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## D3.3 Policy mix for energy efficient fleet management

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## TABLE OF CONTENT

1	Summary .....	5
2	Company Car Taxation.....	6
2.1	UK Company car tax.....	6
2.2	Belgian company car taxation .....	12
2.3	French company car taxation .....	16
2.4	Company car taxation in the Netherlands .....	18
2.5	Conclusions green company car taxation.....	19
3	Green fleet programmes .....	21
3.1	UK green fleet programme.....	21
3.2	Het Nieuwe Rijden (HNR, the Netherlands).....	23
3.3	Project ‘SAVE’ – ‘EXIKONOMO’ in Greece.....	25
3.4	‘klima:active’: the national programme for climate protection in Austria .....	25
3.5	Mobility Mixx – Mobility Card (the Netherlands).....	26
3.6	Mobimix.be.....	26
3.7	Pendelfonds (Belgium) .....	27
3.8	Finland: Eco-Taxi and Energy Conservation Programmes .....	28
3.8.1	Eco-Taxi .....	28
3.8.2	Energy conservation programme for truck and van transport.....	29
3.8.3	Energy conservation programme for public transport .....	29
3.8.4	Energy Efficiency Agreement for Freight Transport and Logistics 2008-2016.....	30
4	Good fleet practices on a local scale.....	32
4.1	Clean vehicles Swedish cities .....	32
4.2	CNG-vehicles in Berlin, Germany .....	33
5	Actions from lease companies and fleet operators .....	35
5.1	Green lease programmes .....	35
5.1.1	Belgium .....	35
5.1.2	A European view .....	36
5.2	Perception of fleet operators .....	38
5.3	A clever use of the German taxation system.....	39
5.4	Conclusion green private fleets.....	41
6	Conclusions .....	42
7	Reference list.....	44

## LIST OF FIGURES

Figure 1: Numbers of UK company car drivers receiving free fuel since 1997/98 (HM Revenue & Customs, 2006).....	9
Figure 2: Fleet sales and private sales in relation to CO <sub>2</sub> -emissions in UK from 1997-2005 (Veith A. & Underdown N., 2007).....	10
Figure 3: Private and company new car CO <sub>2</sub> -emissions (g/km) in the UK (SMMT, 2008).....	10
<b>Figure 4: New company car market share in function of the company car taxation-band (depicted on Y-axis, as defined in Table 1) (SMMT, 2008).....</b>	<b>12</b>
<b>Figure 5: Distribution of diesel company cars by CO<sub>2</sub>-emissions (SD Worx, 2008) .....</b>	<b>14</b>
Figure 6: Reasons why the fleet policy has been changed (SD Worx, 2008).....	15
Figure 7: Average CO <sub>2</sub> -emission of newly registered cars, split up by region (BEL = Belgium; BXL = Brussels Capital Region; VL = Flanders Region; WAL = Walloon Region) (M. Vanderschaeghe T. Denys, R. Guisson, L. Govaerts, 2008).....	16
Figure 8: Valuation and possible implementation by fleet owners towards green car policy (in Dutch) (Thonnon C., 2007) .....	39
Figure 9: Comparison of car costs between a classical leasing of a company car and RentSharing (Schneider A., 2009).....	40

## LIST OF TABLES

Table 1: Benefit-in-kind in % of purchase price for UK company car taxation (remark: from 2008-09 onwards there is a new 10%-band for 120 g/km or less) (HM Revenue & Customs) .....	7
Table 2: Reduction or supplement to UK company car tax rates depending on fuel or technology (HM Revenue & Customs).....	7
Table 3: Market share per CO <sub>2</sub> -band of company cars in the UK (SMMT, 2007).....	9
Table 4: New car CO <sub>2</sub> -emissions by sales type in the UK (SMMT, 2008) .....	11
Table 5: Deductible % of costs of company cars (Belgium) .....	13
<b>Table 6: Changes in the fleet policy (SD Worx, 2008) .....</b>	<b>15</b>
Table 7: French company car taxation scheme (impots.gouv.fr).....	17
Table 8: Company car tax based on fiscal horsepower (cars from before 01-06-2004) (impots.gouv.fr) .....	17
Table 9: Tax coefficients for the reimbursed kilometres (impots.gouv.fr) .....	17
Table 10: Percentages for the value assessment of the private use (if the value of the private use exceeds the indicated percentages, this higher percentage will apply) .....	19
Table 11. Impact of the UK Green fleet programme .....	22
Table 12: Familiarity with the eco-driving concept before and after media campaign (Netherlands).....	23
Table 13: Percentage of motorists applying eco-driving (Netherlands) .....	23
Table 14: Reductions and savings thanks to eco-driving (Netherlands) (SenterNovem, 2007) .....	24
Table 15: Overview of green lease programmes (Belgium) ((Saveyn A., 2007) and own research) .....	35

# 1 SUMMARY

In this report, an overview is given of possible policy measures to promote an energy efficient fleet management. Although companies and their fleet operators are the main actors in improving energy efficiency of their fleet in the field, policy makers can have a positive influence by certain measures (like green company car taxation) or programmes to support fleet operators with this ambition.

The list of measures wasn't meant to be exhaustive, but we have been striving after a relevant list of best practice examples, collected from European countries.

In each case we give a qualitative description of how fleet operators are guided or supported by the authorities to invest in energy efficient fleet management, if applicable backed up with numerical criteria, targets or amount of taxes. A second goal was to give a quantitative impact analysis of the regarded programme or measure, on how many cars are involved, what the impact is on fleet composition and CO<sub>2</sub>-emissions, et cetera. As the follow-up and the reporting of the results of a measure or programme doesn't happen to be that accurate as we wished, there is often a lack of quantitative data. So the impact assessments are sometimes rather brief or even not present.

In a first chapter (2) we will describe and investigate some company car taxation schemes, followed by another chapter (3) on green fleet programmes. Also local authorities can make the difference by taking the initiative with meaningful projects at a local scale. That's why we describe some of those in chapter 4. Private lease companies also put their oar in – no doubt as a consequence of some political measures or the growing public awareness. Some of their initiatives are described in chapter 5 as a kind of feedback to the policy makers, who on the other hand also can be inspired.

The proposed measures and programmes are every time related to one or a combination of these goals:

- Greening the fleet: focus on energy efficient vehicles and alternative drives or fuels;
- Energy efficient use of the vehicles: how to drive in an environmentally friendly way;
- Mobility management of fleets: energy efficient planning and organization of transports.

## 2 COMPANY CAR TAXATION

### 2.1 UK Company car tax

#### Situation

From April 2002 the benefit-in-kind tax charged for company cars has been based on the CO<sub>2</sub>-emissions of a vehicle. The employee has to state the benefit-in-kind income for private use of his company car as a percentage of the purchase price of the car, which is based on the CO<sub>2</sub>-emissions of the car. This applies to all company cars registered from January 1998 onwards. For certain fuels and vehicle technologies, the rates are increased or reduced following the environmental friendliness of the technology. From 2008, the rates will be adapted with a new 10% rate for low CO<sub>2</sub>-cars for encouraging the take-up of low CO<sub>2</sub>-emitting cars (SMMT, 2007).

Moreover, from 6 April 2003 there is a system taxing the free fuel from the employer for private use. The same percentage figure used to calculate the car benefit charge is also used to calculate this fuel scale charge, taking account of the supplement for diesels and the appropriate discount for alternative fuels and technologies. This percentage is multiplied by a set figure for the tax year, which was £14.400 from 2003/04 to 2007/08 and £16.900 for 2008/09 onwards. If an employee decides to stop getting free fuel from his employer during a tax year, the tax is reduced proportionally to the period. (Deloitte)

#### Definition clean vehicles

The criterion in the UK company car tax is the CO<sub>2</sub>-emission of the car (in g/km). The percentage of the purchase price the employee has to declare as benefit-in-kind varies from 15% to 35%; the percentages are presented in Table 1. Diesel cars (except Euro 4 diesel cars registered before 2006) have a supplement of 3% on the purchase price. In 2008 a new 10%-band was introduced for cars with CO<sub>2</sub>-emissions of 120 g/km or less. The supplement for diesel cars is still applying, so even with a emission of 120 g or less, their rate is 13%. Also the percentage for electric vehicles is an unchanged 9%. The rate for alternative fuelled vehicles is reduced with 2 to 6% as presented in Table 2.

The same percentages as in Table 1 are also used to calculate the tax on free fuel for private use.

**Table 1: Benefit-in-kind in % of purchase price for UK company car taxation (remark: from 2008-09 onwards there is a new 10%-band for 120 g/km or less) (HM Revenue & Customs)**

CO <sub>2</sub> emissions (g/km)	2005–06 to 2007–08	2008–09 onwards
135	15%	15%
140	15%	16%
145	16%	17%
150	17%	18%
155	18%	19%
160	19%	20%
165	20%	21%
170	21%	22%
175	22%	23%
180	23%	24%
185	24%	25%
190	25%	26%
195	26%	27%
200	27%	28%
205	28%	29%
210	29%	30%
215	30%	31%
220	31%	32%
225	32%	33%
230	33%	34%
235	34%	35%
240	35%	35%

**Table 2: Reduction or supplement to UK company car tax rates depending on fuel or technology (HM Revenue & Customs)**

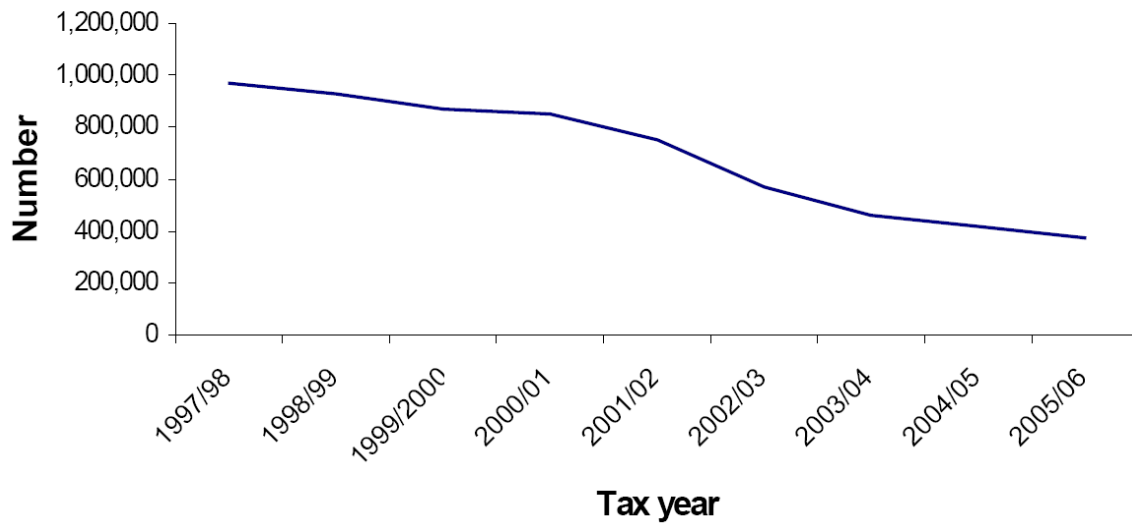
Type of fuel	P11D code	Standard adjustment from 2006/07	Other adjustments
Petrol	P	none	none
Diesel (car not Euro IV)	D	supplement: 3% (see note 4)	none
Diesel (Euro IV car – note 1) first registered before 2006	L	cancel type D supplement, above	none
Diesel (Euro IV car – note 1) first registered in or after 2006	L	supplement: 3% (see note 4)	none
Electric only	E	reduction: 6%	none
Hybrid electric (note 2)	H	reduction: 3%	none
Gas only	B	reduction: 2%	none
Bi-fuel with CO <sub>2</sub> emissions figure for gas (note 3)	B	reduction: 2%	see note 5
Bi-fuel conversion, or other bi-fuel not within type B	C	none	none

### Impact analysis

In 2006, the Inland Revenue office made an evaluation of the second stage of the company car tax reform. (HM Revenue & Customs, 2006) Main conclusions of the evaluation 4 years after the introduction of the CO<sub>2</sub>-based company car taxation are summarised below:

- Around 90% of employers and drivers claim to know about the reform of which nearly half know that the new system is based on purchase price and CO<sub>2</sub> (or at least pollution or fuel consumption in a more general sense). Around 60% of company car drivers were influenced by the reform and choose a car with lower CO<sub>2</sub>-emission.
- The company car tax reform is encouraging substantial numbers of people to choose cars with lower CO<sub>2</sub>-emissions figures. Average CO<sub>2</sub>-emissions figures from company cars were around 15g/km lower in 2004 than would have been the case if the reforms had not taken place which is significantly better than the CO<sub>2</sub>-reduction for private cars (see Figure 2).
- The evaluation suggests that if drivers no longer have company cars, on average, they will choose private cars with CO<sub>2</sub>-emissions figures that are around 5g/km higher as a result.
- The number of company cars has reduced to around 1,2 million in 2005 compared with around 1,6 million in 2001.
- The modelling work suggests that the company car tax reform has led to overall losses in revenues because many employers and drivers are choosing company cars with lower CO<sub>2</sub>-emissions figures as a result of the reform and some employers and drivers have stopped having company cars because of it.  
The central estimates are that these losses amounted to around £40 million for 2002/3, £135 million for 2003/4, £145 million for 2004/5 and £120 million for 2005/06.
- There has been a substantial increase in company cars running on diesel to around 50 – 60% at the end of 2004 from around 33% in 2002 (see Table 3), a somewhat faster rate of increase than for the vehicle stock as a whole. The proportion of company cars running on diesel is forecast to rise to 60 – 70% over the next few years.
- The proportion of company car drivers receiving free employer provided fuel for private use has also decreased significantly from around 57% in 1997 to around 30% now (see Figure 1).
- This means a reduction of 70 – 100 million private miles in cars in 2005 due to the reduction in the number of company car drivers getting free fuel since 1997, although this is less than 0,1% of the total amount of mileage done in cars in the UK in 2005.

**Figure 1: Numbers of UK company car drivers receiving free fuel since 1997/98 (HM Revenue & Customs, 2006)**



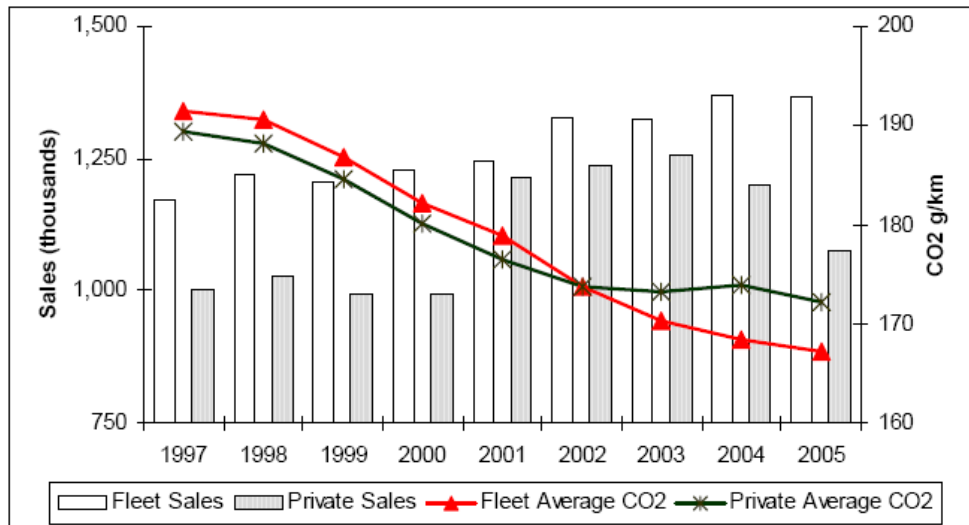
In two years time the number of company cars with lower CO<sub>2</sub>-emissions increased rapidly as shown in Table 3. The average CO<sub>2</sub>-emission of new company cars was reduced with 7,8% in two years and also the number of new company cars decreased with 12% between 2002 and 2004.

**Table 3: Market share per CO<sub>2</sub>-band of company cars in the UK (SMMT, 2007)**

	2004/05	2003/04	2002/03
<b>CO<sub>2</sub> emissions g/km</b>			
<=145	27.5%		
150&155	20.8%	42.0%	
160&165	8.3%	8.4%	41.6%
170&175	10.8%	11.5%	12.4%
180&185	9.2%	9.9%	10.9%
190&195	7.5%	8.4%	9.5%
200&205	4.2%	5.3%	7.3%
210&215	3.3%	4.6%	4.7%
220&225	2.5%	3.1%	4.4%
230&235	1.7%	2.3%	2.9%
240&245	1.7%	1.5%	1.8%
250&255	0.8%	3.8%	1.1%
>=260	2.5%		3.6%
Diesel	54.2%	44.3%	33.6%
Petrol	46.7%	56.5%	66.4%
<b>Total Volume (000s)</b>	1,200	1,310	1,370
<b>Average weighted CO<sub>2</sub> g/km</b>	171.0	177.9	185.5

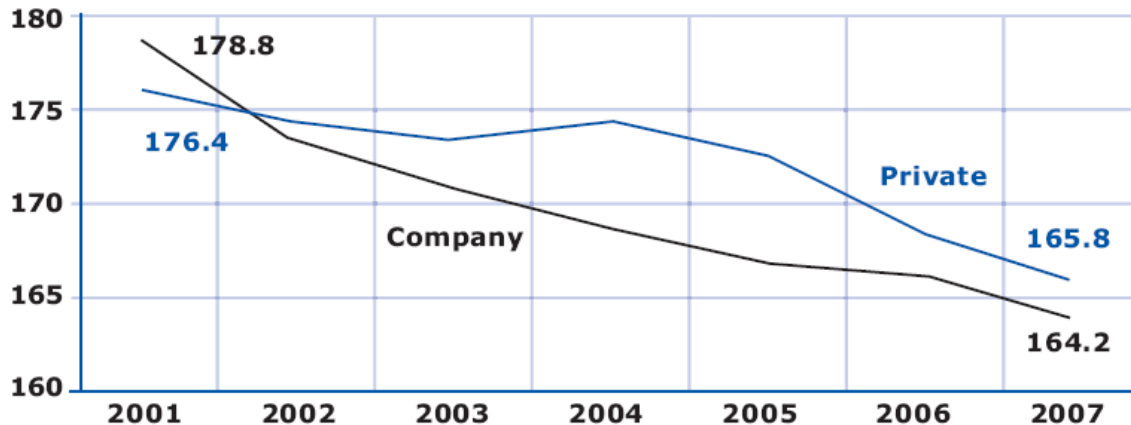
Figure 2 shows the average CO<sub>2</sub>-emissions of passenger cars sold to private consumers versus fleet clients. Since 2001-2002, when the CO<sub>2</sub>-based VED for private consumers (Vehicle Excise Duty, the annual circulation tax ranging from £0 (< 100 g/km) to £300) and the CO<sub>2</sub>-based company car tax were introduced, the average CO<sub>2</sub>-emissions of new fleet passenger cars has decreased substantially, while there was a stagnation for the average CO<sub>2</sub>-emissions for new private vehicles since 2002.

**Figure 2: Fleet sales and private sales in relation to CO<sub>2</sub>-emissions in UK from 1997-2005 (Veith A. & Underdown N., 2007)**



The latest 2008 SMMT-report (SMMT, 2008) mentions that the difference in CO<sub>2</sub>-emissions between private cars and company cars has become smaller in 2006 and 2007, to only 1,6 CO<sub>2</sub> g/km. This is due to the bigger decrease of the emissions of private cars (see Figure 3). However, their market share is declining in favour of the company cars' share (see Table 4).

**Figure 3: Private and company new car CO<sub>2</sub>-emissions (g/km) in the UK (SMMT, 2008)**

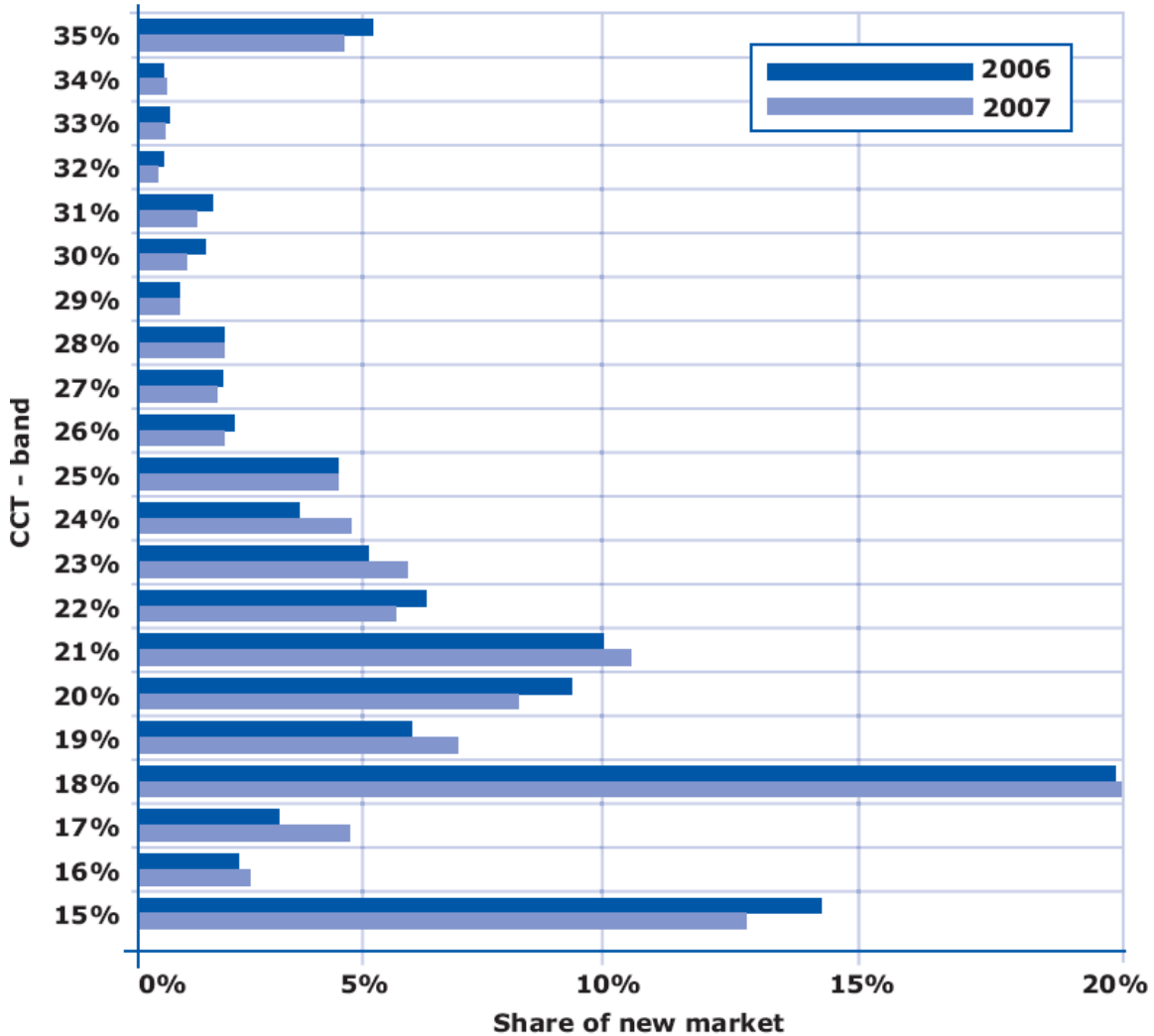


**Table 4: New car CO<sub>2</sub>-emissions by sales type in the UK (SMMT, 2008)**

	<b>2007</b>	<b>2006</b>	<b>2001</b>
<b>Company</b>			
Average CO <sub>2</sub> g/km	164.2	166.0	178.8
2007 % change		-1.1%	-8.2%
Mkt share	56.5%	55.9%	50.7%
<b>Private</b>			
Average CO <sub>2</sub> g/km	165.8	168.7	176.4
2007 % change		-1.7%	-6.0%
Mkt share	43.5%	44.1%	49.3%

Figure 4 shows that the purchase behaviour aims indeed towards the lowest company cars taxation-bands, as 15% and 18% (+ 3% for diesel cars!) are the most populated categories. The decrease of the 15% CCT-band is due to the increasing market share of diesel cars in the UK (45% of the company cars in 2006, 47% in 2007). Not only the part of diesel cars within the company car market is increasing, it's also a general trend since 14,1% of the new sold cars was a diesel car in 2000 and this has been rising to 38,3% in 2006 and 40,2% in 2007. Over a fifth of the company car market is now below 140 CO<sub>2</sub> g/km and 3,7% is under 120 g/km (situation 2007).

**Figure 4: New company car market share in function of the company car taxation-band (depicted on Y-axis, as defined in Table 1) (SMMT, 2008)**



## 2.2 Belgian company car taxation

### Situation

When an employer gives a company car to the employee that is used for private transport, this is taxed in two ways. The employee has to state the net benefit-in-kind that he receives from his employer and this is calculated based on the average mileage and the fiscal horsepower of the car. For the employer, the benefit-in-kind is seen as a kind of salary on which social security contributions have to be paid.

Since January 2005, the social security contribution is not anymore calculated based on fiscal horsepower, but based on the CO<sub>2</sub>-emissions of the cars. (Willems, 2005)

The calculation of the annual social security contribution is as follows:

- Petrol cars:  $(\text{CO}_2\text{-emission} * 9\text{€}) - 768\text{€}$
- Diesel cars:  $(\text{CO}_2\text{-emission} * 9\text{€}) - 600\text{€}$
- LPG cars:  $(\text{CO}_2\text{-emission} * 9\text{€}) - 990\text{€}$

These contribution still have to be multiplied with the index applying in the considered financial year.

Starting from April 2007, the percentage of costs for the purchase of a company car that a company can deduct from its taxable income is also depending on the CO<sub>2</sub>-emissions of the car, replacing the overall tariff of 75%. The percentages per CO<sub>2</sub>-category and fuel type are given in Table 5.

**Table 5: Deductible % of costs of company cars (Belgium)**

CO <sub>2</sub> -class		Deductible % of purchase costs
Diesel	Petrol	
0 - 105 g/km	0 - 120 g/km	90%
105 – 115 g/km	120 – 130 g/km	80%
115 – 145 g/km	130 – 160 g/km	75%
145 – 175 g/km	160 – 190 g/km	70%
> 175 g/km	> 190 g/km	60%

From April 2008, the percentages that can be deducted will be applied to the total costs of the company fleet. (Envirodesk, 2007)

#### Definition clean vehicles

The Belgian company car taxation is based on the CO<sub>2</sub>-emissions of the company car.

#### Impact analysis

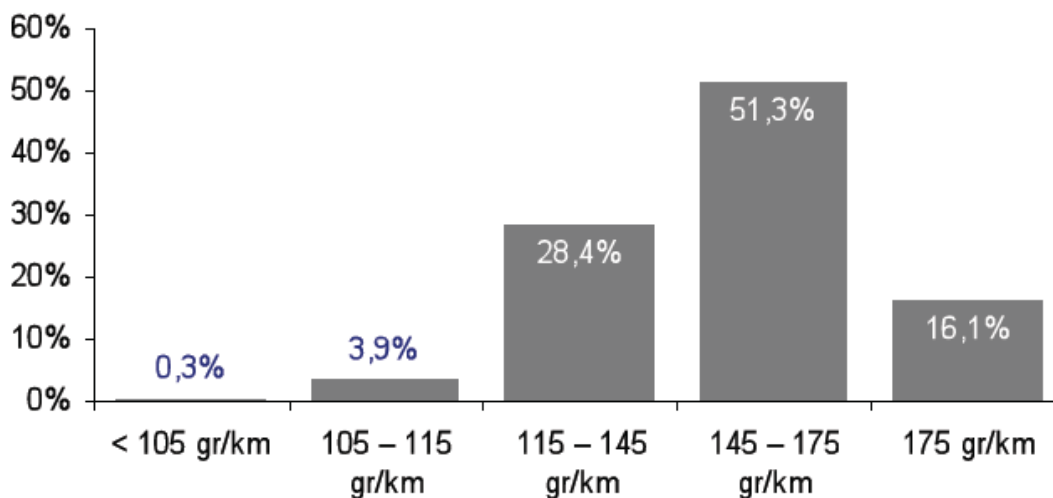
The total company car cost for the employer has been raised on average with 8 to 10%. For cars with low CO<sub>2</sub>-emissions, the social contribution can be lower than it was before, but on average most of the company cars are more heavily taxed. (Willems, 2005) A detailed analysis for FLEET magazine on the fiscal pressure on company cars, concluded that the total fiscal costs of company cars is around 40% of the total leasing costs (including fuel taxes, VAT, car taxation and CO<sub>2</sub>-tax). The absolute amount of fiscal costs is lower for smaller, fuel efficient cars, but the relative amount is around 40% for small and larger more consuming cars. Only for a very fuel efficient car with 102 g/km CO<sub>2</sub>-emission, the fiscal costs were only 32% of total leasing costs. (Willems, 2006)

Fleet managers think that the contribution for the social security based on CO<sub>2</sub>-emissions won't have much effect, because previously there existed such a tax already, based on the fiscal

horsepower. The fiscal deductibility for employers based on the CO<sub>2</sub>-emissions will have a more significant effect, still according to some Belgian fleet managers. When the new measure was introduced, more than 70% of the fleet cars belonged to a more expensive category, compared to the previous flat 75%-rate. The effect won't be immediate nevertheless, because cars won't be replaced by more efficient ones before the end of the existing lease contracts. (Saveyn A., 2007)

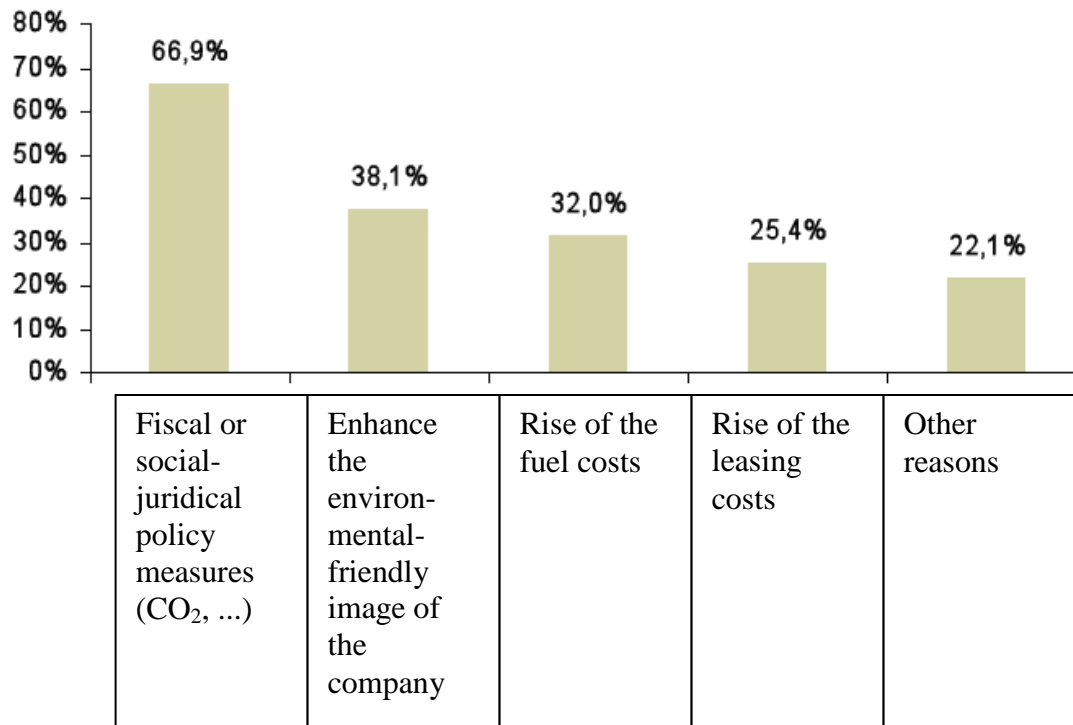
These assessments of fleet managers appear to be quite correct, as turns out in a recent report by the HR services company SD Worx (SD Worx, 2008), as a result of a poll of 236 Belgian companies. Only 4% of the (diesel) company cars has CO<sub>2</sub>-emissions lower than 115 kg/km (energy class A and B) and the majority still belongs to category D (145 – 175 g/km, 51,3%, see Figure 5), but 77% of the respondents says that the share of green cars will increase during the coming years.

Figure 5: Distribution of diesel company cars by CO<sub>2</sub>-emissions (SD Worx, 2008)



Companies that carried out changes in their fleet policy mentioned the fiscal measures as most important reason to do so (67%, see Figure 6). 38% moves towards greener cars because of the company image and also the increasing fuel and leasing costs have a high impact (67%). It's clear that once again 'ecology meets economy'.

Figure 6: Reasons why the fleet policy has been changed (SD Worx, 2008)



Of the companies that have changed their fleet policy because of the policy measures, 60% mentioned that the CO<sub>2</sub>-based fiscal deductibility of company cars has had the biggest impact. But what are the changes in the fleet policy precisely? Table 6 shows that the most adopted measure was to change the budget in function of the CO<sub>2</sub>-emission of the car (55%) and to limit the choice of the employee towards more energy efficient cars.

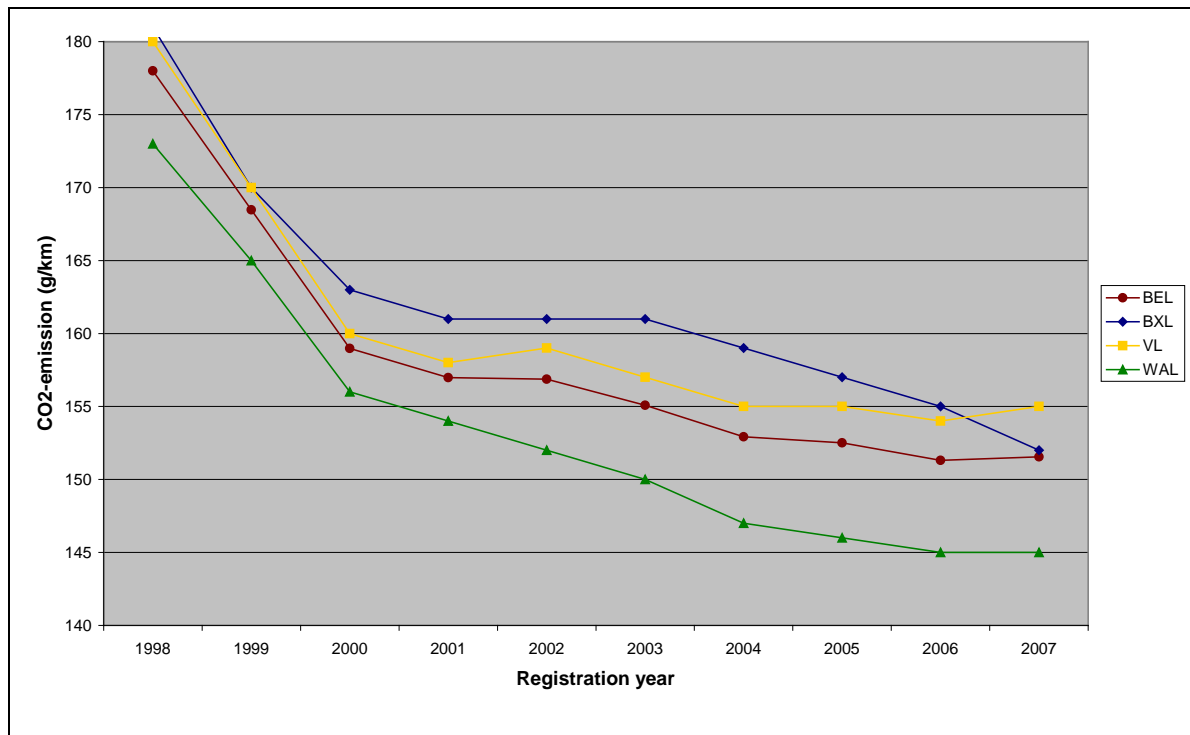
Table 6: Changes in the fleet policy (SD Worx, 2008)

<b>Limitation of the employee's options</b>	<b>46,4%</b>
<b>Adaptation/recalculation of the available budget in function of the CO<sub>2</sub>-emission</b>	<b>55,2%</b>
<b>Adaptation of the net contribution of the employee in function of the CO<sub>2</sub>-emission</b>	<b>10,5%</b>
<b>Longer leasing terms</b>	<b>8,3%</b>
<b>None / Don't know yet</b>	<b>22,7%</b>
<b>Other</b>	<b>8,8%</b>

Belgacom (large telecom operator with a fleet of more than 1500 company cars) for example announced to introduce a new car policy where the CO<sub>2</sub>-emissions of the vehicle determine the remaining budget for other options for the employee: for a car with low CO<sub>2</sub>-emissions the employee will receive a relative higher budget for options compared to the employee who chooses a car with high CO<sub>2</sub>-emissions in the same category. (Verhelst E., 2007)

Recent studies (M. Vanderschaeghe T. Denys, R. Guisson, L. Govaerts, 2008) show that the CO<sub>2</sub>-emissions, the engine capacity and power of cars registered in the Brussels Capital region (where a lot of companies have their head offices) are decreasing faster than in the other regions of Belgium (see Figure 7). If this is really thanks to the new fiscal measures and the influence of the rapidly renewed company car fleet, will be investigated in the further analyses for the fleet composition in 2008 by VITO.

**Figure 7: Average CO<sub>2</sub>-emission of newly registered cars, split up by region (BEL = Belgium; BXL = Brussels Capital Region; VL = Flanders Region; WAL = Walloon Region) (M. Vanderschaeghe T. Denys, R. Guisson, L. Govaerts, 2008)**



## 2.3 French company car taxation

### Situation

The French company car taxation, named Taxe sur les Voitures des Sociétés (or TVS), is based on the CO<sub>2</sub>-emissions of the car and was launched on the 1<sup>st</sup> of January 2006. The tax is due for companies with a residence in France and has to be paid for passenger cars they own or lease, that are registered in France.

Some cars powered by alternative fuels are totally or partly exempt from the TVS. Totally exempt are cars running on natural gas, liquefied petroleum gas (LPG), electricity or E85 (85% mixture of bioethanol and petrol). Cars that alternately use petrol and LPG are partially exempt from the tax. The exemption has a duration of 8 trimesters for cars registered after January 2007. There is no limit on the duration for cars registered before that date.

The TVS is calculated as show in Table 7:

**Table 7: French company car taxation scheme (impots.gouv.fr)**

<b>CO2-emission (g/km)</b>	<b>Tax per gram of CO2 (euro)</b>
≤100	2
> 100 and ≤ 120	4
> 120 and ≤140	5
>140 and ≤ 160	10
> 160 and ≤200	15
> 200 and ≤ 250	17
> 250	19

Cars that were already used by the company before the 1<sup>st</sup> of January 2006 (the date of the introduction of the new company car taxation) or company cars used after the 1<sup>st</sup> of January 2006 but registered before the 1<sup>st</sup> of June 2004, are still taxed based on their fiscal horsepower, as depicted in Table 8.

**Table 8: Company car tax based on fiscal horsepower (cars from before 01-06-2004) (impots.gouv.fr)**

<b>Fiscal horsepower</b>	<b>Tax (euro)</b>
Less than or equal to 4	750
Between 5 and 7	1 400
Between 8 and 11	3 000
Between 12 and 16	3 600
More than 16	4 500

Moreover if the employee gets a compensation for the driven kilometres, this has to be declared to the tax services in function of the number of kilometres that are compensated.

**Table 9: Tax coefficients for the reimbursed kilometres (impots.gouv.fr)**

<b>Number of kilometres reimbursed by the company</b>	<b>Applicable coefficient (in %)</b>
Between 0 and 15.000	0
Between 15.001 and 25.000	25
Between 25.001 and 35.000	50
Between 35.001 and 45.000	75
More than 45.000	100

### Definition clean vehicles

The TVS is based on the CO<sub>2</sub>-emissions of the company car. Besides there are reductions for alternatively fuelled cars (CNG, LPG, bioethanol or electricity) and the number of (reimbursed) kilometres driven are taken into account also.

### Impact analysis

The total revenues of the company car taxation were €855 million in 2004 and €885 million in 2005, but raised to €1.134 million in 2006 (the first year of the reformed TVS). These extra revenues were used by the ADEME (l'Agence de l'Environnement et de Maîtrise de l'Energie) to improve energy efficiency and fight against the pollution, but during recent years revenues are being used more and more to pay social security and social contributions for overtime hours... (Némin F., 2008) This of course causes some resentment and is not good for the credibility of such measures.

## **2.4 Company car taxation in the Netherlands**

If a company makes a car available to a employee, the private use of that car is taxed as wages in kind (i.e. wages not earned in money). One must withhold payroll taxes and the income-dependent Care Insurance Act contribution in relation to such use. You do not have to pay employed persons' insurance scheme contributions for such use.

It should be noted that making available is a broad term. For example, it covers the following situations:

- the car is not your property, but you have hired or leased it for your employee;
- you have agreed to reimburse the total costs (including the write-off) of the employee's own car;
- you reimburse the costs of a car hired or leased by the employee himself.

As of 2006, for each wage period you should count a time proportional part of the value of the private use as wage received by the employee. The value of the private use is a percentage of the catalogue price of the motorcar including VAT, motor vehicle tax (bpm) and ex-factory accessories. The latter include accessories fitted by the car dealer or importer before the registration number was issued. Any contribution paid by the employee for private use is deducted from this.

**Table 10: Percentages for the value assessment of the private use (if the value of the private use exceeds the indicated percentages, this higher percentage will apply)**

Year	CO <sub>2</sub> -emission (diesel)	CO <sub>2</sub> -emission (other fuel)	(Minimal) percentage
2006	n.a.	n.a.	22%
2007	n.a.	n.a.	22%
2008	Maximum 95 g/km	Maximum 110 g/km	14%
	> 95 g/km	>110 g/km	25%
2009	Maximum 95 g/km	Maximum 110 g/km	14%
	> 95 g/km, but maximum 116 g/km	> 110 g/km, but maximum 140 g/km	20%
	>116 g/km	> 140 g/km	25%

#### Example

You make a petrol car with a CO<sub>2</sub>-emission exceeding 140 g/km and a catalogue price of € 25.000 available to your employee. Your employee has a wage period of a month. Your employee pays a contribution for private use of €100 per month. Per wage period you then include  $1/12 \times 22\% \times €25,000 = €521$  minus the €100 contribution = €421 as wages for your employee and you withhold payroll taxes on this sum, plus the income-dependent Care Insurance Act contribution.

You may omit the addition if there is conclusive evidence that the employee does not exceed the 500 kilometre private use limit per calendar year. This conclusive evidence may be furnished in different ways, e.g. by an accurate journey log or a certificate regarding non-private use of car: 'Verklaring geen privégebruik auto' of the Tax and Customs Administration.

#### Results

As the new measures only just started, there are no results known yet. The impact is expected to be large, as the financial crisis is already leading to companies rethinking their car policies and car companies advertising their cars as “only 14% added to your taxes”.

However one can already notice important shifts in the sales figures. These shifts are not only due to the change in the company car taxation, but also to the introduction of the so called ‘slurptax’ (extra tax on vehicles with high CO<sub>2</sub>-emissions) and some discounts and surcharges on the registration tax. Far less big SUV’s are sold, but the waiting times for the delivery of small city cars has increased. On the fleet market, the demand for hybrid cars like the Toyota Prius or Honda Insight (the only two hybrids available in the Netherlands) has grown significantly. (Fokker P., 2008)

## 2.5 Conclusions green company car taxation

In the list below, we give a final overview of CO<sub>2</sub>-based company car taxation schemes applicable in the member states of the European Union. (ACEA, 2009)

United Kingdom:

Company car tax rates range from 15% of the car price for cars emitting less than 140 g CO<sub>2</sub>/km to 35% for cars emitting more than 240 g/km. Diesel cars pay a 3% surcharge. Since 2008-09 there is a new 10% category for cars emitting 120 g/km or less.

Belgium:

The company car tax is based on CO<sub>2</sub>-emissions.

The deductibility of expenses related to the use of the car (60 to 90%) is linked to CO<sub>2</sub>-emissions.

France:

The company car tax is based on CO<sub>2</sub>-emissions. Tax rates vary from €2 to €19 for each gramme for cars emitting 100g/km or less to €19 for each gramme emitted for cars emitting more than 250g/km.

### 3 GREEN FLEET PROGRAMMES

The introduction of cleaner vehicles in public fleets has the primary objective to show to the private consumers the availability of cleaner vehicles on the market and serve as an example for private consumers. Besides, the use of cleaner vehicles in public fleets opens up the market, and induces the installation of dedicated refuelling infrastructure.

In the public sector, both voluntary and mandatory instruments are in place to integrate cleaner vehicles in the public fleets. For the private sector it is very hard to set mandatory standards towards the environmental performance of the company fleet which are more stringent than emission regulations, but different initiatives are taken to promote cleaner vehicles in the private fleets. Hereunder, some examples of practical implications in different European countries are given.

#### 3.1 UK green fleet programme

##### Situation

In the UK an extensive programme for promoting cleaner fleets has been set up by the Department of Transport (DfT) which offers 'green fleet consultancy' for private companies. The green fleet reviews in England are aimed at organisations with a business fleet of over 50 vehicles and vans under 3,5 tonnes (it excludes freight vehicles). In Scotland, the programme is offered to companies with a fleet of minimum 20 vehicles.

The Energy Saving Trust (EST) Transport Advice Team, funded by the Department for Transport provides the qualifying organisation with up to five days of free company specific consultancy to green their fleet and reduce their costs. The consultant writes a green fleet review report for the organisation which is context sensitive and typically covers recommendations on:

- fleet composition;
- vehicle and fuel choice – including vehicle acquisition;
- fuel management;
- mileage management;
- opt-out fleet;
- grey fleet (privately owned cars – not including cash opt-out cars – used for business) and grey fleet management;
- policy documents (environmental, health and safety);
- CO<sub>2</sub>-footprint of the organisation's fleet based on the appropriate methodologies;
- conclusions and recommendations - a practical consolidated action plan with timescales to reduce the carbon footprint of the organisation.

The Energy Saving Trust also offers sub-50 fleets up to four hours of telephone advice with a green fleet consultant or training workshops for up to 20 delegates written and run by a green fleet specialist consultant at locations throughout England. A variety of literature is available for fleet operators and regular newsletters on best practices are distributed to the public.

Account managers visit companies in the UK to persuade them to participate in the programme. This account manager also does the follow up of the implementation of the action plan, six months after the green fleet review a progress review is completed. At this point customers are

encouraged to join Motorvate and become a case study. Case studies and testimonials are an effective way to encourage new organisations to have green fleet reviews. Motorvate is a members' organisation and accreditation scheme run by EST which acknowledges and rewards green fleet best practice.

#### Definition clean vehicles

The green fleet review not only focuses on cleaner vehicles but also on reduction of mileage, driving style and so on. Concerning cleaner vehicles the definition is rather broad as a cleaner vehicle is a vehicle which has lower emissions (CO<sub>2</sub> an/or regulated emissions) than the existing vehicle of the fleet.

#### Impact analysis

From April 2006 until April 2007, 102 organisations joined the fleet programme. In total, it involved 66.314 vehicles, the current average fleet size joining the programme is 650 light duty vehicles. The evolution of number of reviews that were done and the related emission savings are given in Table 11.

**Table 11. Impact of the UK Green fleet programme**

Year of Programme	Funding (£M)	Annual CO <sub>2</sub> savings (tCO <sub>2</sub> /a)	Annual Carbon Saving (tC/a)	Lifetime Carbon Saving (tC)	Programme Carbon Cost Effectiveness (£/tCO <sub>2</sub> )
2005/06*	1,32	6.189	1.688	21.787	213
2006/07**	2,63	10.658	2.904	37.467	246
2007/08***	2,70	16.736	4.560	58.874	161

\*= 2005/06 results include evaluated green fleet review results plus the impact from the evaluation for self help services

\*\*= 2006/07 results include evaluated green fleet review results plus the impact from the evaluation for self help services

\*\*\*= 2007/08 results include an estimate of green fleet review impact using an extrapolation of 2006/07 results and evaluated results for 2007/08 self help services.

From the view of the fleet operator, the EST claims that investing in greener fleets is cost efficient. An average fleet of 100 vehicles can save £ 90.000 per year after implementing a green fleet policy.

Despite the programme already exists for several years, the willingness of companies to consider green fleet management initiatives is limited according to a review done by the EST (EST, 2007): less than half of companies surveyed (48%) have an environmental policy.

- The smallest companies (1-10 employees) and the largest (more than 500 employees) are most likely to embrace an environmental policy (72% each).
- Only 42% of the companies that have an environmental policy consider the impact of company vehicles as part of it.
- Young companies are the most likely to supply company cars. Seven out of ten (69%) of businesses launched since 2000 provide vehicles. These young companies are also the most

likely to have an environmental policy (76%), but least likely to consider the impact of their cars as part of it (16%).

- Companies with between 26 and 100 employees are least likely to bother with an environmental policy (33%).

## 3.2 Het Nieuwe Rijden (HNR, the Netherlands)

### Situation

In the Netherlands, an intensive campaign has been promoting the eco-driving concept since 2000 (called 'Het Nieuwe Rijden' in Dutch, or 'A new way of driving' if translated into English). The objectives of this campaign are reducing emissions (CO<sub>2</sub> and others), noise and accident damages, which have all positive effects on air quality, traffic safety and traffic flow.

In June 2004 this promotion campaign was boosted with commercials on radio and television, which raised the familiarity with the concept significantly (see Table 12).

**Table 12: Familiarity with the eco-driving concept before and after media campaign (Netherlands)**

Moment	Percentage familiar with HNR
April 2004 (before campaign start)	24%
June 2004 (Just after campaign start)	47%
April 2005	63%
April 2006	73%

Not only is the eco-driving concept known by a lot of Dutchmen, a steadily raising share of the motorists applies this new way of driving, as shown in Table 13.

**Table 13: Percentage of motorists applying eco-driving (Netherlands)**

Year	Percentage of motorist applying HNR
1999/2000	10 %
2001	12 %
2002	16 %
2003	21 %
2004	22 %
2005	30 %

Not only private motorists are targeted, but also drivers of vans, lorries, busses and taxis. They were supported by a subsidy campaign in 2005/2006 to reduce their emissions and costs by means of eco-driving. In 2005/2006 an amount of €1,2 million was provided by the Dutch government to support eco-driving campaigns for fleets of companies, municipalities and for other bodies in the automotive sector (importers, driving schools, consumer organizations...). The maximum

subsidy per project was €200.000 and a minimum CO<sub>2</sub>-reduction of 10 tonnes per year had to be realized. (SenterNovem, 2007)

### Impact analysis

An evaluation of the 2005 HNR campaign by Goudappel Coffeng and PriceWaterhouseCoopers (Goudappel Coffeng & PriceWaterhouseCoopers, 2006) showed that the direct reduction of CO<sub>2</sub>-emissions concerning the transport of passengers and goods amounted to 0,10 Mtonnes. The CO<sub>2</sub>-reduction that can directly be attributed to the HNR-campaign with private motorists was 0,22 Mtonnes in 2006.

The campaign has not only direct effects but also indirect effects, mainly caused by a changing mentality (intelligent use of in-car equipment, attention to tire pressure, speed checks, rising fuel prices...), which cause another 0,46 Mtonnes decrease in CO<sub>2</sub>-emissions (still concerning private transport). Owners of a driving licence C or D add another 0,1 Mtonnes of indirect CO<sub>2</sub>-reductions. The overall effect was estimated to be a reduction of 0,80 Mtonnes in 2006 (direct and indirect effects).

The total cost for each avoided tonne of CO<sub>2</sub> is calculated to be less than €10.

Companies implementing this new way of driving benefit from positive costs effects, as shown in Table 14. The total savings in the transport sector amount up to almost €1 per 100 kilometre. (SenterNovem, 2007)

**Table 14: Reductions and savings thanks to eco-driving (Netherlands) (SenterNovem, 2007)**

<b>Indicator</b>	<b>Reduction (in %)</b>	<b>Savings (in €per 100 km)</b>
Fuel consumption	2,1	0,40
Maintenance	3,5	0,19
Accident costs	14,2	0,39
<b>TOTAL</b>		<b>0,98</b>

The savings for a national operating lorry (80.000 km/year) are €800/year when applying eco-driving, while these economies amount up to €1.400 for an international truck.

Other individual case studies with HNR showed even more spectacular fuel reductions:

- Jan de Rijck Transport: 7 % fuel reduction;
- Hermes public busses: 8,4 % fuel reduction;
- ANWB test and training centre (13.000 drivers): 4,5 % fuel reduction;
- ING Car Lease (673 lease car drivers): 3,9 % fuel reduction.

However the eco-driving concept is well known nowadays and is proposed by a lot of lease companies, driving schools et cetera as part of the solution, there is still a lot of room for progression. These measures are quite inexpensive and still a considerable part of the motorists can achieve lower fuel consumptions if they would apply the new way of driving.

### 3.3 Project 'SAVE' – 'EXIKONOMO' in Greece

The recently launched €100 million project "SAVE" – "EXIKONOMO" provides with subsidies on actions related to energy saving in houses, public urban space and transport at a regional level (municipalities only). Planned actions for the transport sector of municipalities include:

- Use of biodiesel / diesel blends (>5% biodiesel) for heavy duty vehicles (at least EuroII);
- Use of DPF (Diesel Particulate Filters) in heavy duty vehicles (at least Euro II);
- Partial substitution of petrol with LPG and CNG or bi-fuel, for Euro II+III vehicles with more than 20.000 km/yr
- Subsidies for urban mobility assessments.

Initiatives are expected to begin in September 2009.

### 3.4 'klima:aktiv': the national programme for climate protection in Austria

#### Situation

In 2004 Austria launched its long-term programme for active climate protection (until 2012), hosted by the Ministry of Agriculture, Forestry, Environment and Water Management ("Lebensministerium" for short) and managed by the Austrian Energy Agency. klima:aktiv is an innovative add-on to common instruments, introducing target-group oriented programmes in the areas construction and living, mobility, company policies, electricity saving and renewable energy sources. Within more than 20 different programmes, it combines various market-constituent measures and effectuates target-oriented implementation.

The following klima:aktiv programmes are aimed at vehicle fleets:

#### *"mm Betriebe" – Mobility management for companies*

The programme aims at avoiding trips and replacing individual motorized transport by more sustainable modes such as car pooling, public transport, cycling or walking. The programme offers grants for implementing all these measures. Preconditionally, a mobility concept has to be developed.

#### *"mm verwaltung" – Mobility management for public administration departments*

Public administration departments at the governmental and municipality-level have to pass through a process of mobility management. Fleet and parking space management for employees and visitors should lead to changes in means of transportation (low-emission vehicles).

#### *"mm kommunal-regional" – Mobility management at a communal and regional level*

The aim of this programme is to introduce alternative solutions instead of using the car at the regional level by consultancy, promotion and awareness-raising measures. Former successful projects like the "Verkehrspar"-municipality (German acronym for the reduction of transport on a local level) should be implemented broadly.

#### *"Sprintspar-Initiative" – Eco-driving initiative*

A fuel-saving driving style (eco-driving) improves road safety as well as the quality of the local and global environment and saves fuel and costs. Trainings in this driving-style can lead to

consumption reduction up to 15%. Annual fuel-saving competitions, public relations and the possibility to train as "eco-driving constructor" should rise the public awareness.

#### Impact evaluation

In total 110 vehicle fleets have taken part in the 3 programmes mm Betriebe, mm verwaltung and mm communal-regional. The number of cars per fleet varied broadly. A reduction of 92.696,14 tons CO<sub>2</sub>-emissions was achieved. The projects have shown reductions of CO<sub>2</sub>-emissions of 3-30%.

Another 110 vehicle fleets participated in the eco-driving programme "Sprintspar-Initiative". A yearly reduction of approximately 15.000 tons of CO<sub>2</sub> was achieved.

### **3.5 Mobility Mixx – Mobility Card (the Netherlands)**

Mobility Mixx was an initiative of the regional transport company Conexxion in 2001 and has been taken over by LeasePlan Nederland in 2003. Mobility Mixx offers solutions for business partners who want to organize their mobility and the mobility of their employees in the most flexible way.

One of their most interesting products is the Mobility Card, with which the employer gives his employee a mobility budget and associated mobility rights, instead of just a company car. With the card the employee (or a certain unit of the company) subsequently can make use of rental bikes, taxis, train services, park and ride facilities or cars, in order to always make an optimal choice for his or her movement. A website helps the traveller to make that best choice.

Information about and booking of bicycles, train tickets or a car is also possible via the Mobility Mixx-website or via a call centre. Also the actual traffic conditions or sudden changes in travel plans, can be communicated with the call centre.

This system is quite flexible, both for the employee, who can always make the most convenient choice, and for the employer. Invoicing is done centrally, so there is no administrative burden, like holding out and declaring receipts, since everything is registered via the Mobility Card and a central server. (see also (<http://www.mobilitymixx.nl>))

In 2008, Travelcard Nederland worked out a combined mobility card in cooperation with Mobility Mixx. This card is a combination of the classic fuel card and the possibilities offered by the Mobility Card described above. According to Travelcard, and based on studies of TNS NIPO, the number of driven kilometres could be reduced by 702 million annually (which is 6 % of the total). Consequently CO<sub>2</sub>-emissions should drop with 84 Mtonnes.

Delta Lloyd has given such a card to its 700 lease drivers. The card is available for all lease companies and business partners in the Netherlands.

### **3.6 Mobimix.be**

Mobimix is a digital platform for fleet managers, fleet purchasers and all people working on (durable) mobility. The website [www.mobimix.be](http://www.mobimix.be) gives them a clear and up-to-date overview of topical subjects like eco-driving, green fleet management or an intelligent mobility management. This platform is an initiative of the ngo Bond Beter Leefmilieu (BBL), and supported by the

Flemish Government, the Flemish Institute for Technological Research (VITO) and the Vlaamse Stichting Verkeerskunde (VSV).

Mobimix informs via its website, but also by means of an electronic newsletter and information sessions. Treated items are:

- mobility related news facts;
- car taxes in force (in Belgium);
- how to drive in an ecological way (eco-driving);
- durable fleet management: information about existing and future car technologies, fuels;
- mobility management for companies or public services;
- examples of 'best practices' in some Belgian companies.

The Mobimix-website is visited by about 300 (unique) guests every day and there are some 500 subscribers to the electronic newsletter.

### 3.7 Pendelfonds (Belgium)

The Pendelfonds ('Commuter Fund') is part of the Pendelplan ('Commuter Plan') made up by the Flemish Ministry of Mobility. This plan aims to reduce the car use for commuter traffic from 70% to 60% in 2010. The resulting 40% of the movements should happen by bicycle or with public transport.

The Pendelfonds aims to support by means of a subsidy (groups of) companies or local authorities in collaboration with a private partner that worked out a commuter traffic plan capable of reducing the car traffic. This subsidy amounts to (maximum) half of the sum needed to make the plan work, during a period of maximum 4 years. The provided budget for 2009 is €10 million and the coordination is done by one Mobiliteitspunt (kind of Central Mobility Bureau) per province. These bureaus also support companies by giving advice, answer all kind of mobility-related questions and are actively looking for solutions.

Criteria that has to be fulfilled in order to get the subsidy from the Flemish Government are, amongst others:

- The project has to be worked out and agreed by mutual consent of both employers and employees.
- The project has to be complementary to the existing means of transport for commuter traffic, offered by private or public services.

#### Results for the year 2007

In 2007 16 projects have been subsidized by the Flemish Government, for a total amount of € 6.380.752. About 42.000 employees were directly involved in the mobility projects.

Projects can be very different: from a network of collective bus services, over van- and carpooling systems to extended facilities for cyclists.

#### Results for the year 2008

At the end of 2008, 20 new projects have been approved for subsidizing. These projects represent a total investment of €10,7 million, of which €4,6 million is paid by the Pendelfonds.

As an example, we describe two selected projects:

*Moving Forward (Nike, Start People Interim and social workshop De Sprong): subsidy of € 817.824*

The establishment of Nike in Laakdal, Belgium had to deal with a few mobility-related problems: it's hard to get to the production plant by public transport (bus or train) due to the distance to stations and to the fact that a lot of employees are working in shifts; there was short of parking place; temporary staff only can be found within a extended range from the plant and as a consequence Nike has troubles to fill vacancies.

With the support of the Pendelfonds Nike invested in collective transport for its employees, but also for its temporary workers (together with Start People Interim and the social workshop De Sprong). Moreover, homeworking has been implemented, (electric) bicycles acquired, bike shelters have been extended and car- and vanpooling is being stimulated.

*University of Ghent: subsidy of € 552.500*

The University of Ghent wanted to stimulate the use of bicycles. The action pack contains following tools: the construction of 1.000 extra bike shelters and 20 shower cells, the purchase of 400 company bicycles, breakdown assistance and a campaign to raise awareness. Other companies located on the same Ardoyen-site can make use of this infrastructure too.

## **3.8 Finland: Eco-Taxi and Energy Conservation Programmes**

### **3.8.1 Eco-Taxi**

Eco-Taxi is an environmental programme of the Finnish Taxi Association. The environmental programme will both minimize the environmental drawbacks of motoring and improve the customer service, as the aim of this project is to increase traffic safety and to make driving more pleasant both for the customer and for the driver.

An Eco-Taxi will do following actions:

- drive steadily in the motors economic range of use;
- avoid unnecessary stops and accelerations;
- choose the traffic route with the least congestion;
- anticipate the traffic and drives more safely;
- avoid idle running of the motor;
- know the meaning of anticipating maintenance;
- pay attention to choosing the tires and the correct tire pressure;
- choose environmental friendly oils and liquids;
- take care of the appropriate waste disposal methods;
- save car and fuel.

An Eco-Taxi driver must participate in an eco-driving course. An Eco-Taxi can be identified from Eco-Taxi stickers attached to the rear and rear-side windows of the car. Every Eco-Taxi also has a booklet telling about the Eco-Taxis.

#### Results:

The programme was initiated in 2000. As of 2007, there are approximately 200 companies running eco-taxis in Finland. The impact is small, but the growing of a public awareness is important. (From ([http://www.isisrome.com/data/mure\\_pdf/transport/FIN11.PDF](http://www.isisrome.com/data/mure_pdf/transport/FIN11.PDF), 2008))

### 3.8.2 Energy conservation programme for truck and van transport

The agreement for the conservation programme for truck and van transport was signed in 2003 by the Finnish Ministry of Transport and Communications (MTC), the former Ministry of Trade and Industry (MTI, since 1 January 2008 the Ministry of Employment and the Economy), the Ministry of the Environment and the Finnish Transport and Logistics (SKAL). The Programme covers the members of SKAL, but also non-members are allowed to join the Programme. The number of members is about 8.000 and they operate about 18.200 trucks.

The objectives of the Programme are:

- to improve energy efficiency in truck and van transport. The quantitative target is to lower the specific energy consumption of the participants by 2% by 2005 and by 5% by 2010 compared to the 2000 levels;
- to develop and implement practices which improve energy efficiency at the operational level;
- to encourage the participants to pass at least level I environmental management training course organised by SKAL or another equivalent course by 2005;
- to provide information to companies which plan to undergo an environmental audit by using an external auditor;
- to study and monitor participants' energy consumption including heating, air conditioning and ventilation, electricity and water and to identify measures for reduction;
- to promote and speed up the implementation of measures within the SKAL's Environmental Programme, implementation of SKAL's environmental management system or another equivalent environmental management scheme (based on ISO 14001 standard or the EMAS scheme) and the use of new energy saving technology and telematics.

The key activities (each consisting of multiple projects) during the Programme are:

- providing environmental training in the sector;
- improving environmental management of the transport fleet and equipment;
- transport operator-client co-operation;
- increasing the use of telematics to reduce the environmental impact and energy consumption;
- developing environmentally friendly transport infrastructures.

#### Results:

An evaluation report for the period 2003-2004 was published by Motiva Oy (the Information Centre for Energy Efficiency and Renewable Energy Sources) in 2005. No annual or other reports have been published after that year. However, in 2005 it was too early to evaluate the impact of the Programme in quantitative terms of energy conservation and CO<sub>2</sub>-reduction.

The impact may be important as the amount of tonne-kilometres of trucks transport per capita is 1,5-4-fold compared to other EU member states. (from ([http://www.isisrome.com/data/mure\\_pdf/transport/FIN15.PDF](http://www.isisrome.com/data/mure_pdf/transport/FIN15.PDF), 2008))

### 3.8.3 Energy conservation programme for public transport

In March 2005, the Ministry of Transport and Communications (MTC), the Ministry of Trade and Industry (from 1 January 2008 the Ministry of Employment and the Economy), the Ministry of the Environment, the Finnish Public Transport Association (PLL) and the Finnish Bus and Coach Association (LAL) signed an agreement for an Energy Conservation Programme for Public Transport. The Programme covers buses and coaches, trams and local train transport. The association members cover about 80% of Finland's busses and coaches and account for about 4% of energy consumption of road traffic in Finland.

The objective of the Programme is to reduce energy consumption in public transport and to improve the energy efficiency of other public transport-related activities (transport buildings) by 5% by 2010 compared to 2000. Another objective is that all participants would have implemented an environmental management system equivalent to or based on ISO 14001 by the end of 2010.

Two projects which already have been launched within the Programme are:

- “Development of environmental know-how in bus companies” implemented by PLL;
- “Development and certification of fuel consumption and emission measurement method” implemented by LAL.

#### Results:

According to the annual report of the Programme (by Motiva Oy and the transport associations), the programme covered 55 business groups, some of them owning multiple companies which have joined the programme. In total, 80 bus companies and 3 rail companies participated at the end of 2006 representing about one fifth of the public transport companies in Finland. In terms of vehicles, the agreement covered approximately 53% of the total at the end of 2006.

Lack of monitoring data (regarding both transport equipment and buildings) by the participating companies hinders the possibilities for quantitative impact evaluation in bus transport. In rail transport, consumption monitoring is much better.

However, a rough estimate can be made using some basic assumptions. Bus transport accounts for only 3% of energy use in the whole transport sector in Finland and that the agreement covers 53% of the busses. According to the “real life” results of eco-driving education for drivers of heavy vehicles, the savings have been 4-6%. Using these assumptions, the savings would be 0.08% ( $0,03 \times 0,53 \times 0,05$ ) of the total of the sector. However, it should be noted that savings will be acquired also through other activities but driving education. (from ([http://www.isisrome.com/data/mure\\_pdf/transport/FIN16.PDF](http://www.isisrome.com/data/mure_pdf/transport/FIN16.PDF), 2008))

#### **3.8.4 Energy Efficiency Agreement for Freight Transport and Logistics 2008-2016**

The Energy Efficiency Agreement for Freight Transport and Logistics 2008-2016 was signed on 24 January 2008 by the Ministry for the Environment, Ministry of Transport and Communications, the Ministry for Employment and the Economy, the Finnish Transport and Logistics (SKAL) and its member associations, the Association of Logistic Enterprises in Finland (LL) and the rail company VR. The agreement is continuation to the former agreements and programmes in the sector (see the two previous sections 3.8.2 and 3.8.3). It has been prepared in the context of the Energy Services Directive which sets and indicative 9% energy saving target for the 2008-2016 period.

In this agreement, companies join by ordering a user ID for the EMISTRA-system. EMISTRA (Use of the Energy and Environmental Accounting and Reporting System for Transport and Logistics Sector) is a nationwide energy and environmental accounting and reporting system for transport and logistics businesses.

#### Objectives:

In the National Energy Efficiency Action Plan, prepared in the context of the Directive, the saving target set for the transport sector is about a quarter of the total, i.e. 4.25 TWh (equivalent to about 450 million litres). The objective is that about one third of the total target for the transport sector will be realised through this agreement. This means that the savings target for freight transport and logistics is also 9% by 2016.

The target set for the coverage of the Agreement is 60% of the companies or registered vehicles in the sector. In addition, an interim target will be established for the three first years of the agreement period.

In addition to quantitative objectives, the Agreement has three operational objectives:

1. Energy efficiency measures and logistics: The participating company commits to continuous improvement of its energy efficiency whenever it is possible with a view to technical, economic, safety and environmental considerations. Continuous improvement necessitates also management commitment. The society provides input for the energy efficiency improvement of transport chains and logistics via transport system planning. The Ministry of Transport and Communications has established objectives for departments and institutions in its administrative branch to take energy efficiency better into account in their operations (including the development of transport routes).
2. Consumption monitoring: Participating companies report their fuel consumption to EMISTRA/PKY Quality. A future development objective is that specific energy consumption can be monitored. In addition, participants will make an effort to improve energy efficiency of their non-transport operations (for example buildings).
3. Environmental management systems: To the degree possible, the participant companies will adopt either the environmental management system of SKAL, the PKY Quality system or an equivalent energy management system.

(from ([http://www.isisrome.com/data/mure\\_pdf/transport/FIN18.PDF](http://www.isisrome.com/data/mure_pdf/transport/FIN18.PDF), 2008))

## 4 GOOD FLEET PRACTICES ON A LOCAL SCALE

Measures issued by the national government are often important levers to green the fleet on a large scale and they create the framework in which must be operated. Yet local initiatives are also interesting, as they are often more flexible and experimental. They show us more than once what is possible from a cooperation between private and public partners and can be considered as worth seeing testing lab's for programmes on a larger scale.

### 4.1 Clean vehicles Swedish cities

#### Biogas in Linköping

In 2008, 1200 cars in the region around Linköping were using biogas, and biogas accounted for six percent of all fuel sales in Linköping. The complete solution of a continuous chain, from production to sale of biogas, is unique in Europe. In 2008, five million tonnes biogas were used in the city, which corresponds to a reduction of more than 10 000 cubic metres of CO<sub>2</sub>-emissions.

Linköping was one of the first cities in Sweden to start using biogas for buses and has been using biogas on a large scale for buses for 13 years. Today all the inner city buses and vehicles for waste collection in Linköping use biogas. Also a large part of the taxi fleet uses biogas.

Linköping has five public biogas stations, and is thereby the city with the biggest number of biogas stations in Sweden. The municipality of Linköping has a car pool with 20 biogas hybrid cars. The car pool is also open for private persons. Linköping introduced the first biogas powered passenger train in the world in 2005.

#### Biogas in Örebro

The municipality of Örebro has been working to increase the number of green cars since the beginning of 2000. In 2008, 65 percent of the fleet consisted of green cars. Most of the cars were ethanol or biogas cars. The goal is to have a green fleet with 80 percent of green passenger cars by the end of 2010. The municipality of Örebro has also ordered two electrical cars for the end of 2009.

Örebro is also working with biogas busses and by the 1st of October 2009 all 65 city busses in Örebro will be changed to new busses using locally produced biogas. The vision of the company for regional public transport, Länstrafiken, is that 40 percent of the busses used in the countryside are biogas busses.

In October, a new plant for compressed biogas, CBG, is opening. The new plant has a production capacity of 60 GWh biogas (representing 6 million litres of gasoline) and will thereby be the largest production plant of its kind in Sweden.

#### Clean vehicles in Östersund

The authority of the municipality of Östersund (about 60.000 inhabitants) has been working for more than ten years to increase the share of clean vehicles, in order to reduce the CO<sub>2</sub>-emissions. The measures taken to accomplish this goal are:

- The procurement of vehicles to the municipality includes demand for clean vehicles (that can use a renewable fuel) and the same demands are also made in the procurement of transport services. The municipality and the Public Transport Authority, Länstrafiken, made a demand for the city buses to drive on ethanol. Of course there are also ethanol pump station in the municipality. In 2010 they reckon to have 30 ethanol city buses. The companies owned by the municipality are required to choose clean vehicles when buying new vehicles.
  - It is one person in the municipality who is responsible for the procurement of vehicles, which has been a success.
  - The vehicles of the municipality have been labelled with the text “Clean vehicle on the way!” which gives good reputation and legitimacy of the work to influence external parts to stake on clean vehicles. The fact that the municipality is a frontrunner has meant a lot for the credibility in the climate work and influenced the development.
  - Companies and civilians with clean vehicles have free parking in Östersund. Today 385 vehicles have permission for free parking and new applications come in every week.
  - The municipality works a lot with information to companies and the public. For example: climate and vehicle information, biogas seminar and environment breakfast where there have been opportunities to drive a clean vehicle.
  - Fuel companies have been invited to the municipality in order to influence them to put up pumps with renewable fuels.
  - The municipality has been active in applying for national investment funding. With support from the national investment initiative, KLIMP, a biogas production unit is under construction. The municipality reckons it will be in operation in the beginning of 2007 and they are now making procurement for 116 biogas vehicles.
  - Contributions for buying a biogas vehicle are given to private persons. The subsidy is 30 % for the extra cost. It’s financed through the national investment initiative KLIMP.
- (from [www.recodrive.eu](http://www.recodrive.eu): (Vindelman A., 2006))

## 4.2 CNG-vehicles in Berlin, Germany

The “Tausend Umwelttaxis für Berlin”-project was started in October 2000. Aim of the project was to boost the use of CNG vehicles in Berlin. The overall budget is about €11,5 million and the project is supported by a public-private partnership formed by the German Department of the Environment, the Senate of Berlin and the gas providers GASAG and RuhrGAS. It was planned to support the purchase and operation of 1.000 CNG cars and to extend the pump station network. The sponsorship focussed on taxi and driving school cars.

In 2000 circumstances for the operation of CNG cars were bad. Therefore an firm ignition was needed to put this technology on his way to success and show other metropolitan areas that the CNG technology was an economic and practicable way to improve urban air quality.

One important measure within the project was the subsidisation of the purchase of the cars with up to €3.000 and free tanking up to a value of €1.500 for each purchased car. GASAG also promised to keep gas prices always 30% lower than the current diesel price and to open 10 new CNG pump stations.

The conditions in order to be supported were the following:

- the car had to meet EURO 4 emission standard;
- the car should be operated in Berlin;
- the car had to be equipped with low noise tires.

Results:

By the end of the project almost 1.000 cabs and driving school cars ran on CNG. More than 10% of the taxi fleet runs on CNG in 2008.

- All in all 3.000 CNG cars operate in Berlin in 2008, it is the highest density of CNG vehicles in whole Germany. Utility service companies, several company fleets and many private car users also run their cars on CNG nowadays.
- 13 CNG pump stations offer a satisfying supply.
- Public transport provider BVG operates 14 CNG buses.
- Bernd Döhrendahl, chairman of the taxi guild of Berlin states that, after minor technical problems in the beginning, most taxi drivers are happy with cost savings and performance of their CNG car.
- CNG cars emit 95 % less PM 10, 80% less nitrogenoxides and 3 dB(A) less noise, compared to diesel driven cars.
- Every year the 1.000 CNG cars save approximately 1.400 tonnes of CO<sub>2</sub> (GASAG figures).

Still today the purchase of a CNG car gets supported by GASAG, private persons are supported with €333 for each car, taxi companies get €1.000 budget for free tanking.

Different cities in Germany have started similar programmes, but mostly without support of the federal government of Germany, but if cities, utility services and gas providers work hand in hand it can be possible to have a similar success as in Berlin, not only by the means of incentives, but also by a good marketing.

Especially under consideration of the tightening emission and immission standards in Europe, the widespread of CNG vehicles can contribute to their abidance.

(from <http://www.recodrive.eu>: (Tscheschke C., 2008))

## 5 ACTIONS FROM LEASE COMPANIES AND FLEET OPERATORS

### 5.1 Green lease programmes

The private lease companies are of course subject to the national legislation (increasing government regulation by penalizing vehicles with high emission levels), that is influencing the market. Besides, public awareness is rising about environmental issues and energy efficient cars in particular. That's the reason why lease companies often offer special green programmes with more efficient cars or a combination of different means of transport adapted to the type of movements.

These programmes are not only the result of the applying legislation, but may also serve as inspiration for policy makers and are a form of feedback on their measures.

#### 5.1.1 Belgium

Several lease companies have introduced green programmes during the last years, each with another name, for example:

- GE Fleet Services: Green & Safe Solutions and Clear Solutions
- ING Car Lease: ABC-regulation
- KBC Autolease: GREENlease
- Athlon Car Lease: EcoCoach en Railease
- LeasePlan: GreenPlan
- ALD Automotive: Eco Mobility Program (Railease, 7 Wheel Lease, Sineo Eco Car Cleaning, E-Consultancy)

The Table 15 below gives an illustration of the tools used in those 'green lease programmes'.

**Table 15: Overview of green lease programmes (Belgium) ((Saveyn A., 2007) and own research)**

Factor	GE	ING	KBC	Athlon	Lease Plan	D'Ieteren	ALD
Information about green mobility	x	x	x	x	x	x	<u>X</u>
Advice about green car policy	x	x	x	x	x		<u>X</u>
Offer of car models with less than average CO <sub>2</sub> -emissions	x	x	x	x	x	x	<u>X</u>
Cars compulsory equipped with particulate filter							
Offer of hybrid car models	x	x	x	x	x		<u>X</u>
Offer of cars with adapted fuels	x	x	x	x	x	x	

Possibility to follow an eco-driving course	x	x	x	x	x	x	x
Offer of a tool (software, on board equipment...) monitoring fuel consumption and/or driving of employees in order to advice a less polluting way of driving	x			x	x	x	
Offer of an alternative means of transport (combination with motorbike, scooter, public transport) in accordance with the type of trips				x		x	x
Pollution-offset by supporting environmental projects		<u>X</u>	x	x	x	x	
Other			x		x		

Particularly interesting in the field of mobility management are the formulas named Railease and 7 Wheel Lease of ALD Automotive. These combine a company car with another means of transportation (namely the train and a scooter respectively).

Railease includes a rail pass with 60 day tickets for each driver. The travel trajectory doesn't have to be filled in on the ticket, only the date of the journey. On that date the employee can travel on the whole Belgian rail network during the whole day. The day tickets are not tied to one employee, but to the company.

7 Wheel Lease combines a car with the Piaggio MP3 (a scooter with three wheels, available with a 125, 250 or 400 cm<sup>3</sup> engine). This is a clever alternative for the busy city traffic.

### 5.1.2 A European view

In 2006 Fleet Europe published an overview of initiatives of international leasing companies to support fleet owners to green their fleet activities. This overview is based on an update of a market analysis that was done in 2004 and showed that in two years more and more initiatives are set up. Examples of green leasing initiatives in Europe are given below. Different types of initiatives are taken: information, driver training, promotion of alternative fuels and vehicles, leading by example, CO<sub>2</sub>-compensation and special green products.

#### Assessment & information

- In France, GE Fleet Services launched a green study, questioning some 968 fleet managers. Around 59% had taken green measures concerning their fleet. Following this enquiry, GE Fleet Services regularly advises and informs its customers, through brochures, newsletters and eco-driving tips included in the driver kit when vehicles are delivered. In France, the leasing company also offers its customer the Tax Solution Key (TSK), a simulator on Excel which enables the status and evolution of the fleet to be observed, as well as its fiscal and environmental situation involving consumption and CO<sub>2</sub>-emissions.
- LeasePlan is going to globally launch a tool to assess the CO<sub>2</sub>-emissions of cars in real traffic conditions based on an independent measurement programme and make up a ranking of cars

based on CO<sub>2</sub>-emissions. Through its project GreenPlan, the company is offering advice on the more efficient management of its vehicles. Leaseplan provides information on the energy efficiency of each vehicle to promote the use of the more efficient ones and suggests tips for the more efficient route planning and driving style

- In Belgium, Arval offers all its clients information and advice concerning new taxes involving CO<sub>2</sub>-emissions, which came into effect at the beginning of 2005. They receive a breakdown of their fleet which includes the CO<sub>2</sub>-emissions for each vehicle currently under contract.
- Fleet Synergy International realized at the beginning of 2005 that fleet owners would need some tools to support them in launching a 'greener' fleet policy. FSI performs an environmental screening of the fleet and helps the fleet owner in setting realistic goals for improvement of the environmental performance.
- Masterlease has launched GoGreen programme. Through GoGreen, Masterlease gives information to its customers on ways to reduce operating costs, improve the safety of their fleets, reduce business mileage, increase driver efficiency and take corporate responsibility.

#### Fuel race & driver training

- In Denmark, Norway, Finland and in the Netherlands, ALD Automotive organized a fuel race offering prizes for the lease drivers with the lowest fuel consumption. In the Netherlands, 300 business drivers participated and they consumed approximately 10% less fuel than the average business driver. Furthermore ALD Netherlands organized 'Training Days'. Some 100 lease customers were given a driving course.
- Leaseplan awards a "gold prize" to the "greenest" of its customers (which has met all targets on energy saving and CO<sub>2</sub> emissions). Another prize, the platinum, is awarded to all other customers that have not fully met their targets but optionally have a chance to meet them by participating in environmental projects like reforestations.

#### Alternative drive vehicles

- In France ALD Automotive is testing four electric vehicles. The vehicles are being driven in a large scale test which will cover 18 months and help the company evaluate their suitability for professional use. The objective of ALD is to determine the cost price per kilometre, and if the results are encouraging, the company plans to offer such vehicles to its clients under long term.
- In Austria and Germany, Arval is renting out vehicles to its clients which use alternative fuels, principally gas, and hybrid vehicles.
- In Austria, Raiffeisen Leasing offers subsidies of up to 300,- Euro for leasing of vehicles with ecological propulsion systems. Additionally, for each new leasing contract three trees are planted by Raiffeisen Leasing in the so called "Rainforest of Austrians" in Costa Rica.
- In Germany, Sixt Leasing hosted a forum where experts and fleet managers talked about the advantages and disadvantages of natural gas and hybrid vehicles as well as other alternative fuels. Sixt Leasing also provided several test vehicles that are already on offer. Despite lack of experience regarding residual values, as well as the unknown development of leasing rates of vehicles with alternative engines in general, the fleet managers participating demonstrated a positive attitude towards alternative engines and identified a significant growth potential.

#### Leading by example

- ING Car Lease has instigated a policy of replacing its passenger cars in the Netherlands – where it has a fleet of about 600 units – by lower emission cars when they become due for change. The only cars allowed are A, B or C energy label cars.

- GE Commercial Finance Fleet Services is also currently working on making its European fleet more environmentally-friendly. To reach this target, the leasing company plans to select not only hybrid cars but vehicles that are fuel efficient. Also the way cars are used is examined.
- In France, GE Commercial Finance Fleet Services has already changed its car policy. The upper management can now select a Toyota Prius, while lower categories can choose more environmentally friendly cars.

#### CO<sub>2</sub>-compensation

- This initiative has been gaining in popularity over recent times. For example, ING Car Lease, through its EcoLease programme plants forests to compensate directly for the CO<sub>2</sub>-emissions of its clients taking part in the scheme.
- In the UK, ALD has introduced measures to manage emissions from its own vehicle fleet and is offsetting the remainder by supporting the creation of new woods for all business mileage undertaken. ALD is offering the same scheme to its customers with its CARbon Offset plan.
- LeasePlan also offers tree planting schemes in the US, where this initiative is particularly popular, as well as in Australia, New Zealand, the UK, Norway and Portugal.

#### Special 'green offers'

- Many of the leasing companies have introduced special green programmes. Eco Lease is a product offered by ING Car Lease in the Netherlands. All Eco Lease cars have the A, B or C energy label, using up to 10% less fuel than the average car in the same class. Eco Lease also enables clients to check on fuel use on line. In order to further stimulate the drivers, the programme can include a bonus system for those drivers who, in average, perform a fuel consumption that is below the standard norm for a specific car.
- GE Fleet Services has set up the 'Green & Safe Solutions' programme for its clients, enabling them to evaluate driver behaviour both in terms of safety and respect for the environment. This evaluation, which leads to concrete rectification measures being taken, involves 5 areas: fuel consumption, brake equipment, non-recoverable damage, tires and motoring offences – all elements which influence fleet costs. The eventual evaluation is linked to concrete actions.
- LeasePlan is currently assessing all the best green practices that are taken by its subsidiaries in order to ultimately launch these initiatives globally. In the UK, in Portugal and in Norway, for example, the company offers its 'GreenPlan' programme, which includes vehicles and fuel selection, scheduled servicing and maintenance, professional driver training, improved journey planning and a reforestation programme.
- In the Netherlands, LeasePlan offers Mobility Mixx, allowing customers to use alternative modes of transport, such as trains and taxis to avoid traffic jams. LeasePlan has also recently launched a pilot project to equip its 80,000 diesel cars with a retrofit particle filter, so as to reduce the number of noxious particles in the air.

## **5.2 Perception of fleet operators**

At the end of 2006, a Belgian fleet magazine (Fleet & Business) organized a survey amongst fleet owners to investigate to which extent environmental criteria are important in fleet strategy. (Thonnon C., 2007) For company car fleet operators, 176 questionnaires were returned.

Main conclusions of the survey are as follows:

Approximately 60% of companies pay attention to environmental issues, especially smaller companies. Cleaner vehicles are a priority in the environmental policy of companies. Only 25%

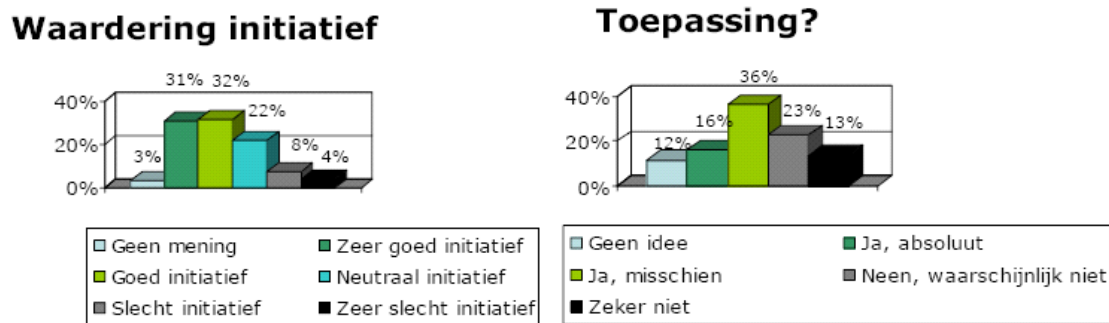
of fleet owners believe in a voluntary approach for greening fleets, approximately 60% is convinced that regulations and/or fiscal incentives are essential for using more cleaner vehicles. Main drivers to improve environmental performance of fleets are:

- cleaner vehicles consume less fuel (82%);
- environmental strategy will become essential in the future, so fleets should be prepared (81%);
- cleaner vehicles are taxed less than less clean vehicles (76%);
- company wants an green image (53%);
- cleaner cars have lower maintenance and repair costs (50%);
- car drivers ask for cleaner cars (18%);
- competitors are also promoting cleaner cars (12%).

When fleet operators are asked which stakeholder has the largest impact on improving environmental performance of vehicles, the car industry has the greatest responsibility (38%), followed by the car driver (35%) and the government (17%). The fleet owner has the lowest impact (7%), so fleet owners don't see a big responsibility in this matter.

Green car policy where extra car budget is given to cleaner cars and less budget for more polluting cars is valued as an interesting policy for more than 60%, but only 50% is considering to introduce this practice in own fleet policy. The detailed answers on this question are presented in Figure 8.

**Figure 8: Valuation and possible implementation by fleet owners towards green car policy (in Dutch) (Thonnon C., 2007)**



The general conclusion of the survey is that the interest for environment is growing but slower for companies and fleet owners. The interest might be growing but the fleet sector is not prepared for taking actions. They feel they have a low responsibility in the whole picture and point to car manufacturers to make sure they produce cleaner cars. It is recommended that the fleet sector is better informed on the role they can play in improving the environmental performance of transport activities.

### 5.3 A clever use of the German taxation system

The German company car taxation isn't specifically aimed at making the fleet more energy efficient or cleaner, but the used taxation system offers some possibilities. The following

example, heard in a personal communication with Gunter Glück, expert for LeasePlan Deutschland GmbH, is a very interesting way of dealing with the issue.

If an employee gets a company car of the employer and the employee uses this car also for private trips, according to the German fiscal system this is seen as a benefit in kind and thus taxes have to be paid by the employer (like social taxes) and the employee (benefit-in-kind), see Figure 9. Since companies are always trying to reduce costs, especially during the financial crisis that began end 2008, some are charging the costs of the private use of the car to the employees (e.g. under the commercial name RentSharing).

**Figure 9: Comparison of car costs between a classical leasing of a company car and RentSharing (Schneider A., 2009)**



Not only taxation costs due to the private use of the company may be charged, but all actual costs of the private movements may, like fuel costs, maintenance costs, possible damage costs... But how does the employer know how many kilometres are work-related and how many are private? This is done by GPS-tracking and declaration via a website. The car's movement are permanently tracked by an on-board GPS-unit and the driven kilometres and routes can be seen on a website. The employee has to declare which trips were private and which were work-related. The percentage of private kilometres is then used to calculate the part that the employer has to pay.

The possible privacy issue caused by the GPS-tracking is solved by the fact that the employee can delete the places where he has been driven in the web-based overview. The number of kilometres (private or work-related) however can never be deleted.

The big advantage – next to the cost reduction for the company – is the fact that the employee pays the real costs for driving with the company car now, while this was formerly seen as a free way of transport – and as such abused. The reasoning often was something like “No problem, my boss is paying the fuel!” or “I don't have to be that careful, because damage costs are paid by the company...”. With the above system, the employee is going to drive more carefully and more efficiently, because he or she has to pay a part of the costs for fuel, maintenance, damage... even when an accident happens during a work-related trip! On a

longer term, the employee may even choose for a more energy efficient car, because he has to bear part of the costs.

Of course it is still possible for the employer to give their employees some advantages by saying that e.g. 10.000 private kilometres are still paid by the company. In every way it is a win-win-situation, because costs are cut for the employer, the driving behaviour as well as the mobility behaviour of the company car user will be more environmental friendly and the company car stays an attractive solution for the employee as a part of its loan, since having to buy a new car himself, will still be more expensive. If the company can save for example € 100 each month, they have no problem with paying €25 monthly for the GPS-tracking infrastructure.

Of course, this can only be applied if the taxation system is adapted to it, but this may be a valid solution to counter the improper use of company cars, originated from the fact that the user doesn't have to pay the actual costs.

## **5.4 Conclusion green private fleets**

For the private fleet sector, it's not feasible to impose more stringent standards than the minimum environmental standards which apply to the whole vehicle market. Nevertheless, private companies can be stimulated to invest in cleaner vehicles and greening their fleets. The UK Motorvate programme for example is an intensive programme where private fleet operators are supported to green their fleets by offering consultancy and a quality label for meeting the set targets. The private lease market is also organizing itself to put 'green lease products' on the market because companies have a demand for such green lease products, partly because of green company car taxation schemes which are being introduced in several European countries.

## 6 CONCLUSIONS

Measures to support more energy efficient fleets can act on three domains:

- Greening the fleet by using more efficient vehicles and by making use of alternative drives and fuels;
- Using the vehicles in an energy efficient way by means of e.g. eco-driving;
- Minimizing the driven kilometres thanks to an efficient organization and planning of the transport (mobility management).

The responsibility for the issuing and implementation of these measures is not restricted to one actor, like the national government. Also local authorities can take meaningful initiatives and of course the players in the fleet and transport sector either have to follow the issued measures or may be creative themselves in greening their fleet, often in order to reduce costs or for (green) image reasons.

However, it is up to the national and European leaders to create the right framework in which an energy efficient management of fleets is rewarded and in which creative solutions are allowed and stimulated. Examples of such policies consist of a green company car taxation scheme (often based on CO<sub>2</sub>-emissions). National governments can also actively stimulate the greening of the company vehicle fleets by means of green fleet programmes that provide advice to companies, like in the UK, eco-driving campaigns or subsidies for the organization of a smarter commuter traffic.

On the other hand, large fleet owners and lease companies are more and more aware of the environmental consequences and the operating costs of their fleets. Therefore almost each (lease) company nowadays has elaborated a green policy that allows fleet owners to choose for best-in-class vehicles and learn their employees to adopt eco-driving principles. Promising solutions with alternative means of transport (scooters, public transport...) don't have much success so far – too often the emphasis is still on the company car.

Although the government and the companies may take intelligent measures, there is still the problem of the private use of the company car, which is often 'misused' when the employees don't have to pay for the actual driving costs (like fuel, wearing parts, insurance...). If the employee has to pay the costs for private use himself, his driving and transport behaviour may become more rational and the company can reduce the expenses. On the other hand, more and more employees expect a company car with all the personal advantages as a part of their wages.

Unfortunately, there is an important lack of impact assessment with the measures mentioned in this report. Too often costs and benefits, or the achieved reductions in emissions or driven kilometres are not known accurately (or not at all...), which makes it hard to evaluate them.

As a result of a CO<sub>2</sub>-based company car taxation scheme the share of low (CO<sub>2</sub>-)emitting new cars increases (which often goes hand in hand with an increasing share of diesel cars, if they aren't treated clearly differently than petrol cars). This effect may however be countered by the higher number of kilometres driven if there is no (fiscal) restriction on free fuel.

The costs for avoiding CO<sub>2</sub>-emissions vary greatly, from £ 161 – 246/tCO<sub>2</sub> in the case of the UK green fleet programme to less than €10/tCO<sub>2</sub> for an eco-driving campaign. Moreover, transport companies may save another €1/km if the full eco-driving principles are fully utilized.

A last important issue to mention is the reason why fleet owners should green their fleet. It is very clear that costs are always a decisive factor, either in the form of fiscal pressure or because of

rising lease and fuel costs. Another reason is the image of the company, because the broad public and the costumers are ever more sensitive to the environmental problems.

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