

Measure title: **Heavy Eco-driving**

City: **Malmö**

Project: **SMILE**

Measure number: **11.9**

A Introduction

Malmö LBC is a major player in the Malmö transport market, operating 150 vehicles on a daily basis in the city of Malmö as well as on long distance routes. It has access to 250 heavy goods vehicles and 300 drivers, organised under 180 independent owner-driver companies.

The business is divided into three main business areas: long-distance distribution, express delivery services, and crane and construction services. The type of goods that Malmö LBC delivers for its customers are primarily construction material, food and drink products, and pharmaceuticals.

Malmö LBC has the ambition to lower the environmental impacts of their business, such as fuel consumption and related emissions. For this reason, Malmö LBC has created and implemented a training programme that provides the drivers with skills and competences on how to drive in a more fuel efficient and environmentally friendly manner.

A1 Objectives

The measure objectives are:

- Develop a sustainable transport solution in Malmö with the lowest possible environmental impact, highest road safety and health and safety.
- Train 200 drivers in an adapted and newly developed training package so they will receive professional development to drive in a more environmentally and economically efficient manner.
- Decrease use of diesel fuel by 1 070 000 litres per year (this is the equivalent of around 2,675 000 km). As a result of this, emissions of the greenhouse gas CO₂ would decrease by 2 793 tonnes in Malmö.

A2 Description

A company designed training programme was developed, which combined training in Heavy Eco-Driving, with education on road safety issues, as well as health and safety (H&S). This combination of various subjects was supposed to make the training more attractive to the owner drivers and the drivers, hence facilitate the recruitment of participants to the course. For a detailed description of the training programme please refer to Box 1 under section B3.

The intention was to train 200 participating drivers (both owner drivers and employed drivers). This was expected to enable Malmö LBC to decrease fuel consumption by 18 % of total fossil fuels used in the business.

B Measure implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **New conceptual approach, locally** – A completely new company-tailored training programme was developed, based on the existing certified Heavy Eco-Driving course. The training package was optimised for local conditions in Malmö and complimented with road safety, as well as health and safety issues.

B2 Situation before CIVITAS

Before the CIVITAS SMILE project, in 2005, the Malmö LBC vehicles used a total of 5 821 478 litres of MK1 diesel. This consumption of fossil fuels corresponds to emissions of 15.2 M kg CO₂.

In 2002-2003, 70 drivers, out of the total of 300 drivers, had received Heavy Eco-Driving education, though not the specially tailor-made education that has been developed for this measure, which adds on education in road safety, and health and safety.

B3 Actual implementation of the measure

Malmö LBC joined the CIVITAS SMILE project in October 2005. The implementation of the measure started in January 2006 and the eco-driving education took place during 14 months, from October 2006 till November 2007. A total of 139 drivers were trained within the CIVITAS SMILE project. A description of the contents of the training and the approximate time budget is provided in Box 1, later in this section. The measure was implemented in the following stages:

Stage 1: Development (2006-01 – 2006-08) – *STR Services AB (organisation for Swedish Traffic Schools) developed a tailor-made Heavy Eco-Driving education for Malmö LBC, which combined heavy eco-driving with education in the field of road safety, and health and safety. The training programme consists of a theoretical part and practical training in vehicle, accompanied by an instructor.*

Stage 2: Implementation (2006-10-11 – 2007-11-27) – *139 drivers received the eco-driving education during this period. The results on fuel consumption and speed before and after instructions were measured and reported, per driver. These results were gathered in a report¹.*

Stage 3: Follow-up (2006-2008) – *During and after the education, follow-up measures were used, such as economic incentives to motivate the drivers to keep up the eco-driving skills.*



¹ Mats-Ola Forsvik. *Heavy EcoDriving, Lastbilscentralen Malmö 2006-10-11 till 2007-11-27*, Yrkestrafikskolan i Skåne AB och Erikssons Yrkestrafikskola (STR Services AB).

Box 1: The Heavy Eco-Driving plus Health and Safety Training Concept as practiced at Malmö LBC during SMILE in Measure 11.9.

Since this measure involves more than just the theory and practice of heavy eco-driving, as conducted elsewhere in Sweden and other locations in Scandinavia, the entire training session requires more time. Training is divided into two parts: practice of heavy eco-driving and theory subjects in the classroom. Typically groups of approximately 30 drivers take the practical parts of the training sessions on various days and each driver spends about 2 hours with heavy eco-driving practice.

According to a pre-arranged agreement, a driving instructor joins the driver in his vehicle and the driver spends about 45 minutes driving the lorry on a particular route. This 45 minute period is used to establish a driver's "baseline" i.e. is used to determine fuel consumption prior to training.

The same route is driven again but this time according to the principles of eco-driving as explained and practiced under the supervision of the instructor. At the end fuel consumption is determined and compared with the first "baseline" session. While the results vary between individual drivers, frequently there is a significant difference which makes a lasting impression on the lorry drivers and may motivate their participation in the next part of the training.

The practical driving session is often held on a week-day. One driving instructor can accompany 4-5 drivers in a day. Malmö LBC matched instructor time with driver's availability by letting their drivers sign up for times when instructors were available based on sheets provided by the driving school.

When approximately 30 drivers had completed the practical part of the training, the next in-class part of the training could commence. Malmö LBC made sure that at most one month elapsed between the practical session and the theoretical session.

The theoretical session lasted 6-8 hours, depending on the number of participants and how many questions they asked. This session was held on a Saturday or Sunday. Topics covered in the class included:

- Heavy eco-driving theory
- Environmental issues
- Traffic safety
- The work environment
- Diet and health

Heavy eco-driving theory takes up about 30% of the entire time during the week-end session. The idea is that each subject in the theoretical training reinforces the other subjects and drivers can see their driving and the company in a new perspective.

B4 Deviations from the original plan

The deviations from the original plan comprised:

- **Number of participants** – 139 drivers were educated within the CIVITAS SMILE project, a deviation from the 200 as initially planned. This corresponds with a 70 % fulfilment of the target figure.

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

- **Measure 10.1 (Freight driver support)** – The intention of this measure was to install and use vehicle computers at Malmö LBC to improve logistics and the load factor as well as part of a follow-up system on the Heavy Eco-Driving measure on fuel consumption and emissions. Such follow-up is known to increase the long term effect of training, providing feedback and incentives to the drivers.

Relations among the eco-driving measures in SMILE Malmö:

In Malmö there are four measures – 5.3, 11.2, 11.8, 11.9 -- that deal solely or in part with what is called “eco-driving” which is a driver technique, approach and strategy to reduce fuel consumption without reducing driving speed. While all four measures include eco-driving, the results are not always easily compared and some of the assumptions or factors used in calculations differ between these measures. The reasons for this are as follows:

The target staff or drivers have varying degrees of incentive or motivation to continue to apply the eco-driving technique in the weeks, months and years following their training. The primary incentive comes from a reward, often in the form of financial gains – directly or indirectly – corresponding to the costs of saved fuel that has resulted from eco-driving.

The target staff or drivers have different relations to the vehicles and their work situation. Some of the drivers in some of the measures are professional drivers: that means driving is their occupation. Such drivers may have regular routes that they take where they may be able to perfect their efforts to reduce fuel. Others driver vehicles rather regularly as part of their work, but this is not the primary part of their occupation or profession. Still other driver may irregularly and for shorter distances use vehicles as part of their work. This means that the results of the eco-driving measure will vary because of the frequency of driving and at the relative centrality of driving as part of the employees’ occupation.

Some drivers almost always drive the same vehicle. Infrequent drivers are more likely to drive a different make of vehicle almost every time they need to use a vehicles.

Finally, there are different kinds of vehicles that are used by drivers in the four measures and the reasons for driving vary.

In comparison we can say:

5.3

That the drivers of heavy vehicles in 5.3 are employees of freight haulers and these employees may not be receiving a financial incentive. The supplier of the training, Skånemejerier, is not the employer. There are indications that the effects of eco-driving fell from about 13% to about 3% reduced fuel use when there was no refresher training but this may have then improved when refresher training was introduced much later in the measure.

11.2

For the municipal employees in 11.2 the initial reduction of fuel was about 13% but since the employees have no incentive to continue to drive this way (fuel savings do not accrue to them, they are not awarded in some other way), this savings tends to have approached nil within a year and we assume that it is zero after one year. There is no refresher training. Most managers or section heads do not see the relation between training staff in eco-driving and financial performance of their section.

There are some exceptions within 11.2 among individual drivers and managers who can see the benefit from eco-driving for their section's financial performance but these are truly the exception.

11.8

In the hospital, it proved difficult initially to get any medical or care staff to take the training. As a result we only have statistics from the regular transportation staff in the hospital. There may be some measure of incentive for the transportation staff since it is a small unit and cost savings can be more easily tracked and attributed to driver performance. For the other parts of the hospital where staff took the training fuel costs are often small in comparison with the total budget and it is hard for either the managers or staff to see the advantage: again there is no incentive.

11.9

This last measure like 5.3 only involves heavy vehicles. However, unlike 5.3, most people who took the training were owner-operators of their own vehicles and as such have a financial incentive to maintain a high degree of eco-driving performance. From an initial savings of about 17% in terms of fuel consumption this falls to 10% or less in the longer-term. However, fuel savings accrue to the individual driver or, in some cases, the small firms that have joined the umbrella organisation Malmö LBC.

Thus we see that even if all measures attempt to reduce fuel consumption using the same basic techniques and methods, the context within which the measure is rolled-out has a clear impact on the long-term effects. More motivated drivers with a form of incentive tend to have driving habits similar to the ideal in eco-driving than drivers who have no form of incentive at all. Motivated drivers retain the positive effects of eco-driving.

This lengthy passage appears verbatim in the B5 section of 5.3, 11.2, 11.8, 11.9 to make it easier for readers who might want to compare these measures.

C Evaluation – methodology and results

C1 Measurement methodology

C1.1 Impacts and Indicators

Table of Indicators.

Nr.	Relates to GUARD Nr.	INDICATOR Name	Possible DESCRIPTION	DATA /UNITS
		Costs	Total costs for the measure during SMILE	SEK
		Revenues	Expressed as economic savings stemming from reduced fuel consumption	SEK
3		Vehicle Fuel Consumption	Total fuel used in the business	Litres of fuel, quantitative and derived
8		CO ₂ Emissions	Total emissions of CO ₂ in the business	Kg of CO ₂ , derived
13		Awareness Level of Measure	Degree to which the awareness of the policies/measures has changed	Qualitative, indirect, interview
14		Acceptance Level of Measure	Degree to which the awareness of the policies/measures has changed	Qualitative, indirect, interview

Detailed description of the indicator methodologies:

- **Indicator 3** (*Vehicle Fuel Consumption*) – Quantitative data on total fuel consumption in the business, according to Malmö LBC. Derived data on reduced fuel consumption.
- **Indicator 8** (*CO₂ Emissions*) – Derived data on CO₂ emissions per litre fuel, using a fixed conversion factor of 2.61 kg CO₂ per litre of fuel.
- **Indicator 13** (*Awareness Level of Measure*) – Qualitative indirect data was obtained on interview with the person in charge of implementing the measure, the Manager of Environment and Quality, Peter Willborg. Quantitative data was obtained from a survey among the general public during April 2008.
- **Indicator 14** (*Acceptance Level of Measure*) – Qualitative indirect data was obtained on interview with the person in charge of implementing the measure, the Manager of Environment and Quality, Peter Willborg. Quantitative data was obtained from a survey among the general public during April 2008.

C1.2 Establishing a baseline

Year 2005 has been chosen as a baseline. Fuel consumption during this year was 5 821 478 litres of MK1 diesel, according to data from Malmö LBC. Yearly diesel consumption per driver was 19 405 litre. Malmö LBC employed the same number of drivers as today, 300 drivers.

C1.3 Building the business-as-usual scenario

To compensate for external factors, we have estimated reduction factors in relation to fuel consumption and emissions in 2005. Thus, we have avoided the necessity to establish a business-as-usual scenario for 2008. There is reason to assume that the business' production (vehicle kilometers) has increased since 2005 for external reasons. In that case, the absolute effect of the measure is *underestimated* in our evaluation (based on 2005 consumption). Furthermore, there is no reason to assume *over-estimation*, since there has been a strong economic growth during the period of implementation of this measure, implying increased demand for transport services.

C2 Measure results

The results are presented under sub headings corresponding to the areas used for indicators – economy, energy, environment, society and transport.

C2.1 Economy

The economic consequences of the measure for the entire SMILE period are as follows:

1. Costs of education
2. Benefits of reduced fuel consumption, and hence reduced fuel costs.

	<i>Concept, description</i>	<i>Euros</i>
<i>Costs</i>	<i>Education: development and implementation</i>	<i>145 148</i>
<i>Benefits</i>	<i>Economic savings related to reduced fuel consumption</i>	<i>314 227</i>
<i>Net result</i>		<i>169 079 benefit</i>

The figures in the table have been derived in the following manner:

Costs

Costs related to the eco-driving education amount to 145 148 Euros. The drivers' wages (hourly cost) is not included in this calculation; it was financed by the vehicle owners.

Benefits

Immediate effect of eco-driving

During eco-driving classes, an average decrease of fuel consumption of 16 percent was achieved.² This figure agrees with the 10-20 percent reduced fuel consumption reported in previous studies.³

Long term effect of eco-driving

Previous studies of the long term effects of eco-driving suggest that the long term effect ranges between 3 to 6 percent.⁴ However different kinds of incentives may contribute to higher figures, such as various kinds of economic incentives to the drivers.

Malmö LBC has not measured the long-term effect of the eco-driving education, but economic incentives have been used. The Manager in charge of heavy eco-driving implementation at Malmö LBC has actively encouraged the vehicle owners to use economic incentives in an effort to maintain the drivers' eco-driving skills and keep fuel consumption down. Examples

² Mats-Ola Forsvik (2007). *Heavy EcoDriving, Lastbilscentralen Malmö 2006-10-11 till 2007-11-27*, Yrkestrafikskolan i Skåne AB och Erikssons Yrkestrafikskola (STR Services AB).

³ Vägverket (2004). *Klimatstrategi för vägtransportsektorn*, Publ 2004:102

⁴ Vägverket (2004). *Klimatstrategi för vägtransportsektorn*, Publ 2004:102

of incentives that were used are bonuses and gifts to the driver with the lowest fuel consumption, a holiday trip, cakes etc.

A comparison of fuel consumption in September 2006 and September 2008 (before and after the eco-driving measure) based on figures from Malmö LBC, which indicates an overall reduction of 9 percent.

Economic saving as a result of the long term effect of eco-driving

The 9 percent fuel reduction would mean a yearly saving of 242756 litres of MK1 diesel compared to the baseline. In present fuel values, it corresponds to reduced diesel costs of 314227 Euro.⁵

Net result

The cost of the implementation of this measure (as defined here) is recovered within half a year to one year.

C2.2 Energy

As described in C2.1, total fuel consumption is expected to have decreased by 8 percent, 215 783 litres per year, compared to the baseline year 2005.

The fuel reduction target was 1 070 000 litres per year. For Malmö LBC this would correspond to an annual reduction of 18 % in fuel use in the whole business. This target was not reached, which seems quite natural, because it was an extremely ambitious target. In particular:

- Firstly, as previous studies on eco-driving show that the long term effect on fuel savings are in the range of 3-6 percent, as stated in C2.1;
- Secondly, since fewer than half of the drivers that were trained in Heavy Eco-Driving; each of those drivers should have had to reach and maintain a level of fuel reduction of 36 percent, for the target set to be reached.

C2.3 Environment

Heavy eco-driving is expected to result in positive effects on the environment, mainly reduced levels of emissions of the greenhouse gas CO₂.

Carbon dioxide

Due to reduced diesel fuel consumption as a result of the Heavy Eco-Driving education (described in C2.1), Malmö LBC has reduced the CO₂ emissions by 633 532 kg.

	<i>Diesel fuel, litre, reduction</i>	<i>CO₂, kg, reduction</i>
<i>Malmö LBC result</i>	242 756	633 592

The target of reducing 2 792 700 kg CO₂ was not reached, for the reason that fuel consumption was not reduced as much as targeted. However, this was to be expected, as explained in C2.2.

Air quality

There are no results available on emissions of other pollutant compounds from the Heavy Eco-Driving education at Malmö LBC. Other studies on the effect of eco-driving education on such emissions indicate neither reduced nor increased levels.⁶

⁵ Calculation based on a diesel cost of 12.75 SEK/liter, and the Euro at 9.85 SEK (2008-11-10)

Therefore, in the case of Malmö LBC, no significant increase or decrease of either NO_x or Particulates (PM) is expected to have resulted from the eco-driving education.

C2.4 Transport

Figures on the number of vehicle kilometres were not obtainable. However, there is no reason to believe that the Heavy Eco-Driving measure has effected on this factor. But, there is reason to believe that the kilometres driven have increased during the evaluation period, due to the strong economic growth during the period, as mentioned in C1.3.

Another positive effect of the eco-driving education is on the drivers' motivation and general awareness. This has, for example, resulted in significantly reduced levels of damaged goods and vehicle accidents (approximately 20 percent⁷). This increased awareness can be assumed to have positive external effect on society in general, in terms of increased level of road safety.

C2.5 Society

Both the *Acceptance Level of the Measure* and the *Awareness Level of the Measure* have increased during the course of implementation, according to the Manager in charge at Malmö LBC (Peter Willborg). The vehicle owners that have received the Heavy Eco-Driving education have become aware of potential to save fuel, and hence reduce costs, a fact that has motivated them to apply the skills in their own driving, as well as to send their drivers to undergo the same training.

During April 2008, as part of a pilot questionnaire distributed to members of the general public in Malmö, questions were asked about Malmö LBC's and other SMILE partners environmental/transport activities in an effort to gauge awareness. The response rate was not great and as a result these questions were dropped or modified in the main questionnaire. However, the results of the survey suggests that as many as 2% of the general population of Malmö may be aware that Malmö LBC has conducted eco-driving training for its employees.

C3 Achievement of quantifiable targets

No.	Target	Rating
1	Reduce fuel consumption by 18% of total fossil fuels used in the business	0
1a	Reduce fuel consumption by 18% for participating drivers	★
2	Decreased use of diesel of 1 070 000 litres per year	0
2a	Decreased use of diesel of 485 111 litres per year	★
3	Decreased emissions of the greenhouse gas CO ₂ by 2 792 700 kg in Malmö	0
3a	Decreased emissions of the greenhouse gas CO ₂ by 1 266 140 kg in Malmö	★
<p>NA = Not Assessed 0 = Not achieved ★ = Substantially achieved (> 50%) ★★ = Achieved in full ★★★ = Exceeded</p>		

Targets 1a, 2a & 3a represent realistic targets formulated at the end of the project because the initial targets were ill conceived.

⁶ Vägverket. (1999) *Effekter av EcoDriving på avgasutsläpp och bränsleförbrukning, en förstudie*. Publ. 199:165; and Johansson H. et.al. (2003) *Impact of EcoDriving on emissions* presented on the 12th International Symposium "Transport and Air Pollution", Avignon 16-18 June 2003, page 73.

⁷ Malmö LBS's insurance company, Trygg-Hansa. Oral communication with Mats Andersson, 2008-11-12

C4 Up-scaling of results

In this case there is no reason to assume anything else than proportionality. This leads to the assumption that, if all the 300 drivers at the Malmö LBC would pass through the same sort of Heavy Eco-Driving education and feedback, the total effect would be a reduction of 523 932 litres of diesel and the emissions of the greenhouse gas CO_2 would be reduced by 1350 tonnes.

On a national level, there is reason to assume that the effects would be the same, given that goods transport chauffeurs in Sweden would receive the same sort of Heavy Eco-Driving education and the same ambitious level of follow up incentives as the drivers at Malmö LBC. This would mean reduced fuel consumption and reduced levels of emissions of the greenhouse gas CO_2 from heavy vehicles corresponding to 509 625 tonnes⁸.

On a local level, the city of Malmö, the effect of this measure would be 4950 tonnes less emissions of the greenhouse gas CO_2 .⁹

C5 Appraisal of evaluation approach

This evaluation is based on the total diesel consumption of the Malmö LBC, but not in relation to the vehicle kilometres. The reason is that figures on vehicle kilometres were not obtainable. Therefore, the evaluation has had to be made on the assumption that vehicle kilometres have not varied significantly, at least not decreased.

However, we have no reason to consider this a problem, because 1) probably, and according to the Manager in charge at Malmö LBC, vehicle kilometres have increased (so, our estimated reductions can be assumed to be somewhat underestimated), and 2) anyhow, there is no reason to believe that the number of kilometres have been *affected* by the measure.

C6 Summary of evaluation results

The key results are as follows:

- **Key result 1** – The measure has led to reduced fossil fuel consumption and a reduction of the emissions of the greenhouse gas CO_2 by 633 592 Kg.
- **Key result 2** – The measure has been economically efficient from both a business and societal perspective. The benefit to the business in financial terms is more than twice the cost of implementing the measure.
- **Key result 3** – The very ambitious target was not achieved, because it was unrealistic from the beginning.

D Lessons learned

D1 Barriers and drivers

D1.1 Barriers

- **Barrier 1** – Personal attitudes were in the beginning a barrier to motivate vehicle owners for eco-driving education. They were not interested in someone teaching them a new way

⁸ Calculation based on CO_2 -emission data as published in: Vägverket (2008). *Uträkning av medelförbrukningen för tunga fordon i Sverige*. Håkan Johansson, 2008-03-31

⁹ Calculation based on Vkm data provided by Nils Haraldson, Road Administration office (Gatukontoret), in the City of Malmö, 2008-11-13.

to drive. This was overcome in many cases due to personal encouragement, see D1.2 Drivers.

- **Barrier 2** – Follow-up per driver was not optimal, since there was no driver support installed in the cars that could measure each driver's CO₂ reductions and other emission data nor were refresher training sessions offered.

D1.2 Drivers

- **Driver 1** – Economic incentive. The eco-driving class gave visible results on the reduced fuel consumption that comes out of this way of driving, a clear economic benefit. This was a driver for many carrier-owners to send their drivers to the eco-driving class. Also, a combination of various subjects, such as education on road safety issues and health and safety training appear to have made the training more attractive to the vehicle owners and drivers.
- **Driver 2** – Customer requirements. Customers sometimes require suppliers of transport services to have eco-driving license, for example the wholesaler Menigo. This was a driver for vehicle owners to send all their staff to the eco-driving course.
- **Driver 3** – Although not meeting what is termed very ambitious and unrealistic targets, the measure has managed to reduce fuel consumption and emission levels of the greenhouse gas and has also been economically efficient from the business and societal perspective. This can act as a good marketing for wider uptake of this measure, albeit with a more realistic and redefined targets and objectives.

D2 Participation of stakeholders

- **Stakeholder 1 – Customers:** Some customers have the requirement that their transport suppliers should have an eco-driving education. Eco-driving transport companies can be important for the customers sustainability approach, and an important account in the Sustainability Report
- **Stakeholder 2 – STR Services AB (organization of Swedish traffic schools):** Suppliers of the company tailored Heavy Eco-Driving education.
- **Stakeholder 3 – The National Road Administration (Vägverket):** This authority may use the Malmö LBC as a “good example” to inspire and promote the eco-driving to other stakeholders as well as internationally.
- **Stakeholder 4 – City of Malmö:** Malmö LBC contributes to the reduction targets of CO₂ of the city of Malmö.
- **Stakeholder 5** – Haulage contractors and their drivers connected to Malmö Lorry Centre.

D3 Recommendations

- **Recommendation 1** – Continue the Heavy Eco-Driving education so that it will include all drivers.
- **Recommendation 2** – Implement an efficient and continuous feedback system, and use economic incentives, such as bonuses and gifts. People's travel behaviour is influenced by incentives, personal and economic. To achieve and maintain the heavy eco driving it may be necessary to keep offering such incentives to the drivers which may go against the measure objectives. It is recommended to establish whether reasons why people joined the training programme meet the objectives of the scheme. This will help create an understanding of the measure effectiveness and enable future planning of the scheme in ways to ensure its success.

- **Recommendation 3** – Install vehicle computers in order to create the most efficient feedback system (measure 10.1, *Freight driver support*)
- **Recommendation 4** – While waiting for the installation and subsequent use of the vehicle computers to establish a feedback system that encourages drivers to continue with driving habits picked-up from eco-driving training, ensure that refresher courses on Heavy Eco-driving are offered to drivers and vehicle-owners to move driver performance closer to the « immediate effect of eco-driving » reduction in fuel use by 16%.

D4 Additional comments with regard to the measure

Comments and tips about arranging the training sessions and motivation

Note that these comments and tips are **not recommendations**.

It would be possible to accelerate the numbers of drivers receiving practical training and hold the in-class training much closer in time if several instructors were available in parallel during the same week. However, this may not be possible during periods of heavy demand for freight services and driving schools may not be able to provide sufficient numbers of instructors during such a limited time frame. Once drivers had seen the practical benefits of heavy eco-driving they were frequently more motivated to attend the week-end theoretical session.

Some drivers influence the opinions of other drivers on various issues. It was apparent that when these “opinion leaders” had been won over and saw the benefits, they became vocal advocates. It can be an advantage to target opinion leaders who are sceptical about eco-driving early on so that these people then can assist in the marketing of the concept among their colleagues. However, the alternative is also possible. Opinion leaders targeted first may not have much improvement in their fuel efficiency and be vocal critics which can lead to lower levels of participation and motivation on the part of other drivers.