>
<td>1</td>
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</tbody>
</table>

BENEFITS IDENTIFIED:

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<thead>
<tr>
<th>No</th>
<th>Benefits (Short description)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The implementation of ecodriving in driving schools and specifically in the list of topics for new drivers will turn it into an integral education and not in phases.</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>It will be possible to create tools that will allow for a standardization and assessment of the list of topics needed to get the driving license.</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Ecodriving has a political and at the same time social benefit, i.e. it improves the environment and saves money (less fuel).</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>As regards training centres, it is considered a business opportunity to impart ecodriving courses both to private people and professionals.</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>The social development of this driving method will help to increase the sale of environment-friendly cars.</td>
<td>3</td>
</tr>
</tbody>
</table>

Part A: Fundamentals concerning Ecodriving

- Policy makers define Ecodriving as a philosophy that it’s increasing his importance every year.
- The Ecodriving is a new way of driving that implies a less aggressive attitude that allows the driver to reduce costs, contamination and fuel consumption, from the policy makers’ point of view.
- At the moment, Ecodriving has no presence in the national energy efficiency and climate policy but in the future years sure it will.
Part B: Ecodriving for learner drivers / driving schools

- Policy makers think that the harmonisation of criteria is basic for Ecodriving and they see it as an integrated approach more than a modular one.
- The main problem when integrating Ecodriving in the education, for policy makers, it’s the economic issues and the acquisition of knowledge.
- The creation on a certification law is the main obstacle for the integration of Ecodriving in the education system, in the policy maker’s eyes.

Part C: Ecodriving for licensed drivers

- Policy makers think that the costs saving and the environment improvement are the major benefits of Ecodriving.
- They appreciate a lack of communication of this benefits that provide Ecodriving.
- Policy makers consider necessary training for driver instructors.

Part D: Future Outlook

- Ecodriving need a harmonisation of criteria between instructors and examiners to create a law that fit with all points of view.
- The major challenge is to convince drivers to change his driving behaviour to assess the benefits of Ecodriving.

RECOMMENDATIONS

The objectives for the policy makers in Spain (DGT - Directorate General for Traffic) along the next two years take in consideration some specifics actions relative the ecodriving following the actions already made until now as next:

- All examiners have been trained in ecodriving. This was finalized in October 2010 in order to implement the ecodriving techniques in practice testing by the time the law is modified. Please be sure to understand that the only examiners in Spain are the ones from DGT.
- In parallel, the DGT is creating a standardize of the contents for all driving schools in order to get the most of ecodriving techniques under the "old fashioned way to teach in the driving schools". According with this action, they are training driving school instructors so that they are able to adopt these new techniques in their teaching, using the synergy that they have with the National Energy Agency in Spain.
- The DGT is looking forward to regulate the implementation of ecodriving techniques in the legislation and regulations currently in force. This is a work realized in cooperation (background) by the National Energy Agency of Spain IDAE. It is establish that the new law is signed in 2011.
- To carry out awareness campaigns among citizens in general to make them understand the advantages of using the new ecodriving techniques. This campaign will be disseminated by the time the modification of regulations has been released and signed.
- Financially support the implementation of courses for licensed drivers, novice drivers, fleet operators and other relevant stakeholders introducing public grants.
12.4. Energy agencies / environmental research institutes / universities / academies

**OBSTACLES IDENTIFIED:**

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<thead>
<tr>
<th>No</th>
<th>Obstacle (Short description)</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>As regards the general problems of ecodriving they consider that experienced drivers are very reluctant to change their driving habits.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Another general problem is that the ecodriving techniques are not compatible with the techniques currently used in driving schools to train new drivers.</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Ecodriving does not reduce the emission of other pollutants, except for CO₂. This is also considered as a general problem of this technique.</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>As regards the implementation of ecodriving in Spain, the little experience in our country is considered as an obstacle.</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>Another obstacle for the implementation of ecodriving is the complementary information needed for driving school instructors.</td>
<td>2</td>
</tr>
</tbody>
</table>

**BENEFITS IDENTIFIED:**

<table>
<thead>
<tr>
<th>No</th>
<th>Benefits (Short description)</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ecodriving is considered to be useful to save fuel (cost savings).</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>The improvement of road safety is a further useful aspect.</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Ecodriving is also considered to be useful to improve the environment.</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Within the private field, the main benefit of ecodriving is the saving of fuel and therefore the cost savings.</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>As regards the commercial aspect, fuel savings, maintenance costs, improvement of road safety and a marketing and added value are considered as benefits.</td>
<td>1</td>
</tr>
<tr>
<td>6.</td>
<td>For training centres, it is considered a business opportunity to impart ecodriving courses both to private people and professionals.</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>For citizens in general, the benefits are the improvement of the environment and the reduction of noise pollution.</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>For the authorities it is an improvement of road safety.</td>
<td>2</td>
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</tbody>
</table>

The interviewed is representative of IDAE (Institute of Diversification and Saving of Energy).

**Part A: Fundamentals concerning Ecodriving**

- The respondent defines Ecodriving as a change in the behaviour joint with a series of driving techniques with lead to a new driving style.
- In IDAE are executing projects aimed to the promotion and implementation of Ecodriving for cars and industrial vehicles. He personally worked in the field of Ecodriving for 9 years.
- The most relevant tips from his point of view are:
  - Drive at larger gears and lower revolutions
  - Shift up as soon as possible
In case you detect an obstacle in the road/street, release the accelerator in time, leaving the car in gear… in this conditions, fuel consumption is “0”

Driver should anticipate actions in order to avoid unnecessary braking and detentions

Maintain a steady speed

The respondent thinks that Ecodriving is absolutely useful. Indeed, for him, is the way in which modern cars must be driven in order to take advance of their new technologies, saving energy, emissions, costs and improving road safety. The only problem he sees with Ecodriving is that not reduces the emissions of some pollutants different from CO₂.

Part B: Ecodriving as business case

The benefits for different target groups named by the respondent are:

- IDAE: energy and CO₂ savings.
- Traffic authorities: improve safety on roads.
- Fleets: fuel consumption, maintenance and costs savings. Useful for marketing campaigns and for achieve service contracts with public administrations.
- Citizens: reduction of noise in traffic.
- Driving schools and driving teaching centres: a new business opportunity both for cars (Ecodriving courses) and industrial vehicles (Ecodriving courses and CAP).
- Car manufacturers: reduction of CO₂ emissions of vehicles in test cycles.

He thinks that Ecodriving is a potential business case, in fact, that’s a real business case. Driving teaching entities, transport consultancies, car makers, insurance companies, renting/leasing companies, public and private fleets, consumer associations, communication companies… are commercializing Ecodriving products, or taking advance of Ecodrive training and communication campaigns.

At this moment, he is working on the implementation of Ecodriving in the Driving Teaching System. In this way, they’re now training all the examiners (a number close to 1,000) in collaboration with Spanish Traffic Authorities (DGT). They’re managing training campaigns of Ecodriving courses in collaboration with Regional Administrations for drivers and teachers, both for cars and industrial vehicles. Also, they’re managing other Ecodriving training programmes for professional drivers of industrial vehicles in collaboration with the ministry of Infrastructures and Transport (Mº de Fomento). Advertisement campaign on Ecodriving techniques: 50,000 units of an Ecodriving leaflet published by IDAE in collaboration with consumers associations.

Concerning obstacles that he face implementing Ecodriving activities, he says there was nothing of Ecodriving in Spain when they started Ecodrive project and they had to bring here to Spain Ecodrive expert and trainers from the steering group (Switzerland, Finland, Germany and the Netherlands) in order to give practical training seminars to Spanish experts and professionals related to eh Spanish driving system.

He thinks that Ecodriving are is the most cost-effective measure regarding energy efficiency.

Concerning the political initiatives, he says that Ecodriving implementation is an objective for current Spanish Government. This firmly commitment figures in the Spanish Strategy for Energy Efficiency and Savings (E4).

The latest results of Ecodriving are:

- Implementation of Ecodriving in the Driving Teaching System: next year will be completed in the frame of a collaboration agreement between IDAE and DGT.
- Training campaigns (today):
  - Cars: around 100,000 drivers and 10,000 driving teachers have been trained.
  - Industrial vehicles: around 40,000 drivers and 2,500 driving teaching teachers have been trained.
In Spain the subject of environmental protection is motivational factor, CO₂ emissions objectives are considered in the E4 (accordingly with National Plan for CO₂ Assignments). Each time, people in Spain are more affected by the environment.

The didactical factors the respondent considers relevant are:
- A well structured practical course (including practical demonstration by trainer and fuel consumption comparative for drivers)
- Fuel expenses
- Incentives for fuel efficiency in fleets

In each course they collect questionnaires and, in general, the Ecodriving is very well accepted and evaluated by consumers. The benefits identified for them are fuel (and money) savings, reduction of stress for car passengers and improve of safety because of the increase in caution and anticipation. The benefits with priority in the communication are fuel and CO₂ savings if communication campaign is managed by IDAE and improve of safety if is managed by Traffic Authorities.

In the respondent's opinion, most of costumers are receiving free training by authorities (in collaboration with IDAE), but there are training programmes that they have to pay a part of the costs and they are functioning in a well manner. He suggests a 60€ price for a one-hour training.

For a mass roll-out of Ecodriving the respondent considers a strategy similar to the Spanish one, based on two key actions developed in parallel:
- Implementation in Driving Teaching System for obtaining driving license in collaboration with Traffic Authorities.
- Mass training programmes (practical courses) for licensed drivers.

A quality standard for real-world Ecodriving should include technical requirements and procedures for:
- Ecodriving contents and tips
- Trainers: curriculum vitae and experience. We suggest special courses of Ecodriving for trainers, similar to the Spanish ones. It should be also considered (as add value) the experience of trainers related to Ecodriving courses.
- Training Procedure and programme: in his opinion, practical courses should be similar to the ones that IDAE is supporting in Spain (3 drivers per car, comparative driving, theoretical lessons… and, we also suggest also a demonstration driving by trainer (drivers can see the rhythm, execution and attitude of Ecodriving in a practical way.

Note: they realise that it’s possible to develop 1 hour’ Ecodriving course. However, they consider that the best training programme (considering both quality and costs requirements) is the one that they are supporting in Spain.

Part C: Future Outlook

In the respondent's opinion, experts of different countries should agree some technical details related Ecodriving tips. However, they think that there are not substantial differences. In general, their opinion is that it may be necessary the clarification of some details in the different fields related Ecodriving, but that there are not necessary further clarifications.

Ecodriving have to face:
- Implementation in different driving teaching systems.
- Technical adaptation to new technologies, specially related to the reality of progressive electrification of drive train: hybridization and, in a next future, plug in vehicles technologies: PHEV and BEV vehicles.

At the same time, Ecodriving should evolve:
- Technically: attending previous answer, specially this one
- Didactically: not specially
Thematically: introduction of electrification techniques and use procedures

- The respondent's opinion about Ecodriving qualification on the one hand and certification procedures on the other, is that both tools are necessary to improve the quality of the Ecodrive training programmes. It's important in this way to consider that there are countries that don't have anything done related Ecodriving and other countries, like Spain, in which Ecodriving is practically implemented.

- The marketing strategy should be based on the terms of economy savings, reduction of the impact on the environment and improve of safety. It should be adapted to each target (particulars, public and private fleets).

- Finally, the respondent thinks that Ecodriving is expected to be fully implemented by the end of 2011. Massive training courses campaign for drivers will continue along the following years.

RECOMMENDATIONS

The National Energy Agency in Spain (IDAE) is the administration in Spain to promote the ecodriving in a national level. Six years since the ecodriving arrived to Spain and a lot of progress has been reached until now. Actually the IDAE is working together with the Directorate General for Traffic (DGT) in order to implement the ecodriving techniques inside the curricula and testing for novice drivers.

Some recommendations made by IDAE to DGT were:

- Try to get an international standardization of the new driving techniques.
- To insist in education in order to improve the awareness of drivers about the need to implement ecodriving and the benefits it can provide; not only in a personal way but also for the environment.
- To unify the criteria used to teach and to qualify between instructors and examiners.
- To demand instructor training in order to adopt the ecodriving techniques the best as possible.
- To include ecodriving parameters in the rating of novice drivers.
- Subvention of the training of licensed drivers by means of practical courses.
- To carry out ecodriving dissemination campaigns and activities at schools and town councils for kids.
- To promote incentives for commercial fleet owners so that they are able to implement the ecodriving technique.
- Integration of new technologies applied to car driving in order to help drivers applying Ecodriving.
12.5. Fleet operators

OBSTACLES IDENTIFIED:

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<tr>
<th>No</th>
<th>Obstacle (Short description)</th>
<th>Classification</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>More information on ecodriving is needed through the different media, as the companies do not know about these courses.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>In large company fleets, it is difficult to train all drivers in ecodriving due to the high costs and the geographical dispersion of the company.</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>More qualified staff is needed to carry out courses for heavy vehicles.</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>The lack of different course providing times offered by the entities in charge of imparting ecodriving courses.</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>The practical time of ecodriving is too short to apply the ecodriving tools clearly and successfully.</td>
<td>2</td>
</tr>
<tr>
<td>6.</td>
<td>There is no official certificate that may be used to obtain other certificates that the company may wish to get (ISO 9100).</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>Lack of non-presential courses (online)</td>
<td>3</td>
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</table>

BENEFITS IDENTIFIED:

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<thead>
<tr>
<th>No</th>
<th>Benefits (Short description)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>It is a very useful tool that can be promoted as a business model.</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>Ecodriving allows for a reduction of the economic costs of the company’s fleet: fuel savings, less maintenance costs and increase of road safety.</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>It allows to draw up a record of the costs before and after the course; controlling all those who do not make good use of the learned techniques (staff).</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>It allows creating internal control tools for the fleet vehicles both locally and country-wide.</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Significant reduction of the emission of certain polluting gases.</td>
<td>1</td>
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</tbody>
</table>

Part A: Fundamentals concerning Ecodriving

- Ecodriving is considered in both ways, one technical (gear change, etc.) and as a new philosophy of driving (p.e. less stressful).
- The relevance of Ecodriving in this sector is increasing every time because the economy savings is the most relevant subject at these times.
- Ecodriving is appearing in this sector since 2 years ago but with a very low implementation at the moment.
- The fleet operators consider useful Ecodriving, is first place for the economy savings and for another reasons as fleet maintenance and the increase of road safety.
- Less than a half of the fleet managers interviewed had participate in Ecodriving trainings.
Part B: Ecodriving as business case

- Ecodriving is actually considered as a potential business case. The fleet operators see important benefits as costs saving and increase of safety.
- In general the opinion is that Ecodriving needs a wide communication about the benefits that offers. Economic aids will help to extent these new techniques of driving.
- Principal obstacles implementing Ecodriving activities are the difficulty to reach all the employers.
- Besides costs savings from the reduction of petrol they expect benefits for the fleet maintenance and reduction of incidents result from the improved road safety. Managers find it difficult to estimate the savings that could result in the introduction the Ecodriving.
- The integration of training activities it’s difficult because the lack of schedule hours for courses. At the same time, an instructor is required to attend the courses in each company.
- The monitoring of fuel-consumption is applied for the major number of fleets but not a tracking system so they don’t personalize the costs of their vehicles.
- It’s difficult to schedule the courses because it requires goodwill from the company and the drivers. The drivers should spend some of his work time attending Ecodriving courses and, after this, the company would obtain the benefits in a long term.

RECOMMENDATIONS

- Change of regulations currently in force in order to integrate ecodriving. The actions over this recommendation are the same mentioned before for the other stakeholders that demands the same modification of the law.
- Dissemination campaigns about the benefits of ecodriving among companies that own fleets. This is not a very disseminated topic inside the fleet operators in Spain. It is needed to do more campaigns about the advantages that the ecodriving can bring to the company. Besides that, it could be possible that for a quickly implementation inside the companies, the public administration, as an incentive, reduces some taxes for a period determined of time.
- Development of non-attendance ecodriving courses (online) addressed to fleet owners in order to manage the lack of time the drivers has in their jobs. Create an standard for online courses that satisfy their needs by the time they get all the knowledge to take advantage of ecodriving.
- Financial support to carry out the courses. Public funds can be added here in order to extend the ecodriving techniques. Some financial benefits can be taken in consideration if a fleet operator takes the ecodriving as part of the each day driving. Here it is needed to have a good monitoring and certification procedures.
- The problem that most fleet operators find at the time they want to do ecodriving courses, is the schedule the driving schools has and the time used to realize the course. They ask for more flexibility and larger ecodriving course practice offered by driving schools.
12.6. Car Dealers / Leasing Organisations

**OBSTACLES IDENTIFIED:**

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<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Classification</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>One of the obstacles of ecodriving is the lack of awareness about environmental issues among users.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Lack of interest among car manufacturers to face environmental challenges in their designs.</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>In order to promote ecodriving it is necessary to have specialised staff, and there is currently no such staff available.</td>
<td>1</td>
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<tr>
<td>4.</td>
<td>The chain of sales is not aware about the need to implement this type of driving when selling cars.</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>When buying a car, ecodriving is not a priority issue to choose the car.</td>
<td>1</td>
</tr>
<tr>
<td>6.</td>
<td>It is difficult to make a follow-up of the acceptance of this driving style, as it is not a well-known method yet.</td>
<td>3</td>
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<tr>
<td>7.</td>
<td>Ecodriving goes against cars with a high cylinder capacity, which implies a lower sales volume if applied.</td>
<td>3</td>
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<tr>
<td>8.</td>
<td>It is difficult to keep the interest of customers in buying a vehicle if the purchase is restricted to a topic understood as prohibitive (ecodriving).</td>
<td>2</td>
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<tr>
<td>9.</td>
<td>As a challenge for the future, the lack of interest should be reduced and the amount of money invested in innovation by means of campaigns favouring ecodriving should be increased.</td>
<td>2</td>
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</tbody>
</table>

**BENEFITS IDENTIFIED:**

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<thead>
<tr>
<th>No</th>
<th>Benefits</th>
<th>Classification</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>The implementation of this type of driving among citizens will allow for a change in the behaviour of car manufacturers as regards the environment.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>The social development of this driving method will help to increase the sale of environment-friendly cars.</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>It is a very good tool to save fuel for regular drivers.</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>The interest of car manufacturers in disseminating the knowledge about ecodriving (by means of courses), will attract new and more customers for the make.</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Drivers will benefit from ecodriving during its use, as they will be protecting the environment and save money.</td>
<td>1</td>
</tr>
<tr>
<td>6.</td>
<td>It is an extremely useful tool to sale cars (if there is a general knowledge about ecodriving)</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>Despite there not being a general knowledge about ecodriving, there are more and more customers asking for it when buying a car, which leads to the expected benefit.</td>
<td>3</td>
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</table>

In this case the interviewed person is Mr. Joan Soler, marketing department at ‘Honda Automoviles España, S.A.’.
Part A: Fundamentals concerning Ecodriving

▪ Mr. Soler was engaged in the field of Ecodriving for the last two years. He sees the benefits of Ecodriving and he thinks that is useful. The only problem he detects is the lack of awareness about Ecodriving.

▪ He thinks that every time is more relevant in his profession.

Part B: Ecodriving as business case

▪ From Mr. Soler’s point of view, Ecodriving is a potential business and is useful marketing instrument that can help to increase the car sells that in Spain has decreased significantly.

▪ According with the problem detected in Part A, he thinks that communication benefits campaigns are needed to increase the awareness of drivers.

▪ His company has provided different Ecodriving courses with his cars but hasn’t offered programs as best practice for reaching new costumers. For future actions, specialized instructors will be needed for theses courses.

▪ The benefits identified for the costumers are the costs savings and the improvement of the environment.

▪ He thinks that Ecodriving is not a priority feature for a new buyer currently. Another issues, as fuel consumption, are in fact relevant for drivers and the awareness of environmental in general is an increasing factor for customers.

Part C: Future Outlook

▪ The main factor for Mr. Soler is to increase the awareness of costumers through a innovative campaigns.

▪ For the future development he considers to introduce the cell fuel technology.

RECOMMENDATIONS

▪ To increase the manufacturers’ interest in carrying out ecodriving trainings offering aid to those who carried out. Giving some subventions, by public administration, would be perfect in order to start this kind of courses that will lead to continue thru the whole sales chain (car manufacturers, car dealers, client).

▪ Ecodriving must evolve didactically and thematically to increase the awareness of consumers. The contents might evolve not taking only in consideration the content of the courses, but most important is how it is explained to the different stakeholders in order to get the attention required for each one and with this, the satisfaction trasmitted to other stakeholders.

▪ Ecodriving campaigns must be developed to reach all possible stakeholders. This kind of campaign must be supported economically by public and private entities to raise the awareness of people/companies about this topic and follow up for car manufacturers and car dealers in order to complete the cycle of ecodriving in a social behaviour.

12.7. Automobile clubs

OBSTACLES IDENTIFIED:

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<tr>
<th>No</th>
<th>Obstacle Short description</th>
<th>Classification</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>The lack of motivation among instructors to learn something new which goes against what is established in the law currently in force.</td>
<td>2</td>
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</tbody>
</table>
2. The Spanish law does not comply with the processes to apply ecodriving. Applying ecodriving is actually a reason to fail the exam.

3. The course which is currently being imparted is well complemented; however, drivers complain that the practical time (2h) of the ecodriving course should be extended.

4. There are not enough well-prepared instructors to impart the courses.

5. Ecocentric courses often do not have a standardized list of topics due to the lack of certification and quality control over those imparting them.

6. A significant obstacle is the lack of legislation covering all the aspects of ecodriving (driving schools, company courses, etc.).

7. The support by the authorities with competence in ecodriving is sometimes nonexistent given the difficulties for implementation and the economic costs.

**BENEFITS IDENTIFIED:**

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<tr>
<th>No</th>
<th>Benefits Short description</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>One of the benefits brought about by ecodriving is the reduction of fuel consumption, with the consequent reduction of polluting gases emitted to the atmosphere.</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>The direct benefit for the car, as one of the consequences of driving effectively, is the reduction of maintenance costs.</td>
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<tr>
<td>3</td>
<td>Ecocentric driving allows for a reduction of road fatalities and injuries, as it is also a safer way to drive.</td>
<td>1</td>
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<tr>
<td>4</td>
<td>It is also a powerful business tool, as there are currently many potential drivers who can be trained.</td>
<td>1</td>
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<tr>
<td>5</td>
<td>From an in-house perspective (automobile club) it allows providing in-house instructors with a differential training, thus achieving advantages against direct competitors.</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>With the time, the implementation of ecodriving will take all drivers to drive in a more environment-friendly way.</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>It will compulsorily lead to a standardized training, both in driving schools when teaching pupils and in ecodriving courses for licensed drivers.</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>The social interest in this method will force the government to implement these topics in the education of pupils at driving schools.</td>
<td>1</td>
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Mr. Alberto Caamaño is Director of Driver Instructors in RACC and is the person interviewed for the automobile club section.

**Part A: Fundamentals concerning Ecodriving**

- Mr. Caamaño defines Ecodriving on the technical side as the application of new driving techniques to optimize the fuel consumption and to reduce the maintenance costs. On the philosophical side he defines it as a more safety driving based on the anticipation of what other drivers will do.
- From his point of view, Ecodriving is a relevant subject in Spain, indeed RACC is promoting an Ecodriving area of formation and for the last 6 years is was involved in this field.
- The most relevant Ecodriving tips for Mr. Caamaño are an appropriate use of gear change, the engine shutdown at long stops and the use of the inertia of the car.
- He is convinced that Ecodriving is useful because helps to achieve 4 main benefits:
Reducing fuel consumption
Reducing pollutants emission
Reducing car maintenance costs
Improvement of road safety

The only problem for Mr. Caamaño is that drivers are still not aware of the need of ecodriving.

Part B: Ecodriving as business case

Mr. Caamaño thinks that Ecodriving is a potential business case because the number of potential customers is very large and the awareness of this issue is increasing.

For RACC, where 30000 drivers were formed in last 5 years, Ecodriving offers a differential formation than the official so this means an added value for the organisation.

RACC is making a lot of efforts to extend the Ecodriving. Firstly with the Ecodriving courses and also with a communication campaigns in different media.

The opinion of the consumers is that the practice part of the formation is too short so they want to extent it.

At the beginning, RACC focused on the fleet companies but currently the target is the private driver also. The formation offered so far is based on courses but now they are developing an e-learning platform for Ecodriving.

Part C: Future Outlook

Mr. Caamaño thinks that Ecodriving needs a boost from the administration and a new regulation. The objective is to form all new drivers and recycle the drivers with experience.

Ecodriving should evolve in the future:

Technically: implementing the new technologies to new cars to help drivers to practice Ecodriving
Didactically: expanding the formats of formation, focus on online formation
Thematically: including all drivers, private and commercial

RACC thinks that Ecodriving needs a regulation to allow drivers to get a certification of driving quality. This will include a required quality level for formers.

On the other side, Ecodriving also requires extensive communication by public administration.

RECOMMENDATIONS

Ecodriving should be implemented compulsorily by modifying the laws that regulates the way and content in which the driving schools supports its education.

To change the laws currently in force to make them comply with ecodriving. Actually, the responsible for this issue will implement during the next two years this recommendation as it is included in its activation plan.

A certification and a quality control should be created (list of topics, instructors and examiners). It is needed to identify the best practices in Europe to execute this process.

Large scale communication campaign to the different stakeholders (fleets, drivers, etc.) in order to let them know that there is something else that all of them can do for the environment and for save some money too. This activity can be done by private entities as Automobile Clubs and others, but always supported by the public administrations in country.

Creation of online courses for ecodriving is recommended. It is needed to have a unique criteria about ecodriving content in order to establish this way of learning under a certification. This can be use not only for novice or experienced drivers, but also instructors and examiners.

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- Increase of the practical time in the ecodriving courses. It is recommended that reduce the time spent in a classroom and increase the practice with drivers. A modification of current ecodriving curricula is needed to fit in these requirements.
13. United Kingdom

This report presents the results of interviews with 11 key stakeholders involved with ecodriving in the UK in October and November 2010. Most interviews were conducted by phone and some were by an emailed questionnaire. Other stakeholders were contacted but either did not respond or were not willing to participate.

It is difficult to draw general conclusions from such a diverse set of interviewees but in general we found:

- Belief in the importance of ecodriving.
- Interest in and support for ECOWILL.
- Moderate enthusiasm for the potential to promote ecodriving to fleets.
- Scepticism about the potential for promoting ecodriving to private individuals that already have their licence.
- A belief that the UK’s current position of ecodriving being part of the new driver test but not pass/fail criteria has not been effective in promoting ecodriving to learner drivers. However the majority were against changing the test to that ecodriving does become pass/fail criteria.
- Moderate support for a European accreditation for an ecodriving standard.

As well, this report presents recommendations for how ECOWILL should promote ecodriving and in particular ecodriving short duration training in the UK.

The recommendations are based partly on interviews conducted in October and November 2010 with UK stakeholders, and partly on EST’s own experience that comes from five years experience of promoting ecodriving and two years managing a Government-funded ecodriving short duration training programme.

The key recommendations are:

1. Develop an ECOWILL ecodriving standard.
2. Work with and lobby policy makers to make ecodriving pass/fail criteria in the UK driving test.
3. Seek better statistical evidence for the long-term benefits of ecodriving.
4. Seek better statistical evidence for the safety benefits of ecodriving.
5. Work with fleets to show help them put in place management practices to ensure that the benefits of ecodriving training are long lasting.

13.1. Driving instructors

Benefits

- Too many instructors chasing too little work in the UK so ecodriving as a new revenue stream would be very welcome.
- Little if any prejudice against ecodriving from instructors: most would be very to teach ecodriving if there were demand.
- No major problems foreseen in integrating ecodriving to the learner curriculum, as long as DSA onboard. Instructors generally agree it makes sense to teach ecodriving principles from the start.
- Currently no ecodriving accreditation scheme in the UK. The instructors interviewed would generally welcome a European accreditation scheme. They would only be prepared to pay for it if they were convinced it would be recognised by their customers and would lead directly to more paid work.
Obstacles

- Low awareness in the UK and little demand for ecodriving from those that are aware.
- UK Experience to date shows that even when subsidised or free there is little demand for ecodriving training.
- Not being part of the pass/fail criteria in the UK.
- Some concerns about whether ecodriving principles might at times contradict DSA’s approach of making progress quickly where possible.

Part A: Fundamentals concerning Ecodriving

- Ecodriving is not seen as being very high on the radar for UK driving instructors. Most instructors do not think about the subject and are not aware that it’s a potential source of business for them. The fact that it’s not part of the pass/fail criteria in the UK is partly responsible for this.
- There’s no quality control or ecodriving standard in the UK but the instructors were receptive to the idea of there being one. One of the instructors already runs training courses for other instructors to show them how to teach ecodriving, so he considers he has proof that there would be demand from instructors to become accredited. Suggestions included that ecodriving could become a module in the existing “Pass-Plus” scheme for new drivers, or that there should in the future be a compulsory requirement for Continuous Professional Development for instructors and ecodriving should be part of that.
- The most relevant aspect of ecodriving was anticipation and keeping the car rolling / momentum. Other tips mentioned included keeping back from car ahead; use of gears; vehicle maintenance.
- There was seen as little if any prejudice against ecodriving from instructors. This could be seen as being at odds with the fact that the subject is not on their radar, but I think the explanation is that instructors are not very aware due to the lack of interest and demand in the subject, but they themselves are happy to focus more on ecodriving if there were more demand.
- Three of the instructors expressed concern that an ecodriving style could be perceived as contrary to the DSA’s requirement about “making sufficient progress” e.g. a belief that the DSA would expect to see a new driver get to the red light quickly, whereas ecodriving could see them slowing down well before the red light. The instructors were mixed as to whether this is a genuine clash of driving styles of just a question of perception in some instructors’ eye, but in all cases they thought clarification from the DSA could easily overcome these concerns.
- Two instructors voluntarily emphasised the links between safety and ecodriving. One instructor said the links were “blindingly obvious” and could offer the key to wider roll-out of ecodriving.

Part B: Ecodriving for learner drivers / driving schools

- All instructors agreed that the UK’s current system of ecodriving being part of the syllabus for new drivers but not pass/fail criteria means that the subject received little attention. Drivers – and as one instructor pointed out – their parents who are usually paying for the lessons, just want to pass in as few lessons as possible so want to focus on what will get them through the test.
- There were mixed views on whether ecodriving should become part of the pass/fail criteria.
  - Two instructors thought ecodriving should become a ‘minor fault’. In the UK a leaner driver can fail a test due to one major mistake but in the absence of a major mistake he/she is allowed up to 15 minor faults and will only fail on the 16th minor fault. Different aspects of ecodriving could be separate minor faults e.g. the leaner driver could pick up one minor fault for changing gears at too high revs and another minor fault for leaving the engine running for two minutes at a red light.
  - One thought ecodriving should not be pass/fail in the practical test but that it should feature more strongly in the theory test.
  - Two instructors were undecided whether ecodriving should be pass/fail criteria in the practical: “Where do you draw the line?”
- The instructors all thought ecodriving techniques should be taught to learner drivers. Learners are seen as more receptive to the techniques and in this aspect they were compared positively to teaching experienced drivers who already have their own prejudices. One instructor thought that teaching ecodriving style makes it easier to teach the other (safety) aspects of driving. However one instructor pointed out that whilst it’s good to teach ecodriving to learners, they won’t be able to perfect the more advanced techniques of greater anticipation until they have more experience. “Teaching ecodriving from the outset [to learners] is good but there’s an awful lot of subject matter in a short space of time so learners won’t be able to perfect it all”. The UK’s current problem that learners won’t take much notice of ecodriving until it become pass/fail criteria was mentioned again.

- No problems were foreseen in integrating ecodriving to the learner test as long as this is what DSA wants to do, and as long as DSA clarifies that there are not contradictions with its expectation of seeing a driver make ‘sufficient progress’. The DSA would also need to clarify that they don’t want to see a student start and stop plenty of times (one instructor thought the DSA currently likes to see starting and stopping simply to check that the student driver is able to pull away smoothly from stationary).

- In terms of requirements to teach ecodriving, instructors have periodic “check tests” and one instructor suggested ecodriving should become a part of this revalidation test.

Part C: Ecodriving for licensed drivers

- There were mixed views as to whether there’s a business case for ecodriving for experienced drivers, but the majority of instructors thought there should be. One instructor said fundamentally there is a business case because the fuel savings easily outweigh the costs, so he thought it was primarily a question of communicating the benefits effectively. Another instructor pointed out that without the current UK ecodriving training subsidy (available through the Energy Saving Trust Smarter Driving programme) demand falls away very quickly. Another instructor thought there would only be a business case if ecodriving was tied in with reduced insurance premiums.

- Most instructors thought 1-hour training was ideal, but one instructor thought this was a bit short and that 2-hours would be better. Two instructors said that with 50-minute or 1-hour training the location was important because that time is sufficient if starting and finishing from somewhere with free-flowing traffic, but is not sufficient if starting and finishing from congested urban streets. Only two instructors stated what they believed to be the correct prices: one said £15 for one hour training (the current EST subsidised price) and the other said £25-30 per hour for 2-hour training.

- Instructors said there is a lot of resistance from experienced drivers, with the most common prejudice being that it means driving more slowly. They pointed out that when training it’s good to measure average speed so that this perception can be challenged.

- Target group: There were mixed opinions as to whether it’s better to target older or younger licensed drivers. One instructor thought the young were too influenced by peer pressure and that ecodriving is not cool, but another thought that younger drivers were generally more interested in the environment and therefore were more receptive to ecodriving. Older drivers were seen as largely immune from peer pressure but their bad habits made it more difficult as instructors have to help them to “re-hone outdated skills”.

Part D: Future Outlook

- Moderately optimistic. Awareness and interest in ecodriving has increased (from virtually zero to low) in the last few years but is now static.

- The instructors generally thought that certification would be a good thing and might help them to sell ecodriving training to private individuals.

- One instructor thought that certification would help in that fleet training companies would be able to choose with confidence instructors that knew how to teach ecodriving.

- Three of the instructors thought that in the future instructors should be obliged to undertake Continuous Professional Development courses and that an accredited ecodriving course should count towards CPD.
Most of the instructors would be prepared to pay for ecodriving instructor accreditation if they believed it would be recognised by customers &/or if it would count toward their CPD.

RECOMMENDATIONS

Driving instructors in the UK are generally receptive to and interested in ecodriving and appeared to hold no prejudices against the subject. However they all agreed that there is very little demand or interest in ecodriving from their customers. The key to getting driving instructors more involved would therefore be to help create more customer demand – easier said than done!

The instructors interviewed were all keen to be involved with ECOWILL workshops.

Recommendations:

1. Create and promote ECOWILL ecodriving accreditation for instructors. This will give instructors greater knowledge and confidence in their own abilities to teach ecodriving and will provide reassurance for potential customers that they have the appropriate knowledge and abilities.

2. Seek clarification from the Driving Standards Authority that there is no contradiction between the ecodriving technique of easing off the throttle early when approaching a situation in which the driver will have to slow down (e.g. red traffic light) and the DSA’s requirement for candidate drivers to “make sufficient progress” during their driving tests.

3. Capitalise on instructors’ openness and enthusiasm towards ecodriving by creating generic marketing materials that instructors could use to promote their own ecodriving training. Develop marketing packs to help instructors to market their own ecodriving training.

4. Seek hard statistical evidence from thorough and well-documented studies to prove the long term real-world fuel savings following from ecodriving training. The level of certainty required will only be possible by obtaining fuel consumption data from fleets that either use bunkered fuel or fuel cards. Results should compare fuel consumption between drivers that had received ecodriving training and a control group that had not received training. Such evidence would help instructors to market ecodriving training.

5. Seek hard statistical evidence from thorough and well-documented studies for the correlation between ecodriving training and lower accident rates. Such evidence would help instructors to market ecodriving training.

13.2. Driving examiners

EST has not been able to interview any examiners.

13.3. Policy makers

Benefits

- Ecodriving is to some extent on DfT’s agenda and the wider political agenda.

Obstacles

- Media interest in ecodriving is decreasing.
- Ecodriving is not high profile among the general public.
- Ecodriving only seen as having a very minor role in national energy efficiency and climate policy.
- Lack of ecodriving skill from instructors.
- Not pass/fail criteria in the UK driving test and no plans to make it such.
- A mass roll-out of training is not realistic or feasible as we have seen there is little demand: drivers think they don’t need extra training.
- DfT does not have the money to pay for the long term promotion that would be required to create demand.

**Part A: Fundamentals concerning Ecodriving**

- Ecodriving is to some extent on the Department for Transport (DfT)’s agenda. It is seen as recognised as a potential contributor to reducing carbon emissions.
- Similarly it is on the wider political agenda but only to a limited extent. The Committee on Climate Change has highlighted ecodriving as a way to reduce carbon.
- In general ecodriving is not high profile with the media or the general public.
- Media interest in ecodriving is decreasing. The subject has been of some interest to the media in recent years partly as it had novelty value, but now the media’s attention is on electric vehicles as the way to ‘solve’ environmental transport problems.
- Within national energy efficiency and climate policy ecodriving is seen as having only a very minor role compared, for example to shifting to electric vehicles.

**Part B: Ecodriving for learner drivers / driving schools**

- The main thing preventing ecodriving playing a greater part in the learner driver curriculum is lack of skills on the part of driving instructors. The instructors have no real incentive to learn the skill and teach them as ecodriving isn’t well covered in the driving test. There may be a feeling that pupils are not advanced enough in basic driving skills to be capable of learning ecodriving techniques.
- As far as known, there are no plans for ecodriving to become pass/fail criteria in the UK driving test.

**Part C: Ecodriving for licensed drivers**

- A mass roll-out of ecodriving training for licensed drivers is not realistic and feasible under current conditions. Drivers generally think they are highly skilled already, and would be unlikely to volunteer for extra training even it were free or cheap, without a protracted process of social norming around the concept of ecodriving. DfT could not afford to pay this.
- DfT has no plans for a mass roll-out of ecodriving training for licensed drivers.
- The greatest challenges to a mass roll-out of ecodriving training for licensed drivers are the cost and overcoming drivers’ attitudes that it’s unnecessary and intrusive.

**Part D: Future Outlook**

- Ecodriving will only become the norm if we stop positioning it as something different from normal driving. It needs to be the way that everyone drivers naturally from the day they start learning, so it needs to be embedded in the learner curriculum, in driving instruction and in the driving test.

**RECOMMENDATIONS**

The key policy maker in the UK is the Department for Transport (DfT). DfT has been subsidising EST’s ecodriving programme since December 2008 to provide short-duration ecodriving training for fleets. DfT is supportive of ecodriving but has seen over the last two years how difficult it is to sell ecodriving training in significant volumes even when the cost is subsidised.

**Recommendations:**

1. Convince DfT that ecodriving should become pass/fail criteria in the new driver test. (The DSA is responsible for this but DSA is funded by and reports to DfT.). When interviewed, our DfT representative said she knew of no plans to make ecodriving pass/fail criteria. However, she also stated that she believes ecodriving will only become the norm when it is embedded in the learner curriculum and she acknowledged that instructors currently have no incentive to teach ecodriving because it is not pass/fail criteria. We believe therefore that DfT may be fairly receptive to the idea of ecodriving becoming pass/fail criteria. The strategy to achieve this should include:
Demonstrate that the current system (in the curriculum but not pass/fail) isn’t working. To do this we could present the finding of the interviews conducted for this research and we could also present the Dutch research (referred to by Peter Wilbers at the ECOWILL Vilnius meeting) that shows that the same arrangement in the Netherlands is having no discernable effect on new drivers’ ability to ecodrive. Perhaps we can also present something demonstrating that the German system in which ecodriving is pass/fail criteria is more effective?

Presenting a detailed proposal for how ecodriving should be included as pass/fail criteria. This would probably be that certain specified aspects of ecodriving (e.g. changing up gears at too high revs; not turning engine off during a long stationary period; too much acceleration and braking) could each count as separate “minor faults”. (Currently a candidate is allowed up to 15 minor faults but fails if s/he makes 16 or more minor faults).

2. Seek hard statistical evidence from thorough and well-documented studies to prove the long term real-world fuel savings following from ecodriving training. The level of certainty required will probably only be possible by obtaining fuel consumption data from fleets that either use bunkered fuel or fuel cards. Results should compare fuel consumption between drivers that had received ecodriving training and a control group that had not received training. Such evidence would give DfT greater confidence in the long term carbon savings achievable through ecodriving.

3. Seek hard statistical evidence from thorough and well-documented studies for the correlation between ecodriving training and lower accident rates. Such evidence would give DfT an additional incentive to promote ecodriving and potentially would open up different sources of funding for ecodriving (e.g. different departments within DfT).

13.4. Energy agencies / environmental research institutes / universities / academies

Benefits
- Perhaps there’s an option to promote ecodriving more through the safety angle.
- Certain sectors of society may well be interested.

Obstacles
- Consumer awareness and interest in ecodriving is now decreasing.
- Vehicle emissions best tackled through cleaner cars.
- Ecodriving best tackled through vehicle ‘gadgets’ to encourage ecodriving rather than through training.

Part A: Fundamentals concerning Ecodriving
- Consumers’ general level of environmental concern has decreased recently after rising for some time; probably a response to the crash, recession and cuts. Copenhagen Climate Summit outcome didn’t help much either.
- Certain groups of consumers (probably middle-aged and older, women esp.) are receptive to ecodriving messages but being receptive and adopting ecodriving techniques do not necessarily follow. My own experience is that immediate concerns (i.e. I’m usually late; want to get somewhere quickly) do often ‘trump’ my attempts to ecodrive.
- I think that having a dashboard fuel economy indicator is definitely important. Without it, there’s no certainty/reinforcement of the benefit of ecodriving techniques. It should be a standard on all new cars. Also tyre pressure indicators. On-board computers could be used to remind drivers of ecodriving techniques, maintenance etc via dashboard displays.
- I’d like to see on-board computers with ability to compare fuel economy on standard trips to encourage drivers to ‘break their record’ for fuel economy over set routes.
- Driving style seen as an environmental issue only in very limited groups. I think the majority have probably never heard of ecodriving and will be hard to reach. I think being green can be a
motivating factor for some kinds of behaviour but in this area, in particular, pointing out potential cost savings is likely to be most effective message.

Part B: Ecodriving as business case

- In the fleet market I think there’s definitely a business case for devices designed to encourage ecodriving. The number of companies selling on-board monitoring devices linked with driver training are testimony to this. Some business fleets have made significant savings by adopting these. But I’m not convinced that there is a business case for ecodriving training.

- In the consumer market, I think the problem of emissions is best tackled through regulation of the car industry or an effective voluntary agreement to install devices designed to encourage and educate people to ecodrive. Some standardisation of monitoring/information devices between models would help people better understand and more likely use these devices. Market research is needed to identify the most effective and useable devices around which to standardise. (Or maybe cars’ computers could be designed to download ‘apps’ for the purpose, as available in the mobile market.).

Part C: Future Outlook

- It could be useful to get agreement with safety-focused motoring organisations to gain a consensus and greater voice around eco-safe driving.

- I think ecodriving has something to offer in terms of emissions reduction, especially in the fleet sector, though actual results are likely to fall far short of theoretical potential. Case studies, awards schemes etc highlighting the successes (esp. in financial terms) of ecodriving champions likely to be some of the most effective ways to communicate and motivate.

- In the consumer market I think effective dashboard indicators are particularly important to achieve tangible individual and overall savings.

- It should be noted, though, that as in the domestic sector, there’s likely to be a rebound effect; people may ‘take’ the fuel savings by choosing to drive more often and further as they perceive that it is costing them less per mile.

RECOMMENDATIONS

EST is one of the UK’s two main energy agencies and needs no further encouragement to promote ecodriving! The other is the Carbon Trust and there may be opportunities to encourage the Carbon Trust to promote ecodriving, but EST has tried this before with only limited success.

EST is not convinced that this category or organisation is key to the success of ecodriving, so considers the recommendations below to be low priority.

Recommendations:

1. Try to involve environmental research institutes, universities or academies in the recommendations to obtain hard statistical evidence for the long term fuel saving and safety benefits from ecodriving (these are recommendations listed under Driving Instructors and Policy Makers). This would have the dual benefit of achieving these earlier recommendations but would also be likely to secure support from the institutes, universities and academies through their involvement.

2. To influence the Low Carbon Vehicle Partnership it would be useful to convince them that in-car gadgets and displays (e.g. gear shift indicators) are not sufficient.
13.5. Fleet operators

Benefits
- Most fleet managers aware of ecodriving and its potential benefits.
- There is a business case for fleet training.
- Can we promote ecodriving through manufacturer demo drivers?
- Promoting the cost savings is the key – not the environmental benefits.

Obstacles
- Getting drivers to change their driving styles even after training as if they don’t directly pay for the fuel.
- No chance of getting primate individuals to pay for training.

Part A: Fundamentals concerning Ecodriving
- Most UK fleet managers aware of ecodriving and the idea that driver training can reduce fuel consumption.
- The most important tips are planning ahead, correct tyre pressures, light right foot on both the brake and accelerator.
- I don’t think there is a problem promoting ecodriving to fleet managers but the problem is getting buy-in from the company drivers. It’s a company car / van and therefore not my responsibility so why should I care. The other difficulty is maintain the savings after the effects of the training have worn off.
- I attended an Energy Saving Trust smarter driving course and reduced my fuel consumption by 17%.

Part B: Ecodriving as business case
- There probably is a business case for ecodriving for fleets depending upon the cost. I don’t think there’s any chance of a business case for private individuals.
- Preferred duration is short sharp sessions of one-hour or less.
- Fleets are looking to ecodriving for financial and fuel savings.

Part C: Future Outlook
- Can’t ecodriving be promoted at the driving lesson stage i.e. to learner drivers before they take their tests?
- What about promotion through manufacturers demo programmes? And on delivery of new vehicles through major leasing companies? E.g. through the Association of Car Fleet Operators etc.
- I do believe ecodriving has a future.

RECOMMENDATIONS
1. Focus on cost savings
   a. Hard evidence for long term fuel savings
   b. Correlation with safety
2. Advise fleet managers on effective ways to manage their drivers in order to ensure the benefits from ecodriving training are ‘locked-in’ i.e. last a long time. Different approaches will be necessary:
a. Exception reporting, for example flagging up any driver that is consumer more than X% above his vehicle’s official fuel consumption. Such drivers could then be dealt with through discussions, advice, training or if necessary warnings.

b. League tables highlighting different drivers’ performance

c. Prizes. e.g. most efficient driver or team leaves work early on last Friday of the month; most efficient driver get to drive the favoured vehicle during the next month etc

3. Advise companies on how to make the business case for ecodriving training even in situations where employees buy their own fuel and are paid a fixed “pence per mile” from the company. (this category includes the majority of company car drivers. For example:

a. Short-duration ecodriving training is a good cost-effective employee benefit: good for staff morale and staff retention and helps employees deal with the cost of commuting to work.

b. Ecodriving training could be provided in conjunction with lower paying lower mileage rates, or at least in conjunction with resisting calls for mileage rate increases.

4. Use other project partners’ links with multinational companies that are already involved in ecodriving in the other partner’s country. Seek to encourage the overseas representatives of the company to recommend ecodriving to the UK division.

### 13.6. Car Dealers / Leasing Organisations

**Benefits**

- Fleet customers want dealers and leasing companies to help them reduce fleet costs.
- High awareness of ecodriving among leasing companies and dealers.
- Customers also interested in the environmental benefits – not just the cost savings.
- Better customer experience of the vehicles: improved customer perception of the vehicles.

**Obstacles**

- Private individuals wouldn’t pay.
- Some dealerships have questioned the relevance or the ‘fit’ of the training.

**Part A: Fundamentals concerning Ecodriving**

- Any dealer who is working closely with customers, particularly public sector would be aware of ecodriving. However that awareness is most likely limited to a few individuals or a particular department – particularly the corporate department who will be working with these customers on a daily basis. Awareness will be lower in the retail sector where eco driving is not so much on the agenda of the average individual private driver. Ecodriving also appears to be more prevalent in the industry with most of the Corporate awards offerings including at least one ecodriving category and this has helped to raise awareness of the issue as much if not more that any particular provider.
- Leasing companies appear to becoming more aware of ecodriving than they were, just as the dealers are and for similar reasons. They would also see the value of the cost saving proposition that they can inform their customers of.

**Part B: Ecodriving as business case**

- I think it is unlikely that ecodriving courses at full price would be of interest to the vast majority of private motorists. It is just not on the agenda certainly when purchasing a car. MPG and Whole life costs are being considered more and more by customers as are simple CO2 outputs but the drivers own driving style is not something that usually comes into question.
- As for Fleets, this would be more likely to be sustainable but even then, if the full price is over £100 per person then the likelihood of too many fleets being interested would be severely reduced whereas if the cost is low and the benefits are quantifiable then uptake would be much more likely.
As many of the customer facing corporate Sales Team as possible, as well as members of Product and Marketing departments have received ecodriving training but not through a HR or Fleet Manager action to be honest – but because of our interest in the Smarter Driving Programme.

Fuel consumption and CO₂ are very important to customers and the two are obviously linked closely. For fleets, CO₂ and therefore MPG are key in the current environment. Retail customers will compare MPG too and it influences their buying decision due it being the most obvious way for them to consider the long term running cost of the car.

As a dealer with cars on the Smarter Driving Fleet we see huge value in people being trained in our product and hope that some of these experiences lead to a raised brand image and could lead to possible future sales. However, we have run an eco course for Dealer staff at a large dealership and the feedback was not wholly positive in terms of retail customer relationship building and the fit was questioned. The experience itself was seen as positive but there was not an obvious way in which it could be used to increase traffic. One limitation is the timing; although it is unavoidable and all is done to take the difficulty out of the management of the days, it still requires someone to ensure people are in a place at a specific time which is difficult to do in many work environments and maybe is seen as a logistics problem that they could do without. Obviously with retail customers this would be very difficult as a number of prospects would have to be rounded up to one venue.

Without question, customers’ environmental awareness is increasing. Not all customers will take this into account when considering a purchase but they are in the main more aware of CO₂ emissions, MPG and so on.

Part C: Future Outlook

There is potentially a future for ecodriving training. The difficult thing is focusing and promoting it to the right people in organisations. The quickest win will be to promote to large fleets so you only have to convince one or two people to get 500 people signed up.

As to who those correct people are, it could be the Fleet Manager, the Environmental Officer, Finance, or HR but by choosing the right publications and arenas and focusing the most appropriate message to each one it is likely to have the most benefit.

In general (but not exclusively) the fleet manager will be cost focussed on costs as might Finance, HR will be on retention and staff benefit and Environmental officers more on the pure environmental impact aspect than the cost of the training – although for all the price will be critical as it will be the first determinate as to whether it is even considered at all.

RECOMMENDATIONS

1. Promote ecodriving training as a means of helping dealers sell vehicles to fleet customers. Ecodriving training will show their vehicles in a good light; a calm, enjoyable driving experience achieving high fuel economy. (This recommendation is based on the dealer’s belief that fleet customers want the dealer to help them reduce running costs, and also on the dealer’s belief that private individuals will not pay for ecodriving training).

2. Develop partnerships with dealers in which dealers provide vehicles for ecodriving training. In the right circumstances dealers may provide the vehicles for free as a means of getting a high number of good quality test drives).

3. Encourage leasing companies to pay for a day of ecodriving short duration training for every X vehicles they supply to a customer. (this idea is based on discussions EST had with a leasing company earlier this year. The leasing company agreed to this arrangement in theory but no such training has yet taken place.).
13.7. Automobile clubs

Benefits
- Making ecodriving part of the pass/fail criteria would put it on the agenda and ensure it was taken seriously.
- The few that are interested in ecodriving training are interested in the cost savings not the environmental benefits.

Obstacles
- Even when free we’ve seen that ecodriving training doesn’t really sell.
- Drivers do not feel empowered: even if they perceive a problem they don’t necessarily see themselves as part of the solution.
- Takes a long time to bring about the cultural shifts and perceptions that would be required.

Part A: Fundamentals concerning Ecodriving
- For many organisations they’re working on such small margins and short-term that are focussing on today and tomorrow not long term nor the environment. Need a cultural change, but from drink driving and speed awareness campaigns we know these take many years and much funding.
- We need to empower drivers to think their actions are relevant. We will need “carrots and sticks” to change drivers’ behaviour.
- For fleets one of the main challenges is that if drivers have fuel cards then they have no personal incentive to save fuel. And if on fixed p/mile then the company has no incentive to send drivers on the courses.
- I think half day training is the best, thought some in the [COMPANY] like 1.5 hour ecodriving training.
- Not convinced that a European quality standard for ecodriving would be very useful, though it might help to ‘set out the stall’. It might work if you could get insurance companies to offer discounts to people that had received certified training.
- Becoming pass/fail criteria in the new driver test would put ecodriving on the agenda and ensure that people take the subject seriously.
- The key ecodriving tips are hazard perception, observation, managing risk, block changing. The smoother you can drive and still make steady progress the better.

Part B: Ecodriving as business case
- Ecodriving is not yet a major part of the [COMPANY]’s business. It’s important but not major. The [COMPANY] is trying to build ecodriving into its standard training modules and has already done so for much of the standard fleet training. The [COMPANY] sees the market increasing, but not hugely.
- The [COMPANY]’s experience is that the case for ecodriving training is very hard to make. The case for doing it is not compelling enough. Demand for efficiently training only has been limited.
- Even free ecodriving training is hard to sell.
- Those that want ecodriving training are interested in cost savings. The green message won’t sell training.

Part C: Future Outlook
- The main way things will change will be through people buying cleaner cars.
- Could be useful for manufacturers to identify their engine sweet spots. E.g. at 50mph the most efficient gear is X rpm.
RECOMMENDATIONS

Automobile clubs are a powerful force given their long histories and large memberships.

Recommendations:

1. Use automobile clubs as a means of promoting ecodriving short duration training to their membership in order to help create the demand for ECOWILL accredited instructors.

2. Stress relevant links such as rising fuel prices and links with road safety.

3. Share with automobile clubs any hard statistical evidence from thorough and well-documented studies proving the long term real-world fuel savings following from ecodriving training. Even if these studies are based on fleet data the automobile clubs would be able to use the findings to strengthen the argument in favour of ecodriving training for private individuals.

4. Attempt to feed automobile clubs new fresh information, findings, research etc to help them find new ways to promote ecodriving to their memberships.

13.8. Tyre Company

- COMPANY has focussed more on choosing low CO₂ cars than ecodriving training and on fitting energy saving tyres.

- The main problem promoting ecodriving to fleets is inertia and sloppy management e.g. no measurement of fuel consumption and no targets.

- There is only a clear business case when promoting ecodriving training to companies with clean ‘green’ corporate social responsibility targets. For the rest the business case is less clear and would require guaranteed financial returns.

- Few private individuals would pay for training for environmental reasons – they’d need to be convinced that they’d see financial savings greater than the cost of the training.

- There is the potential for a business case in more creative ways, e.g. sharing the cost of training between many suppliers of different products (e.g. fuel suppliers, tyre manufacturers, vehicle manufacturers but only if the cost burden is shared between many and only if it generates incremental business.

- Two-hours is the maximum duration appropriate for ecodriving training.

- Success will depend on keeping the paperwork and bureaucracy to a minimum.

- Ecodriving does have a future.

RECOMMENDATIONS

- Attempt to develop partnerships and activities involving multiple stakeholders e.g. fuel suppliers, tyre manufacturers, vehicle manufacturers in which the cost of ecodriving training could but be shared between many partners. To be successful any such activities would have to generate incremental business.
## 13.9. Summary

### Table 13.1. Classification of obstacles.

<table>
<thead>
<tr>
<th>No</th>
<th>Obstacle</th>
<th>Short description</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not pass/fail criteria</td>
<td>Ecodriving is not pass/fail criteria in the UK learner driver test, which means it is given little attention</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Lack of demand</td>
<td>Experience in the UK shows little demand for ecodriving training from licensed drivers even when the training is subsidised or free</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Fleet fuel purchase arrangements</td>
<td>Drivers using fuel cards do not have direct personal incentive to save fuel. When drivers received a fixed payment per mile then the employer has little incentive to invest in their training</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Low awareness among consumers</td>
<td>Low awareness among the general public</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Low awareness &amp; interest from media</td>
<td>Low and perhaps decreasing interest from the media</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Behavioural change difficult</td>
<td>Drivers will only act if they feel empowered: they believe they can make a difference. This will only happen en masse if there is a change in the prevailing cultural attitudes. Such changes take a long time and – if they are to be driven by policy makers – a lot of money</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Instructors keen for new work</td>
<td>Instructors generally don’t have enough work in the UK and would welcome new sources of work / revenue</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Contradicts DSA advice?</td>
<td>Seen as potential clash with DSA’s requirement that drivers make progress whenever possible. But this is only a minor concern as clarification from DSA, or if necessary a slightly change of policy, could remove this problem</td>
<td>3</td>
</tr>
</tbody>
</table>

### Table 13.2. Classification of benefits.

<table>
<thead>
<tr>
<th>No</th>
<th>Benefit</th>
<th>Short description</th>
<th>Classification (1 = very relevant; 2 = quite relevant; 3 = less relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Instructors receptive to ecodriving accreditation</td>
<td>The instructors interviewed were fairly positive about a European accreditation of ecodriving instructors, subject to the accreditation creating customer demand</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Short-duration training favoured</td>
<td>Short duration ecodriving training was favoured over longer formats</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Techniques compliment learner instruction</td>
<td>Instructors saw no fundamental problem teaching ecodriving techniques to learner drivers (as long as DSA clarified that approaching obstacles such as red lights relatively slowly doesn’t contradict DSA advice to make progress wherever possible)</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Fleet managers aware</td>
<td>Fleet managers generally aware of ecodriving and its fuel savings benefits</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Links with safety</td>
<td>Potential to exploit the safety aspects of ecodriving for marketing purposes</td>
<td>3</td>
</tr>
</tbody>
</table>