



The Minaraad

**Environment and Nature Council of
Flanders**

Policy paper

of 22 November 2005

**on the introduction of a system of duties for
road traffic in Flanders**

Summary of the orientations

Against the background of the Flemish Climate conference and the social debate resulting from the 'Quickscan study', a study document was prepared and considered during the 29 September 2005 Council meeting. Seeking to amplify the study document, this policy paper puts forward specific approaches towards the implementation of a system of taxes, with due regard to the complementary relationships between mobility and climate change and other environmental issues. The Council is therefore anxious to show that the most welcome system of taxes is the one that produces the best overall results. With this in mind, the Council is calling for an intelligent mileage tax to be introduced, as this system offers the greatest mobility, ecological and social-related benefits.

The Minaraad is pressing for a fast, phased implementation of a highly differentiated mileage tax, that is adjusted according to location, time, the environmental characteristics of the vehicle and driving attitude. This financial instrument is vital for taking account of the external costs, while managing the demand for transport. A differentiation according to location and time is essential because the external costs of road traffic vary enormously according to the place and time of mobility. The full benefits of a mileage tax can only be realised if passenger transport is also factored in. With this in mind the Minaraad is calling for a quick succession of the two-phase implementation of the mileage tax.

The intelligent mileage tax will involve a sharp cut (up to 15%) in the number of vehicle kilometres, thereby resulting in a higher occupancy and loading rate. The modal shift for passenger transport and for goods transport will also be facilitated. The behaviour guiding effect of the mileage tax will help reduce congestion as well, thereby improving the traffic viability and traffic safety and reducing noise. A highly differentiated mileage tax also seeks to achieve a better environmental performance per kilometre driven in terms of energy use and emissions of CO₂- (-15%), NO_x- (-42%), particulate matter (-23%), PAHs (-25 to -60%) and VOC (-10% to -35%).

A highly differentiated mileage tax is moreover a socially fairer system and involves an adjustment according to the 'polluter pays' principle.

The proceeds of the mileage tax can be earmarked for a balanced development of sustainable mobility (with the focus on all transport modes), but revenues from the mileage tax also have to be targeted on cutting the external environmental and social costs. The amount of revenue will depend on the type of mileage tax: budget neutral or a further supplement so as to internalise external costs (fully or partly). The Council also points out the intangible revenue: less congestion, less air pollution, fewer accidents and therefore fewer road accident victims. This produces important social benefits: the external costs are avoided.

The intelligent mileage tax will be seconded by other measures within a policy mix so as to boost its effectiveness. Flanking measures will have to be taken towards this end.

Contents

Summary of the orientations	ii
Contents	iii
Introduction.....	1
II. Background.....	2
III. Approaches	8
3.1. How a variable mileage tax affects the mobility issue : general	8
3.2. Recommendations for the implementation of a phased intelligent mileage tax in Flanders.....	9
3.3. Mileage tax revenue	11
3.4. Environmental dimensions of the intelligent mileage tax.....	13
3.5. Social dimensions of the intelligent mileage tax	14
3.6. Flanking measures	16
IV. Conclusion.....	19
V. Annex 1: Overview of the effects of the various taxation systems (for Flanders) (source: Minaraad. Study document on the introduction of a system of taxes for road traffic. September 2005).....	21

Introduction

Flemish Mobility Minister Van Brempt commissioned a study on the introduction of system of taxes for road traffic: the 'Quicksan study on the road tax disc'. Prior to the introduction of a new system, the Government of Flanders has decided to sponsor a broad-based social debate so as to investigate the aspired aims. In the light of the objectives proposed another system of taxes will have to be applied. Organised by the SERV – Flanders Social and Economic Council - the debate lasted until December 2005.

Minister Peeters, the Flemish Minister of the Environment, announced the start of the Flemish Climate Conference on 6 June 2005, which was designed to be a large-scale consultation process on climate policy. During the Climate Conference and the follow-up process key policy objectives are being formulated that can be meshed in with an ambitious Flemish climate programme in the short term to cover the 2006-2012 period. Mobility represents a cornerstone of this debate. The long-term aim is to create a low-carbon and sustainable Flemish society. 18 October 2005 was the date when the first assessment of the climate conference was presented: 365 recommendations were made to the Government of Flanders. This was not the end of the process, however, as the second phase continued until June 2006.

There is an obvious complementary relationship between the implementation of a system of taxes for road traffic and the recommendations that may lead to a 'low-carbon society' against the background of the climate conference. Mindful of this and the Minaraad's great concern for the mobility issue, a study document was drawn up to provide the Council members with background information about the impact of the various taxation systems in the context of both processes.

This policy paper seeks to amplify the study document considered during the 29 September 2005 Council meeting. The Minaraad is hoping this policy paper will send out a clear signal against the background of both processes. Hence a series of recommendations were made, to build upon the analysis made in the September 2005 study document. The Minaraad aspires to use this document to reflect upon the issue, emphasising the environmental benefits of a system of taxes. The form chosen, i.e. the policy paper 'format', means the Council members support the main themes but not necessarily each detailed proposal. From this point of view, the policy paper allows some scope for further discussions. The Minaraad approved the policy paper during the 22 November 2005 Council meeting. The ACV, the ABVV, the ACLVB, the Voka-Vlaams Economisch Verbond, the Unizo and the Boerenbond withheld their opinion on the policy paper.

Hubert David

President of the Minaraad

I. Background

- [1] **General outline of the mobility issue.** It is impossible to deny that the present mobility situation creates problems and needs improving upon. The transport sector causes noise pollution, light pollution, fragmentation and barrier effects, climate change, etc. A key obstacle in the mobility issue is represented by 'traffic jams'. This causes various problems such as: loss of time, a heavier environmental impact owing to stationary vehicles and frustrations contributing to a metaphorical acidification of society (stress,...). The large number of accidents resulting in injuries and traffic fatalities is another challenging issue: it is estimated that the number of road accident victims (both dead and wounded in Belgium) cost the Belgian State about €12.5 billion¹ in 2002.
- [2] **External costs of road transport.** The unwelcome impact of mobility activities may also be expressed in monetary terms: the figures are known for the marginal external costs of road transport resulting from accidents, congestion, air pollution and climate change. These costs are high. A petrol-fuelled passenger car creates about €45 worth of external costs per 100 vehicle kilometres, a heavy-good vehicle (HGV) about €95 worth of external costs per 100 vehicle kilometres. Congestion costs make the biggest contribution to the marginal external costs. But if the total external costs rather than the marginal ones are considered, the environmental damage-related costs are in excess of the congestion costs².

Solely a part of these negative externalities are charged to the consumer by way of taxes. On average, the external costs are three times higher than all the road traffic taxes combined at present, according to a study by De Ceuster³ (2004)⁴. Moreover, there is a sharp difference between the negative external costs of road traffic according to the place (urban area versus the countryside) and the travelling time (peak versus off-peak hours). The largest external costs are produced in urban areas during rush hours.

¹ De Standaard, 11/10/2005. Traffic costs Belgium 12.5 billion a year. Based on a study by De Brabander, University of Hasselt.

² Mira-T, VMM 2004.

³ De Ceuster G., Internalising external costs of road traffic in Flanders, Study carried out at the request of the Flemish Environment Agency (VMM), MIRA, MIRA/2004/04, Transport & Mobility Leuven.

⁴ Stef Proost rightly pointed out in one of the road tax disc debates that if the costs were actually to be internalised this would result in a different kind of mobility behaviour, where the average external costs would fall. In any event, this would mean that the cost of road traffic would increase by less than a factor of 3.

[3] **Social dimensions of the mobility issue.** Apart from the mobility-related issues, 'being mobile' is of crucial importance: we move to and from the workplace, we move about in our free time to engage in sport, visit friends, etc. And yet, access to mobility is not equally distributed. A reference is made to transport poverty (or increasing personal inaccessibility) and an increasing level of transport inequality between motorists and public transport users. Access to public transport depends on a person's place of residence and timetables applying to the closest staging points. Not everyone can or wants to afford a car⁵. People who are less affluent are usually dependent on public transport and rely on this to be able to travel about and take part in social life.

[4] **Seeking sustainable mobility.** As the Minaraad operates on the basis of seeking 'sustainable' mobility, an examination may be made of the extent to which a system of taxes contributes to the achievement of the long-term objectives⁶:

- ❑ economic: seeking optimum accessibility for all social activities, with the right price being paid by the consumer, with due regard to all the external costs ;
- ❑ social: better traffic safety and a better traffic viability, while remedying transport inequality via more accessibility and obtaining an acceptable level of mobility ;
- ❑ ecological: keeping the environmental damage caused by transport down to an acceptable level, while increasing the environmental performance, occupancy rate and loading rate of the transport system and changing over to more environmentally-friendly modes of transport.

[5] **Need for economic instruments within a mix of policy instruments so as to achieve sustainable mobility.** Various instruments and approaches are available for achieving sustainable mobility, but a balanced and effective mix of policy instruments has to be developed towards this end. **Behaviour guiding economic instruments** play a key role within the range of policy instruments deployed **so as to achieve a total push-pull policy**. A push-pull policy means that environmentally-friendly alternatives are encouraged, while activities which have a negative impact on the environment are discouraged. Push measures are generally regarded as more efficient than pull measures⁷. Economic behaviour guiding instruments represent a push measure. These instruments offer the most prosperity-related efficiency and are also the only instruments that genuinely work in the long term⁸. Ideally, the environmental pollution that is caused will be passed on to the actual polluter and the government will be able to charge the costs to the polluters themselves. This has the effect of making people more accountable. The

⁵ In 2001 one-quarter of Flemish people did not have a car, compared with one-quarter who had two or more. This imbalanced distribution is also found in the case of cycling: over one-fifth of households did not have a bicycle, while one-quarter had three or more. (VRIND, 2004/2005)

⁶ The long-term objectives are defined in the Mobility Plan for Flanders. Source: LIN Department, Mobility Unit. Mobility plan for Flanders, towards sustainable mobility in Flanders. Ministry of the Flemish Community, Brussels, 2003, 170p.

⁷ See 'The climate on the agenda: 365 proposals for the Flemish climate policy.' Recommendations from the Flemish Climate Conference, 18 October 2005.

⁸ Minaraad, Advisory opinion issued on 5 March 1998 on Mobility and Infrastructure, inst. 1998/7.

effectiveness of economic instruments is also determined by a well developed enforcement policy.

[6] Against the background of the climate conference a ranking system has been defined with a view to achieving sustainable mobility :

- ❑ opting for the best location for the home and workplace so as to facilitate sustainable mobility behaviour;
- ❑ organising mobility as rationally as possible, so as to avoid any unnecessary travel;
- ❑ using the most sustainable mobility system available;
- ❑ encouraging consumers to choose the most environmentally-friendly model tailored to their needs when buying a car;
- ❑ driving a car in an environmentally-friendly way.

An effective pricing instrument makes an impact at all levels of sustainable mobility. In the short term it will primarily be attuned to individual behaviour: choosing between using a car or public transport, the mobility time and the driving attitude itself. In the longer term it will play a role when consumers are keen to buy a new vehicle, as well as in the context of deciding where to live or the site of a new business.

[7] The Minaraad will consider every pricing instrument in the light of the contribution it makes to achieving sustainable mobility. In practice the pricing instrument has to score well in meeting as many criteria as possible from the following list:

- ❑ reducing energy use ;
- ❑ reducing greenhouse gas emissions (CO₂, CH₄, N₂O, HFCs);
- ❑ reducing air pollution (particulate matter, SO₂, NO_x, VOC);
- ❑ reducing noise ;
- ❑ reducing congestion ;
- ❑ increasing traffic safety;
- ❑ increasing mobility.

[8] Focus on the impact taxation systems have on environmental factors. Various taxation systems for road traffic can be developed. The Minaraad's September 2005 study document⁹ features an overview of the potential systems and their impact on mobility activities and environmental factors. Annex 1 includes the overview, as formulated in the study document.

This policy paper also makes an appropriate review of how taxation systems affect environmental factors, particularly the potential for reducing CO₂ emissions. The transport sector's environmental profile shows that this sector is responsible for about 16% of total emissions of CO₂ equivalents (during the 2002-2004 period)¹⁰ and therefore comes in third place in the order of sectors which are to blame for these emissions. In Flanders greenhouse gas emissions were almost 4 Mtonnes of CO₂ equivalents above the 1990 reference level in 2003 or 4.5% higher than in 1990. The figures are hardly encouraging, as they are in sharp contrast to the commitment made under the Kyoto Protocol. Flanders undertook to cut greenhouse gases by 5.2% over the 2008-2012 period compared with the level of emissions in 1990. As an intermediary target, Flanders proposed stabilising emissions in 2005 in relation to the 1990 reference year. In the case of the 'traffic' sector, the proposal is for CO₂ emissions to be stabilised by 2010 in comparison with 1990.

The increased level of emissions in Flanders is mainly attributed to higher CO₂ emissions. CO₂ emissions are responsible for 96% of total greenhouse gas emissions in the transport sector. Road traffic (both passenger and goods transport by road) is responsible for 98% of the transport sector's CO₂ emissions¹¹. Since 1995 there has been only a comparative lack of connection between greenhouse gas emissions and the number of passenger kilometres covered, whereas there was an absolute lack of connection for the other pollutants¹² (with an absolute decline in acid rain emissions, ozone precursors and PM₁₀ (exhaust)). Between 1995 and 2001, there was a comparative lack of connection between the use of energy (and the related CO₂ emissions) and the flows of transport caused by goods transport¹³.

In 2003 traffic produced 24% more CO₂ than in 1990, i.e. the 'distance to the objective' for the transport sector was still 2775 ktonnes CO₂ (in 2003).¹⁴ Other environmental parameters must not be overlooked, however. For example, particulate matter is a crucial problem in industrial countries. It is the pollutant that

⁹ De Smedt, A., Study document on the introduction of a system of duties for road traffic. September 2005. Study commissioned by the Minaraad.

¹⁰ Mira-T 2004, VMM.

¹¹ Minaraad . Study document on the implementation of a system of duties for road traffic . September 2005, p 11. Source : figures Mira-T 2004, VMM.

¹² Mira-T 2004, VMM (see transport eco-efficiency (Flanders , 1995-2003). See also the Study document on the implementation of a system of duties, September 2005, p 7.

¹³ Mira-T 2004, VMM (see transport eco-efficiency (Flanders , 1995-2003). See also the Study document on the implementation of a system of duties, September 2005, p 7.

¹⁴ Minaraad . Study document on the implementation of a system of duties for road traffic . September 2005. See also: Minaraad , Advisory opinion of 4 December 2003 on the Mobility Plan for Flanders, inst. 2003/69.

has the biggest impact on public health in Flanders. The new thematic strategy for air pollution proposes tougher air quality standards by 2020 for sulphur, nitrogen, black smuts, ammoniac, particulate matter and ozone. As transport bears a heavy responsibility for air pollution, further environmental measures are due to be applied to this sector.

A report by the Milieu en Natuurplanbureau (Netherlands)¹⁵ reveals that the limit value for particulate matter (PM10) is unlikely to be feasible by 2020, not even if the thematic strategy for air is enforced. Particulate matter creates serious health risks: particulate matter causes various complaints such as lung disorders. Excessive overruns will probably be solved but local ones continue to be possible. West Netherlands and Flanders are very similar when it comes to this issue, hence Flanders is unlikely to achieve these targets for particulate matter by 2020 either and further measures will be needed. It should be stressed that a lot of the blame for poor air quality can be laid at the door of road traffic as a result of particulate matter. The Mira-T 2004 revealed that the entire transport sector is responsible for about 34% of total emissions of particulate matter in the air (PM 2.5 percentage) in Flanders. The share represented by road traffic in transport's total 'particulate matter air pollution' (PM10 percentage) is about 80%¹⁶. Freight transport and passenger transport by road roughly make the same contribution to this 80%. If the implementation of a system of taxes for road transport can make a key contribution to lowering particulate matter air pollution, this should definitely be taken into consideration.

[9] Fine-tuning the policy paper's field of investigation. The study document on the introduction of system of taxes for road traffic in Flanders (see also annex 1) shows that a mileage tax may be counted as one of the best types of taxation systems. A highly variable mileage tax makes a key contribution to the mobility issue in terms of congestion, the traffic viability and traffic safety, while helping to reduce overall mobility (thereby increasing the efficiency of the transport sector). The study document also shows that a highly differentiated mileage tax is one of the best ecological solutions, while offering a socially fair and responsible model. The most ecologically efficient model should therefore be most consistent with a socially responsible one in this case, with due regard to the allocation of the proceeds. This is why this policy paper takes a closer look at the 'intelligent mileage tax' while making a few recommendations (see chapter II).

Should the social debates nonetheless focus on or lead to the implementation of another system of taxes, owing to political reasons or various conflicts of interest between the participants (personal motives of specific target groups), it should be stressed that this system, too, has to meet certain requirements in order to be environmentally efficient and socially fair. A few priorities or proposals are highlighted in the following paragraph. Both debates provide a perfect opportunity for

¹⁵ Milieu- en Natuurplanbureau. Implications for the Netherlands of the EU thematic strategy for air pollution, 1 November 2005.

¹⁶ Minaraad, Study document on the implementation of a system of duties for road traffic in Flanders, September 2005. p.9.

addressing and solving several mobility issues at the same time. Consequently, the environmental and social dimensions should definitely never be overlooked.

- If, for example, it is nonetheless decided to opt for the implementation of a road tax vignette (sticker), there is a strong argument for differentiating the tax according to place (and time) so as to produce a guiding effect (for example the road tax vignette may be more expensive for the inclusion of the use of motorways).
- In the case of a budget neutral variability of fuel taxation or a general increase in fuel taxation, account has to be taken of the current 'undertaxing' of diesel. Diesel is less environmentally efficient in the case of NO_x and particulate matter (which have a serious impact on human health). Hence the recommendation to adjust the taxes.
- The implementation of a toll system or applying a toll to new roads is seriously frowned upon (see annex 1) and is regarded as not serving a useful purpose for Flanders ! The debates definitely have to take account of this issue.
- Cordon or zone tolls (urban tolls) have solely a local impact. As this system has only a limited scope, it will ideally be combined with other ones that do have a regional (Flemish) impact. Research by De Borger shows ¹⁷ the effects of a cordon or zone toll can be considerably boosted when used with a comprehensive parking policy. In order to avoid undermining urban accessibility, the system has to be flanked by better public transport services
- A rush hour congestion tax can have welcome effects (on the traffic jam problem), while encouraging a modal shift. According to De Borger¹⁸ further research is nonetheless required in order to confirm this, as no extrapolation can be made to the Belgian situation.
- A fast-paced implementation of a mileage tax for HGV traffic is regarded as a constructive development but care has to be taken to avoid a changeover from goods transport to smaller non-tax-liable 'passenger cars'. The guiding effect of this system has to be fully assessed in the longer term, in the light of observations in the study by the Milieu- en Natuur Planbureau ¹⁹. This system would have a guiding effect in the direction of clean air lorries in the short term only if the current vehicle categories were to be used for the differentiation process.

The flanking measures formulated for the mileage tax (see section 2.6) will also apply for the aforementioned systems. The implementation of a system of taxes for road traffic can only solve the mobility issue to some extent so has to be addressed on the basis of a policy mix.

¹⁷ Bruno De Borger. Mobility, road pricing and the price structure in the transport sector. 2005, Wilrijk, VKW Denktank, 47p.

¹⁸ Bruno De Borger. Mobility, road pricing and the price structure in the transport sector. 2005, Wilrijk, VKW Denktank, 47p.

¹⁹ Milieu en Natuur Planbureau. Environmental effects - Paying differently for mobility. MAP-Milieu, Netherlands, May 2005, 57p.

II. Orientations

2.1. How a variable mileage tax affects the mobility issue : general

[10] **The widespread implementation of an intelligent mileage tax or highly differentiated mileage tax.** As a (partial) solution for the mobility issue, the Council has long been a confirmed supporter of the implementation of an ‘**intelligent mileage tax**’ that may be **variable and differentiated according to place, environmental characteristics of the vehicle and driving attitude**. This instrument is crucial for taking account of the external costs, while managing the demand for transport. A differentiation according to place and time is of vital importance, because the external costs of road traffic vary enormously according to the place and time of mobility (see [2]). This claim is substantiated by scientific studies asserting that a highly variable mileage tax is the most efficient instrument (see study document and annex 1).

The widespread implementation of an intelligent mileage tax to HGV and passenger traffic will involve a sharp reduction in the number of vehicle kilometres: the number of vehicle kilometres driven may decrease by 15% (see annex 1). A higher occupancy and loading rate (energy efficiency) and a switch to a more environmentally-friendly and safer means of transport and transport modes (modal shift) will also be facilitated. The mileage tax's behaviour guiding effect will act as a cornerstone of an overall push-pull policy and also have a welcome impact on several mobility issues (see also 2.4 Environmental dimensions of the intelligent mileage tax). The congestion issue will be partly overcome by the behaviour guiding effect of an advanced mileage tax. Financial incentives will be provided to encourage people to avoid peak hours.

[11] **Traffic viability and traffic safety.** The mileage tax's guiding effect will also have a favourable impact on the **quality of life and traffic safety**. The mileage tax will involve a huge restriction on the number of kilometres driven, while encouraging safer driving behaviour if it also differentiated according to driving attitude. Taking acceleration into account will serve to guide drivers towards a safer driving attitude: gradual ‘acceleration’ and driving slowly. A fall in the total number of vehicle kilometres will be matched by a decline in the number of injured people (about 15% to 20%) and the number of road accident victims (people killed - 20% to 30% less). A mileage tax can also be combined with a speed limiting device (see also [27]), thereby enhancing the impact on traffic safety. A decline in the number of vehicle kilometres driven will be matched with a decrease in noise levels (about 20%) (see annex 1) thus enhancing the quality of life in the vicinity of busy traffic routes.

[12] Communication and control. If the aforementioned behaviour guiding effect is to be achieved, drivers have to be familiar with the various pricing systems so as to be able to make an informed choice. Hence the need for clear channels of communication with drivers. The effectiveness will obviously involve a firmly based enforcement policy.

In order to make the pricing system clear for consumers and allow them to find their way around the various rates used (according to the type of road, the time, the environmental characteristics of the car, etc), it may be advisable to set up a customer-friendly information centre which people can turn to with their questions. For example, a website may be created that calculates the cheapest roads and suggests possible alternative routes (such as a bus connection with the timetable, opportunities for a connection to a transshipment terminals...). The communication process may also be able to rely on the OBU²⁰, road marking, digital information signs along roads, etc.

[13] Full coverage of the road network. The road network in Flanders / Belgium is extremely dense compared with other European countries, so there are always alternatives to driving on the main roads. The system of taxes cannot be responsible for switching traffic flows to these alternative routes, hence the system of taxes will ideally cover the *entire Flemish (Belgian) road network* in order to counter rat-run traffic on local routes.

[14] Coordination between the regions. The Council seeks to stress the need for a comprehensive system of coordination with the various regions. There is no point in introducing a new system solely in Flanders, in view of the road network's close association with the roads in and around the Brussels-Capital Region and the Walloon road network. It has also been decided that the three regions have to agree if the 'Eurovignette' is abandoned, or if the system is differentiated according to regions.

2.2. Recommendations for the implementation of a phased intelligent mileage tax in Flanders

[15] Phasing. The Council is mindful that the implementation of a regional differentiated mileage tax is by no means an easy task and requires a suitable level of time and preparation. This is why the Minaraad is proposing a clear system of phasing:

- ❑ the first phase involves a partial implementation of the intelligent mileage tax for domestic and non-domestic HGV traffic with a maximum permitted mass of 3.5 tonnes or higher;
- ❑ the second phase entails extending the mileage tax to passenger transport.

In order to avoid a shift from heavy to light lorries the mileage tax has to apply to both heavy and light HGV traffic at the same time during the first phase. This means having to abandon the Eurovignette and therefore the proceeds of this scheme. However, thanks to a fast-paced implementation of an intelligent mileage tax for HGV traffic, all non-domestic lorries – including light lorries - will have to pay for using the (Flemish and Belgian) road infrastructure, so that a source of income that has been lost hitherto will be recovered.

²⁰ OBU: On Board Unit.

Phasing also produces another additional benefit. When all lorries install an OBU (On Board Unit), technology costs will fall owing to the economies of scale of large-scale production. Financial support for purchasing the requisite equipment may be considered so as to smooth the changeover process. Meanwhile, all OBUs are now selling for Euro 5 per unit in Austria.

The Minaraad is keen to stress that phasing according to a time line will be necessary so as to be able to control the new factor of a differentiated mileage tax and put it into operation. However, the various benefits and objectives will not be fully realised until goods transport and passenger transport are involved in the mileage tax system. Hence the Council is calling for the second phase to be launched as early as possible. In the case of the particulate matter issue, too, where both goods transport and passenger transport bear almost as great a responsibility, it is important for the second phase to be implemented post-haste (see [8], p. 7-8). Possibly, further phasing in the process can be implemented, for example: company cars can be included in the system in an earlier stage than regular passenger cars.

[16] Budget neutral mileage tax or break-even mileage tax. A mileage tax is a financial instrument so will therefore logically produce (monetary) revenue. The level of proceeds depends on how the system is implemented. Two lines of inquiry can be followed. The starting point may be a budget *neutral* mileage tax and a call may also be made for a *further increase* during the implementation of the mileage tax so as to cover marginal external costs for traffic more effectively. However, the aim in both cases, is to replace the fixed costs and enable variability via the mileage tax, on the basis of the distance driven. The Minaraad is championing an additional increase in the mileage tax so as to be able to cover the marginal external costs, in view of the higher environmental advantages this offers. However, the Council can also agree to a budget neutral mileage tax, if this helps to promote the widespread acceptance of the intelligent mileage tax.

Thus, the mileage tax may replace the road tax and registration tax (to a great extent – see [28]) for passenger cars. Hence this implicitly involves the road tax and registration tax being linked to CO₂ emissions, as the European Commission would like²¹. With the budget neutral mileage tax the sum the average car driver pays every year will be the same as before on average but the behaviour guiding effect will prompt drivers to use their cars in a more well-considered way. If an additional increase is realised to cover the external costs of car traffic the average car user must therefore pay more than previously, but the rate charge will be in keeping with the damage caused. Consequently, the intelligent mileage tax can / may not be regarded as (simply) an additional source of income but should primarily be seen as an instrument for guiding users towards a more sustainable system of mobility.

The same argument applies to HGV traffic. The car registration tax (CRT), the annual road tax and the compulsory amount for the Eurovignette (for MPM > 12T) may be included in the budget neutral mileage tax. Here, too, we should caution against regarding an intelligent mileage tax merely as an additional source of income for the

²¹ On 5 July 2005, the European Commission tabled a draft Directive to phase out car registration fees. Car registration taxes (CRT) in Belgium are supposed to be abolished and set off in the annual road tax. According to the EU, a CO₂ contribution for all private cars should also gradually be incorporated into this annual road tax. By 2008, the road tax and the gradual conversion of the CRT should be 25%-based on the CO₂ emissions of the car and by 2010 the tax should be 50%-based on this item.

authorities. Additional revenue for the authorities is primarily represented by the lost flow of money from non-domestic HGV traffic. Nonetheless, the proposed phasing system does involve the tax system in Flanders also being remodelled in two phases: first the taxes on HGV traffic that are made fully variable, then the taxes on passenger traffic. The taxes on passenger cars will however not be fully converted into the mileage tax. (see [28]).

However, the aim at this stage is not to indicate the actual technical impact nor to make claims about the level of the duties or the weight assigned (when deciding on the rating system) to the differentiation according to place, time, environmental characteristics of the car and driving attitude.

[17] Technology. The Minaraad believes that in the light of recent developments in other countries, it is best to deploy the most advanced technology in Flanders. A link with the German LKW-Maut system is the most obvious option. There are also signs at European level that a general implementation of interoperable 'European Electronic Toll Services' is to be sought in the future²².

2.3. Mileage tax revenue

[18] Expenditure of the revenue - general. The expenditure of the revenue is a key factor for promoting the acceptance of the intelligent mileage tax. 'The being mobile' component is taxed, so it is obvious that (the bulk of) the proceeds from the pricing system should be allocated for the benefit of mobility. This needs to be broadly interpreted, in the light of the aim of facilitating *sustainable mobility*. For example, the proceeds may be invested in road maintenance activities (such as: recreating crossings, maintenance work, ...), the development of the public transport system, establishing and improving cycle paths, freight port terminals, better line infrastructure and such-like so as to promote the modal shift for both passenger and HGV traffic. However the Council believes that creating the missing links in the road infrastructure is not a fundamental solution and is therefore inadvisable. Several studies show that this is merely a temporary solution and is no answer to the congestion issue. The additional road capacity is taken up again (as time goes by). If it is decided to create missing links, the Council would like a well-documented social costs-benefit analysis to be carried out.

However, the revenue also has to be earmarked for reducing the external ecological and social costs traffic produces. The direct link between a rating system for road traffic and expenditure on overall sustainable mobility will make people more willing to espouse the tax.

According to research by Mayeres and Proost²³ a reduction in social charges or an increase in social benefits can also help boost the degree of acceptance and provide an opportunity for the expenditure of the revenue (see also [26]). Other (social) reforms that result in lower mobility requirements may be funded to some extent with the

²² Directive 2004/52/EC on the interoperability of road toll systems across Europe.

M/338 Mandate on electronic fee collection, interim report on the CEN Editor, Ken Perret, rapp UK (13/06/2005).

²³ Mayeres, Proost. Reforming transport pricing: an economist's perspective on equity, efficiency and acceptability, KUL-CES, October 2002.

proceeds of the mileage tax, hence the recommendation for an effective information campaign to be launched about how the revenue is spent.

[19] Budget neutral mileage tax versus a further increase in the tax so as to achieve a break-even mileage tax. Should the authorities opt for a budget neutral tax, the additional revenue will be generated by non-domestic road traffic alone. However, budgetary leeway will be available as a result of the disappearance of negative externalities (see [20]). This additional revenue and extra budgetary leeway are nonetheless unlikely to be conducive for funding any significant reduction in the financial burden (of taxpayers in general), for example. Clear choices will therefore have to be made about how to spend the revenue, because not all expenditure targets can be achieved, as was mentioned earlier [18]. If a budget neutral mileage tax is decided upon, the major benefits will be less congestion and a better environment, whereas the benefits involved in the expenditure of the revenue will be less decisive.

If it is decided to opt for an additional increase in the tax so as to take account of the external costs (partly or entirely), the revenue from the intelligent mileage tax will be much higher, so the extra revenue can be invested in several objectives (see [18]). Apart from less congestion and a better quality environment, a break-even mileage tax can also create substantial benefits as a result of spending the revenue on such items as additional cycle paths or lowering the financial burden (charges).

[20] The invisible revenue from the intelligent mileage tax : social benefits (= avoided costs). Apart from the income generated, an intelligent mileage tax also creates invisible revenue or profits. For example, an intelligent mileage tax will lead to less congestion and, by the same token, less congestion costs (lost working hours,...). The anticipated cut in the level of pollutants also means less environmental costs (see also [22]-[24]). Accident-related costs will also fall, as an intelligent mileage tax is expected to be responsible for a decrease in the number of road accident victims. Charging an additional environmental tax, as a result of internalising (all) external costs, will further boost these 'invisible' gains because of the higher environmental gains (see annex 1 – 'non-budget neutral mileage tax and see [2]).

[21] Phasing in expenditure targets and the scale of the revenue. As part of the proposed phasing of the mileage tax, the proceeds of the tax may also be covered by a system of phasing to some extent. In the case of the first phase, when solely HGV traffic will be taxed, there may be a call for a bigger share of the revenue to be earmarked for the needs and requirements of the road sector, such as road repairs, intermodal and multimodal HGV traffic and operations for raising separating levels (development of transshipment levels),... and a lowering of the social charges (reduction in the tax burden). During the second phase, passenger cars will be taxed as well and a bigger share of the revenue has to be earmarked for this target group by schemes such as investing in public transport for the benefit of passenger transport, in cycle paths²⁴,... However, it is not advisable to wait for passenger transport to be covered by the mileage tax before taking sustainable mobility initiatives for this target group. The impact of a mileage tax can make itself felt only if there are also enough valid alternatives. Nonetheless, it may be advisable to develop a specific phased allocation formula, where priority is granted to general HGV traffic measures during the first phase. Lower social charges offer general gains in terms of prosperity, so it might

²⁴ One suggestion is to create a Flemish Cycling Fund, where government and provincial resources are combined so that a supralocal network of cycle paths can be developed in double-quick time. Some of the revenue from the mileage tax may be invested in this project, for example.

be a good idea to favour this item in both phases on a proportional basis.

It should also be pointed out that during the early stages (of the two phases) of the mileage tax implementation process, there will be a transitional period where more revenue is collected. Road users will first have to undergo a learning process ('exploratory phase') before their behaviour is adjusted as effectively as possible to the new system. In the wake of this exploratory phase a new balance will be struck. As a result of this new balance, the revenue will be lower, once the regulatory effect of the mileage tax has fully worked through. Consequently, a proposal may be that during the adjustment phase the higher level of revenue is channelled into new investments (possibly phased as well with the focus primarily on investment for the benefit of the goods transport sector). The subsequent equilibrium revenue will tend to occur as a constant factor and may be invested, say, in a steady reduction in the level of social charges.

2.4. Environmental dimensions of the intelligent mileage tax

[22] Secondary benefits of the intelligent mileage tax. On top of solving the mobility problem to some extent, an intelligent mileage tax also offers a second set of benefits. A more intensive mileage tax will also deliver more decisive benefits. This once again underscores the importance of an intelligent, highly variable mileage tax. This policy paper emphasises the complementary relationship between mobility and greenhouse gases (primarily CO₂ in the transport sector), but account also has to be taken of overlaps with other (environmental) issues, such as particulate matter, acidifying and eutrophying matter in the air (SO₂ and NO_x), fragmentation and the barrier impact. The proposed intelligent mileage tax can make a contribution in this case, too.

[23] The intelligent mileage tax has a tremendous CO₂ reduction potential. Placing the research findings of the University of Amsterdam²⁵ into the Flemish context shows that the implementation of a budget neutral intelligent mileage tax may reduce the level of CO₂ by 2.9 to 5.7 Mtonnes of CO₂-equivalents²⁶. In 2003 greenhouse gas emissions in Flanders were nearly 4 Mtonnes of CO₂-equivalents above the 1990 reference level²⁷ (see also [8]). If the intelligent mileage tax is implemented, this will make a major contribution to cutting CO₂ emissions and reaching the Kyoto targets. In practical terms, the Government of Flanders is seeking additional measures by way of 5 Mtonnes of CO₂-eq/year for the 2008-2012 period, otherwise the emission credits required will have to be bought on the international market, at a cost of about Euro 180 million. This is comparable with the budget neutral mileage tax.

The major potential for reducing CO₂ emissions is confirmed by a study called 'Environmental effects - Paying differently for mobility'. The intelligent mileage tax being sought by the Minaraad can be best compared with the following versions in the study 'Environmental effects-Paying differently for mobility':

²⁵ Peeters Advice and Free University of Amsterdam. Effectiveness and feasibility of an advanced mileage tax. Main report. Stichting Natuur en Milieu, Amsterdam, September 2000, 96 p.

²⁶ Minaraad, Advisory opinion of 9 September 2004 and the 2004 Progress report on the Flemish Climate Policy Programme, inst. 2004/35.

²⁷ The year 1990 for CO₂, N₂O and CH₄ and 1995 for the other greenhouse gases (source : MIRA-T 2004. VMM. Milieu- en Natuurrapport Flanders : Themes MIRA-T 2004. Leuven, Lannoo Campus, 2004, 454 p.)

- 1A paying per kilometre with variability in the MRB and partial variability in the BPM²⁸ (comparable with the Flemish road tax and purchase tax respectively);
- 1B paying per kilometre with complete variability in MRB and BPM;
- version 5 'Paying per kilometre and congestion rate': a combination of two pricing systems: version 1A (see above) and version 8A 'static congestion tax'. A static tax involves charging per kilometre on structural congestion routes - irrespective of the actual congestion - and acts as a further supplement on top of the existing taxes.

The versions form (almost) budget neutral versions, as (some) of the existing taxes are converted into a tax per kilometre driven. The intelligent mileage tax championed by Minaraad is best compared with version 5 (= 1A + 8A), as in this case account is taken of the environmental characteristics of the vehicle and location (congestion). The intended time dimension should be reflected with a combination of version 1A and version 8B 'dynamic tax per kilometre driven in congestion areas'. However, this combination is not investigated in the document, but the figures show that versions 8A and 8B achieve very similar environmental performances. The research reveals that these versions can achieve a 15% reduction in CO₂ emissions or thereabouts (in the Dutch context) or about *2.8 Mtonnes less CO₂ emissions than in the reference scenario*.

[24] A highly differentiated mileage tax is also the most environmentally efficient option for other environmental issues. Research into how taxation systems affect NO_x and particulate matter emissions reveals comparable versions of the intelligent mileage tax as being the most environmentally efficient. Variations 1A, 1B and 5 appear as the best performing versions in all areas (in the study 'Environmental effects-Paying differently for mobility'). A broad interpretation of the findings suggests that the intelligent mileage tax may also definitely be ranked amongst the best performing price policy versions. Consequently, an advance mileage tax can produce the following gains:

- NO_x: about 14.8 ktonnes or a 42% gain, compared with the reference scenario ;
- particulate matter : about. 1.3 ktonnes PM₁₀ less or a 23% gain compared with the reference scenario.

These findings were also confirmed in research carried out by the Free University of Amsterdam and Peeters Advice, which also goes further and calculates that on average up to 20% of noise can be avoided by the implementation of a differentiated mileage tax. A mileage tax also encourages the use of low-energy cars (between 20 to 40% cut in energy consumption per vehicle kilometre). Emissions of PAHs (polycyclic aromatic hydrocarbons) can also be reduced by between 25% and 60%, depending on the fuel mix; emissions of VOC (volatile organic compounds) between 10% and 35%.

2.5. Social dimensions of the intelligent mileage tax

[25] Socially fair & responsible and social adjustment. The current car taxation system is based on the purchase of fuel and an annual road tax – not including the one-off car registration tax (CRT) and registration costs. The assessment basis is therefore differentiated according to the type of fuel and the type of engine, the cylinder capacity or the maximum permissible mass (MPM). The level of the current road tax is therefore

²⁸ MRB: the Dutch motor vehicle tax, BPM: the Dutch purchase tax.

not dependent on the actual use (number of kilometres driven) but on the type of vehicle. Someone driving long distances every year with a car will pay comparatively less tax than someone who travels less kilometres. In comparison with the external costs that are produced, someone who does not use the car often has to pay too much. In short, road users with an environmentally-friendly car driving in local areas outside peak hours pay more than the costs to society that they cause. Users with a more environmentally-hostile vehicle travelling in urban areas during rush hours pay much less for the societal costs caused. Consequently, the current system of taxation is socially unfair. An intelligent mileage tax enables variability according to various factors: type of vehicle (environmental characteristics), place, time and driving attitude. From this point of view, this system is socially justified.

The most vulnerable groups in social terms are also those most affected by the social costs of mobility. There is a high level of exposure to environmental pollution, noise and other road traffic-related nuisances along busy roads. Rents or house prices along these main roads are low owing to the unfavourable circumstances. Those most affected by a short supply of public transport services (transport poverty and transport inequality) are those who cannot afford their own car. The internalisation of the social costs will therefore be beneficial for this most vulnerable group, who will be able to enjoy less traffic-related nuisances and a higher level of better-quality public transport services. Lower fixed costs also mean those in the low-income category will be able to afford a car. Research shows that the number of cars will increase by (less than) 8% as a result of implementing a mileage tax²⁹. Some of the proceeds from a mileage tax may be spent on lowering the social (tax) costs or increasing the social benefits, thereby producing a social redistribution³⁰ (see also 2.3). The intelligent mileage tax will therefore involve a social adjustment.

Until a number of other conditions are met (flanking measures), the mileage tax system has to ensure that employees are not penalised when they have no other option but to use their cars to travel to work and back. Some workplaces continue to be difficult to reach by means of public transport. Flanking measures, such as mobility cheques, company transport schemes and a well developed public transport system (see point 2.6) are preconditions for ensuring a socially fair impact of the mileage tax. Employees should not have to pay the price for the lack of valid alternatives to commuting between home and work.

Socially vulnerable groups may be released from the mileage tax via subsidised season tickets, mobility cheques or exemptions with evidence having to be produced for qualifying for these concessions. The 'not in my car' phenomenon has to be avoided.

²⁹ The number of vehicle kilometres driven does not increase, but the car occupancy level does. The higher number of cars does not lead to more traffic or more external costs. (source : Peeters Advice, Free University of Amsterdam . 2000).

³⁰ Bruno De Borger. Mobility, road pricing and the price structure in the transport sector . 2005, Wilrijk, VKW Denktank, 47p.

Mayeres, Proost. Reforming transport pricing: an economist's perspective on equity, efficiency and acceptability, KUL-CES, 2003.

2.6. Flanking measures

[26] **Measures to promote the acceptance of the intelligent mileage tax.** A few measures may be taken to facilitate the acceptance of the intelligent mileage tax, or, in other words, to create a *base of support* for this system of taxes. The first step involves clearly explaining why a new system is so urgently needed. An awareness-raising campaign targeted on the *general public* has to be launched so as to highlight the external costs of road traffic (such as the damage to natural resources, the effects on health, damage to buildings, lost working hours,...), by explaining the need for further environmental measures to counter the greenhouse gas effect and by underscoring the benefits resulting from the guiding effect of the intelligent mileage tax and the secondary (environmental) benefits (see above). Less traffic jams and less pollution, more investment in cycle paths and public transport, more habitable urban centres, etc. – these are examples of the clear arguments that have to be used to create a depth of support. The awareness-raising campaign will be particularly important in the second phase of the implementation process, when passenger transport is also included in the system. The need for awareness-raising will be much greater with the implementation of a non-budget neutral version.

The acceptability of the intelligent mileage tax will also be dependent on the impact. A *gradual implementation* is recommended, starting with domestic and non-domestic HGV traffic with a MPM heavier than 3.5 tonnes. Consequently, the lost non-domestic sources of revenue for Flanders, as a pre-eminent transit region, will be recovered straight away. The cost of the technology required will also decrease when all lorries are compelled to install an OBU (On Board Unit). The expenditure of the revenue is a key factor in encouraging people to espouse the intelligent mileage tax (see 2.3). The bulk of the revenue has to be channelled back into the mobility sector and used to achieve a more sustainable system of mobility. The revenue may also be used for the purpose of social redistribution (lower social costs or higher social benefits – see 2.3 Mileage tax revenue) and to fund social reorganisation initiatives that result in less mobility needs.

[27] **The intelligent mileage tax will be underpinned by other measures within a policy mix so as to enhance the effectiveness.**

- A mileage tax steers mobility in the direction of a **modal shift**, where public transport and more environmentally-friendly modes will become more important in the *passenger transport system*. In order to overcome user resistance to these transport systems - ideally gradually with the implementation of a mileage tax - measures will have to be taken to promote these modes. This applies to the 'pull' in the 'push-pull' policy. User resistance is not only determined by financial considerations, but is also dependent on saving time and comfort. Consequently, comfort, punctuality, connections (transfers) and the public transport capacity have to be improved. The overall standard and availability of public transport services as a valid alternative will be boosted as a result. As public transport cannot penetrate everywhere, consideration also has to be given to the idea of issuing mobility cheques, for taxis and feeder services, for example. Further measures have to be taken for cycle traffic, too, so as to create safer and more comfortable cycle paths. For example, the regional network of cycle paths in Flanders has to be completed, as the sooner the network is finished, the more people will opt for cycling, thus creating a few so-called 'quick wins' (less air pollution, less noise, welcome health benefits for the cyclists themselves,...). Apart from the modal shift toward more public transport (bus, train, tram) and slower forms of transport, steps will have to be taken to encourage car-pooling and car-sharing. The revenue from the mileage tax can be used in part to

fund these measures (refunds).

- Road pricing will also act as an incentive for a *modal shift in the case of goods transport*. Here, too, steps have to be taken to ensure enough investment and flanking measures are taken towards this end. For example, further (decentralised) marshalling yards should be established, while investments will have to be made in multimodal terminals and the effectiveness of the (rail) lines must be maximised. The revenue from the mileage tax may be used to make a contribution to these investments.
- The mileage tax implicitly involves an incentive to set up home 'closer to the workplace' and to concentrate activities more in the vicinity of one's home. It is proposed that during a transitional period businesses / the authorities assume some of the taxes paid, as in the case of the action to encourage employees to use public transport. Mobility cheques may also be used instead of refunds for the use of public transport or the number of kilometres driven. Offering mobility cheques is more in keeping with the behaviour guiding mobility policy being sought by a mileage tax. These measures have to be taken so that employees are not penalised owing to the lack of public transport alternatives [25]).
- Businesses / the authorities may also offer support for organising car-pooling initiatives or establishing company transport schemes in cooperation with the transport companies (concluding agreements on staging points and timetables).
- An examination has to be made of the relationship with the basic mobility concept. Some companies are out of reach of the public transport system. Moreover, some public transport routes designed to ensure basic mobility are not profitable owing to the peripheral location of the staging points. Other facilities, such as hospitals, are also difficult to reach by public transport. Nor can these problems be (partly) overcome with the advent of an intelligent mileage tax. The basic mobility concept therefore has to be assessed against the background of these fundamental constraints. The government's priorities (and resources) for basic mobility also have to include easier access to business sites. Easier accessibility for residential and business areas, combined with the public transport link between both areas, is a key issue that also has to be addressed with the basic mobility concept.
- A mileage tax differentiated according to place and time also implies setting a cheaper rate for rural roads. In order to prevent these 'cheaper' roads attracting rat-run traffic, carefully-thought-out deterrent measures have to be taken for through traffic on these roads, such as rearranging crossings, speed bumps, ISA (Intelligent Speed Adaptation), etc.
- The mobility policy has to be underpinned by the town and country planning policy, where the focus on a concentration of activities continues to be paramount. Traffic-generating businesses must not be encouraged to settle in (cheaper) rural areas. The town and country planning policy could offer the prioritisation of road system as a basis for differentiating the pricing policy according to location.
- There is a broad base of support for a general change in the driving attitudes of motorists. Fast acceleration and braking, speeding and other similar attitudes create further environmental pollution, traffic accidents, noise pollution – the list goes on and on. The implementation of an intelligent mileage tax will have a behaviour guiding effect but this should be backed up with the Intelligent Speed limiting device (ISA: Intelligent Speed Adaptation). Pioneer projects and studies (in Ghent, for example) show that Intelligent Speed limiting devices can help drivers cut down their fuel consumption and result in a 30% reduction in accidents ³¹. Drivers are very keen to

³¹ Info: www.cdonet.ugent.be, www.voetgangersbeweging.be; www.isaweb.be

espouse the ISA because of the additional user comfort it offers. The advent of the ISA system will also help to prevent rat-run traffic seeking out 'cheaper' alternative roads running through town centres, as the ISA system discourages speeding in such locations, thereby making cheap alternative roads less appealing to motorists.

[28] Partial variability in car taxes, so car ownership is also partly taxed. Apart from traffic jams, road accidents and the external environmental and health costs created by cars, these vehicles also occupy (public) space. Examples are parking areas on municipal streets and underground and overground car parks. These observations create an argument in favour of a continuing partial taxation of car ownership. An argument that is supported by the fact that one of the key motives for using a car is the ownership of the vehicle and the tax structure may be only partly variable. Hence the use of the car has to be taxed (to produce the aforementioned guiding effect) and car ownership also has to continue to be (partly) taxed.

This argument is also highlighted by T&E.³² In order to promote more sustainable mobility the car taxation system has to be reformed and not only in relation to CO₂ emissions (as the European Commission is proposing – see [16]). T&E is calling for the system of taxation to be reformed so that it covers two components. A) the actual usership has to be taxed and b) car ownership has to continue to be taxed. The usership tax has to be based on emissions, the car ownership tax has to be a reflection of the claim on space by road transport (T&E considers the use of space by motorised traffic in a specific region or urban area where a car is registered and driven and sees this in the light of the amount of land earmarked for individual motorised transport). Consequently, car-pooling and car-sharing have to be encouraged.

[29] Tax reforms: green taxation³³. The implementation of an intelligent mileage tax where a part of the revenue is earmarked for lowering social charges applying to labour (or increasing the social benefits) is in keeping with the principle of the 'sustainability of the tax system' or 'greening taxation'. This is a key instrument for internalising social costs. The 'sustainability of the tax system' means a large percentage of the tax burden is switched from labour to use of the environment. This takes the form of reforming the tax system so revenue from environmental taxes is deployed for alternative sources of social security funding. This may result in the win-win situations sought for sustainable development, while providing an added value for the ecological, economic and social dimension within the sustainability and sustainable mobility concept. Shifting social costs (taxes on labour) to mobility taxes will therefore succeed in enhancing prosperity. Employment and profitability will be promoted, while ecological targets (easing the pressure on the environment) will be achieved: easing environmental pressure or mobility.

³² T&E (European Federation for Transport and Environment). Paying properly – not paying differently. Towards a taxation of passenger cars that addresses both car ownership and usership. October 2002. 2p.

³³ Minaraad, Report by the Special Working Group on Sustainable Development, dated 22 January 2004, on a Flemish STRATEGY for Sustainable Development (STRADO), inst. 2004/2b.

III. Conclusion

- [30] The intelligent mileage tax is one of the best types of road traffic taxation systems, offering the most benefits in mobility, ecological and social terms. The debates and follow-up process, within the climate conference and in the context of the social debate resulting from the Quicksan study, offer an ideal opportunity to address a few key mobility problems simultaneously. This means that the complementary relationship with several environmental issues, such as climate change and particulate matter emissions, must be borne in mind. The Council is therefore anxious to show that the most welcome system of taxes is the one that produces the best overall results.
- [31] Towards this end, the Minaraad is pressing for a fast, phased implementation of a highly differentiated mileage tax, that is adjusted according to location, time, environmental characteristics of the vehicle and driving attitude. Should another system of taxes be adopted, it has to be pointed out that this system, too, has to meet one or two requirements so as to be environmentally efficient and socially responsible.
- [32] **Effect of a highly differentiated mileage tax on the mobility issue.** The mileage tax may be differentiated according to place, time, environmental characteristics of the vehicle and driving attitude. This financial instrument is vital for taking account of the external costs, while managing the demand for transport. A differentiation according to location and time is essential because the external costs of road traffic vary enormously according to the place and time of mobility.

The intelligent mileage tax will involve a sharp cut (up to 15%) in the number of vehicle kilometres, thereby resulting in a higher occupancy and loading rate. The modal shift for passenger travel and for goods transport will also be facilitated. The behaviour guiding effect of the mileage tax will help reduce congestion as well, thereby improving traffic viability and traffic safety. Linked to an intelligent speed limiting device, the mileage tax's impact on the traffic viability and traffic safety will be further increased. An effective customer-friendly information campaign about the rating system is crucial in the bid to ensure the mileage tax has a behaviour guiding effect. Preventing rat-run traffic means the mileage tax should (ideally) cover the entire Flemish road network. A well developed enforcement policy obviously represents a key stone for the system. The full benefits of a mileage tax can only be realised if passenger traffic is also factored in. With this in mind the Minaraad is calling for a quick succession of the two-phase implementation of the mileage tax.

- [33] **Revenue from the mileage tax.** The system may take two forms as a partial replacement of the road tax and registration tax : a) a budget neutral mileage tax (for the authorities and the 'average user') may be created and b) it may be decided to take account of all (or a large percentage) of external costs. The revenue from a budget neutral mileage tax will be generated only by non-domestic traffic, so the income will be much lower than a more 'break-even' mileage tax. The opportunities for earmarking the revenue for various targets is therefore dependent on the type of system – budget neutral or break-even. The proceeds of a mileage tax may be spent for the most part on the balanced development of sustainable mobility (focusing on all transport modes), but the revenue also has to be used for reducing external and social costs. The income may also be deployed for achieving a social redistribution or funding social reorganisations that reduce the demand for mobility. Emphasis also has to be placed on the invisible proceeds of the intelligent mileage tax : less congestion, less air pollution, fewer accidents and therefore fewer road accident victims. This produces

important social benefits: the external costs are avoided (and more budgetary leeway is created in other policy areas).

The phased implementation process will be accompanied by a system of phased revenue. Subsequent to the adjustment period a new balance will be struck where the revenue (subject to the same social circumstances) will be almost constant over the course of time.

- [34] Social factors.** A highly differentiated mileage tax is moreover socially fair and responsible and involves an adjustment according to the 'polluter pays' principle, unlike the current system of taxation. The mileage tax will also result in a social adjustment: the most vulnerable groups will benefit (the most) from less traffic-related nuisances, the higher level of public transport services on offer and the better services at staging points. The possibility of being able to afford a car will also come nearer because the car-use (what people themselves control) will be more heavily taxed than car ownership. Lastly, a socially redistributive effect may be achieved by earmarking some of the revenue for lower social costs or increasing the social benefits, thus producing a more environmentally-friendly tax system or promoting the sustainability of taxation with all the prosperity-related, gains this implies.

However, the system has to ensure that until such time as various conditions are met (business sites being accessible via public transport,...) employees are not penalised by the initiative.

- [35] Environmental dimensions of the intelligent mileage tax.** Generally speaking, variability in the fixed car taxes via a mileage charge will produce the most substantial environmental gains, depending on the form this takes. The differentiation in rates should preferably be expressed very strongly. This results in a decline in car mobility, congestion and noise and furthermore the environmental performances improve for every kilometre driven in terms of energy use and of CO₂- (-15%), NO_x- (-42%), particulate matter (-23%), PAHs (-25 to -60%) and VOC emissions (-10% to -35%).

- [36] Flanking measures.** In order to ensure the mileage tax is accepted as much as possible a base of support has to be created by various means, such as raising awareness about the external costs of road traffic and the additional (environmental) benefits of a mileage tax. An effective information campaign about the expenditure of the revenue has to be conducted. The bitter pill may be sweetened by gradually introducing the mileage tax.

The intelligent mileage tax will be underpinned by other measures within a policy mix so as to enhance the effectiveness. Enough support has to be offered for a modal shift in favour of passenger transport and freight transport. During the transitional period employees should not be penalised for the lack of alternatives to commuting between home and work. Attention also has to be paid to the need to promote car-sharing, car-pooling, company transport schemes and mobility cheques. During the assessment of basic mobility, it is advisable to establish new priorities and to channel resources into improving the accessibility of business sites by means of public transport. Rat-run traffic has to be deterred from cheaper 'rural roads' as a result of traffic restrictions and systems such as having Intelligent Speed limiting devices operate / be made compulsory in town centres. The development of a mileage tax also means ensuring car ownership continues to be partly taxed so as to factor in the costs of public space, while taking account of the key motive (i.e. car ownership) for car usership.

IV. Annex 1: Overview of the effects of the various taxation systems (for Flanders) (source: Minaraad. Study document on the introduction of a system of taxes for road traffic. September 2005)

	SYSTEM	GENERAL EFFECT/COMMENTS	MOBILITY				ENVIRONMENT			
			Decline in vehicle km (cars and/or HGV traffic)	Congestion	Modal shift	Traffic victims	Noise	CO ₂	NO _x	PM ₁₀
Variability in fuel excise duties	Budget neutral variability through fuel excise duties with exemption for freight transport (version 9)	- Slight reduction in traffic; - incentive for non-wasteful driving behaviour and low consumption cars; - extra subsidiary effects: "filling up abroad" & increase in the share of diesel cars in the border area Therefore poorer air quality in border towns (which will certainly apply for the Flemish situation).	- 1% compared to basic scenario	<i>no influence on behaviour</i>	<i>no influence on behaviour</i>	<i>no influence on behaviour, slight decline in traffic, therefore, also slight decline in victims of traffic</i>	<i>slight</i>	strong decline (approximately -20%)	slight decline (approximately -10%)	slight decline (approximately -10%)
	General increase in excise duties on fuel (comparable with version 10)	Slight because of the large degree of elasticity in behaviour and car usership in relation to the price of fuels. Also take into account "leakage" abroad (filling up in other countries)	slight: - 1% (price increase of 33% would lead to a decline of 9.34%) ⁶⁴	<i>no influence on behaviour</i>	<i>no influence on behaviour</i>	<i>no influence on behaviour</i>	<i>Dependent on decline in traffic</i>	<i>Dependent on decline in traffic and effect on all vehicles (more diesel cars, LPG, ...)</i> In version 10: almost no decline in these emissions		

⁶⁴ See Flanders mobility plan (calculation by BBL). N.B. The fall in the use of petrol and diesel as a result of the higher prices which were noted during the first half of 2006 (approximately -11%), should also be partly attributed to a fall in the number of Dutch people filling up their cars in Belgium. (Therefore the fall will be smaller than 11%.) Furthermore, it is necessary to wait and see whether this is a temporary phenomenon.

Corridor	Introduction of 'toll' system (corridor duty based on distance)	NOT FEASIBLE BECAUSE OF THE DENSITY OF THE ROAD NETWORK IN FLANDERS								
	Tolls on newly constructed road sections (distance based) (version 4)	A large-scale increase in capacity of the road infrastructure will continue to promote the growth of car traffic. Furthermore, this tax has almost no effect on a regional scale, the tax only works locally. Therefore the introduction of this type is not efficient: traffic increases and consequently the negative effects of mobility and effects on the environment will also increase.	increase in traffic (+1%)	will increase	<i>no influence on behaviour</i>	+ 1%	<i>increase</i>	+ 1%	+ 1%	+ 1%
Cordon or zone toll	Urban tolls. (cf. static duty on staying) (version 7)	Positive (temporary) effect on congestion BUT often not financially feasible. Furthermore, this tax has almost no effect at a regional level, the tax only works at the local level .	-2%	<i>only local effect</i>	<i>only local effect</i>	<i>only local effect</i>	<i>only local effect</i>	(approx.) - 2%	(approx.) -2%	(approx.) -2%
	Duty on passing during peak hour at one point (cordon toll or ring round city). (version 6)	A tax on staying (such as this one) has almost no effect at the regional level, the tax only works at the local level .	-2%	<i>only local effect</i>	<i>only local effect</i>	<i>only local effect</i>	<i>only local effect</i>	approximately -2%	approximately -2%	approximately -2%

MILEAGE CHARGES	Limited form of mileage charge	<p>Congestion charge during peak hours for every km driven (both fixed sum and depending on actual congestion, on main road network and subsidiary road network where there is a congestion problem. (version 8)</p>	<p>- Positive: reducing distances from home to work;</p> <p>- negative: however, business traffic increases because of the increased accessibility, social-recreational traffic is affected less;</p> <p>- increase in the level of use.</p>	- 4%	<i>limited</i>	<i>Modal shift</i> towards railways and inland shipping			approximately - 4 - 5%	approximately - 4 - 5%	approximately -4 to 5%
		<p>Mileage charge for heavy HGV traffic, differentiated by environmental class of vehicle (version 3)</p>	<p>Short-term: reduction in emissions but increased shift towards cleaner trucks (which could also be expected without this measure);</p> <p>Long-term: positive effects on air quality are removed by a <i>modal shift</i> towards "more polluting" inland navigation and railways;</p> <p>In the short term, a mileage charge for all HGV traffic could be useful as a transition towards a general mileage charge.</p>	no reduction						- 3%	- 3%

MILEAGE CHARGES	Partial variability MRB and BPM	Advanced mileage charge Version 1A (complete variability MRB and only a quarter variability BPM).		- 11%	Yes				approximately - 10%	approximately - 30%	approximately - 16%
		Comparable to version II 'partial variability'.	Level of occupation of cars is increased: car pooling is promoted	- 8%	Yes	yes: smallest	-15% injuries - 22% fatalities	- 18%	-28%	- 31%	- 28%
	Complete variability MRB and BPM	Advanced mileage charge. Version 1B (complete variability MRB and BPM).		-16%	Yes	yes			approximately - 14%	approximately - 42%	approximately - 23%
		Comparable to Version I 'complete variability'.		- 11%	Yes	yes: average	- 17% injuries - 23% fatalities	- 19%	-27%	- 30%	-27%
		'Hofstra' version: comparable to complete variability (1B), but less pronounced differentiation: only differentiation by type of fuel and weight of vehicle. (version 2)	A less pronounced differentiation than in the current taxation regime results in a smaller environmental gain and will even lead to greater NO _x emissions. The environmental gains in themselves depend on the increase in the share of diesel.	- 15%					approximately - 19%	approximately + 10 (to + 20%)	approximately 9%
		Advanced mileage charge. (comparable to 1B: complete variability') + extra incentive for purchase of cleaner cars. (= version III bonus-malus)		- 11%	Yes	yes: average	- 17% injuries - 23% fatalities	- 19%	- 32%	- 35%	- 32%

NO budget neutral mileage charge	Differentiated mileage charge) + congestion charge. (version 5= 1A + 8A) Comparable to the differentiated mileage charge + extra environment supplement	- 13%						approximately - 13%	approximately - 32%	approximately - 19%
		- 18%	yes	Yes: largest	- 20% injuries - 26% fatalities	- 20%	- 43%	- 45%	- 43%	

Explanation of table –

- ST: Short-term, LT: Long- term

- Versions I to IV refer to the study: “Effectiveness and Feasibility of an Advanced Mileage Charge” (2000). This study was carried out only for passenger cars and therefore there was no estimate of freight transport! For the versions in this study, an estimate is given of the relative effect on congestion in the study (cf. in table 6: average, smallest, greatest).

- Versions 1-9 refer to the study: “Environmental effects. Paying differently for Mobility” (2005).

- The systems marked in grey are not applicable to the Flemish situation or will not be useful. The reason is outlined in the table.

- Text in italics: No figures available. Indicated on the basis of an estimate of the effects.

Comments

Comment 1: the emission reductions for versions I, II, III and IV were considered with the current fuel mix (BM1). For NO_x and PM₁₀, greater reductions can be achieved in every case with a different distribution of the fuel mix in cars. For CO₂, similar or slightly less favourable effects are achieved with other distributions of the fuel mix.

Comment 2: the percentages indicated for versions I to IV are estimates on the basis of graphs. The exact figures are not always given in the text. It is possible that there is a small error in the estimates. However, the order of size and the relations between the versions are always realistic.

Comment 3: the figures for emissions in the study: “Environmental effects. Paying differently for Mobility” sometimes vary for car traffic and HGV traffic. In that case the table indicated an “approximate” figure and reference is made to the figures in the text or the figure for car traffic is given (so that the results can be compared more effectively with the study of the University of Amsterdam & Peeters). For car traffic, the “middle” column was looked at in every case