

# THE DISTANCE-BASED CHARGING PROJECT IN THE NETHERLANDS

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## ABSTRACT

The Dutch government decided to introduce distance based charging for all vehicles on all roads ('Kilometre Price'). A first step is planned for 2011 and should include HGV above 3.5 tons. By 2016 all passenger cars are to be included in the scheme. The tariff will depend on time and place as well as vehicle characteristics.

## KEYWORDS

Road Pricing, Distance-based charging, TDP-charging, Electronic Fee Collection, EFC, GNSS/GSM, Satellite based tolling.

## 1 INTRODUCTION

The Dutch government has decided to change vehicle-related taxes fundamentally. The road tax (MRB) and the vehicle purchase tax (BPM) will be phased out and road users will pay per kilometre driven, the 'Kilometre Price'. Motorists who use the car infrequently will pay less, whereas those who drive regularly will pay more. In addition, cars that cause more pollution will be more expensive than cleaner cars. Driving in off-peak periods and on quiet roads will be cheaper than driving on busy roads in the rush hour. The revenues will directly feed the so-called Infrastructure Fund. The Infrastructure Fund will be used to finance the construction, management and maintenance of roads, bridges and viaducts.

The Kilometre Price (KMP) aims at three goals. Costs of roads and vehicle use are divided among road users in a fairer way. Although this goal does not seem to justify a complex and costly project on its own, it is vital to win public support. Secondly, the measure is expected to reduce congestion significantly, especially if the tariff is differentiated by time and place. In the third place the measure will have a beneficial effect on the environment. This is caused by an overall reduction in vehicle kilometers, a reduction of vehicle congestion hours and an extra stimulus to buy cars with better environmental characteristics.

The KMP is not intended to generate extra national income: the total income from the current taxes should equal the income from the new scheme. Of course some motorists will pay more while others will pay less.

## **2 BRIEF HISTORY OF ROAD PRICING IN THE NETHERLANDS**

The Netherlands have a long history of attempts to introduce road pricing as a means to reduce congestion. Already in the late eighties, plans for free-flow EFC on congested highways were developed (“Rekeningrijden”). This plan was followed by a technically less ambitious project to introduce a peak-hour vignette for motorways. It was cancelled due to doubts on the effectiveness of the measure. In the mid nineties there was a renewed interest for point charges on the highways in the morning peak hour (“Rekeningrijden-II”, later called “Spitstarief”). The requirement to support payment with bank-issued electronic purses, as well as post-payment via automatic number plate recognition, caused considerable technical challenges. The technical difficulties were overcome in a staged development and procurement process with multiple vendors. Meanwhile political difficulties were growing and finally (2001) opposition reached a level that caused the government to drop the plans.

Road pricing was not off the political agenda however, as the project was replaced by a new one (“Kilometre Charge”), with a more or less similar scope as the current project. This first distance-based charging project was discontinued after a change of government in 2002.

Because traffic volume was ever increasing and the expansion of the road network could not at all keep up with this growth, congestion was getting worse continuously. Some politicians still believed that road pricing would be a crucial component of any effective strategy to improve the situation. As public and political support had always been difficult for road pricing, a platform with a broad representation from employers, trade unions, transport sector, motorists’ organisation, environmental organisations etc. was founded to look for a form of road pricing that would be broadly acceptable. This platform finally reached agreement in 2005 and concluded that a distance-based charge for all vehicles on all roads, with tariffs depending on time, location and vehicle characteristics was the best option and should be realised on the shortest term possible. As a condition for public acceptance, the overall tax burden on motorists should not be raised.

The current government adopted this advice and included the so-called Kilometre Price as one of the focal points of transport policy in its coalition agreement. A ‘significant and irreversible step’ towards the end goal should be taken within the current government period. A number of possible first steps with alternative technologies were investigated but rejected as they would lack public support and might divert from the end goal. By November 30<sup>th</sup> 2007, the government decided that the Kilometre Price should be realised in one go, without any intermediate solution.

### **3 GOVERNMENT DECISION TO INTRODUCE KILOMETRE PRICE**

The text below is an excerpt of the letter that was sent to Parliament by the Cabinet on November 30<sup>th</sup> 2007.

‘The Dutch Cabinet has agreed to the proposal by Minister Eurlings of Transport, Public Works and Water Management to introduce a price per kilometre on all Dutch roads, differentiated according to time, place and environmental factors.

The Cabinet aims to start with freight transport in 2011, which entails an acceleration of the legislation and tendering processes in terms of the critical time path ending in 2012. This will require intensive technical and policy-related cooperation with Belgium, France and Germany. The implementation for passenger cars will follow a year after the launch of freight transport. The complete system roll-out will be scheduled for 2016 and beyond. As part of the introduction of the price per kilometre, there will be extensive trials to test the technology and assess the behavioural and accessibility impacts, especially in the Northern wing of the Randstad (Area around Amsterdam, ‘Noordvleugel’).

During this Cabinet period, the legislation shall be completed, major progress shall be made on converting fixed vehicle taxation (motor vehicle tax, purchase tax and the Euro Vignette for freight vehicles), the operational organization shall be implemented, the technology tested and a start shall be made with freight vehicles under the conditions stated.

In the run up to 2011, there will be tests to gain experience, many focused on the Noordvleugel. This in cooperation with major Dutch companies - in their role as employer - and along with other government authorities. By means of these tests, the Cabinet aims to work with the utmost urgency towards improved accessibility for the major cities. The tests will be voluntary-based and focus on encouraging motorists to avoid peak periods. Covenants on this will be concluded shortly. Compulsory payment by road users cannot be enforced until the legislation is completed and the rechanneling of fixed taxation for road users guaranteed.’

### **4 COSTS**

The current political support, or at least a significant part of it, is conditional to a stringent cost target. The Parliament has accepted a requirement that the operational costs of the system should not exceed 5%<sup>1</sup> of the generated income. The broad market consultation that was carried out in 2006, confirmed that the 5% is rather ambitious for solutions of today.

Main OPEX Cost drivers are:

- Issuing/replacement of defect OBE and OBE for new vehicles, including cost of installation.

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<sup>1</sup> From experience of other pricing schemes 5% seems a very hard target.

- Costs for OBE to backoffice communications. Alternatives to cellular communications (GPRS/UMTS) may offer cost reductions, yet usually have disadvantages e.g. an incomplete geographical coverage.
- Costs for billing and payment collection. A low frequency of invoices helps to reduce costs, but increases credit risks and reduces the effect of feedback on usage to change mobility choices. The use of electronic invoices is another means to reduce costs. It is expected that the portion of invoices that can be issued electronically will steadily increase.
- Costs of enforcement. It should be assumed that various effective attacks on the OBE are possible, and not all these can be detected/reported. Spot-checking on the road is therefore deemed necessary to achieve an acceptable level of compliance. The length of the road network (135.000 km) poses a special challenge to an effective spot-checking approach at moderate costs. Mobile / transportable spot checking may involve a considerable amount of manpower.

## 5 ORGANIZATION MODEL

One of the basic choices to be made concerns the allocation of tasks and responsibilities and the involvement of the private sector. Several organization models have been brought forward. The favorite model so far is the so-called hybrid model, with the following elements:

- The levy is imposed and the payment is collected via a single dedicated back office under public responsibility
- There is an open market for On-Board Equipment allowing vehicle owners to choose from different makes with different additional functionality. OBE has to be certified for the KMP.
- Installation, data collection and aggregation services can also be delivered by certified private operators (service providers). It is assumed that these private service providers may realize synergies by offering value added services using the same infrastructure.

On one hand a model with multiple certified private operators is expected to lead to continuous innovation and low prices as a result of competition. Given the size and complexity of the system, that model is however expected to give insufficient certainty that the service is fully operational for the intended number of users by the start of the Kilometre Price in 2011 and beyond. A back office realized via a public procurement has stronger guarantees for a timely start. The hybrid model reduces the risk while still achieving the market benefits on a longer term. The downside is of course an increase of organizational complexity.

The organization model is currently subject to discussions with stakeholders, including the industry. This may lead to modifications of the preferred model.

## 6 SOME SYSTEM FEATURES

Some envisaged system characteristics are discussed below. It should be noted that firm decisions on these aspects have not been made yet. The upcoming parliamentary debate - and decisions at later stages of preparation/implementation - may lead to changes to the envisaged concept.

### *Any kilometer driven*

It has been decided that the KMP will be due for any kilometer driven, whether on private or public territory. The benefit of this approach is that no data are required on the exact location of all public roads and boundaries of private territory. This eliminates the problem of dealing with the dynamic nature of such information.

### *On-board versus off-board aggregation*

For reasons of privacy protection the envisaged concept is based on a minimum of personal data to be processed ('smart client'). The basic OBE is assumed to aggregate distances traveled over a certain period, per tariff category. Only this information, together with some systems management data is to be reported to the back office. Service providers may choose a different concept, e.g. including collection of tracking data for other services. With explicit consent of the customer privacy concerns can be overcome in this case.

In order to aggregate distance to the corresponding tariff category, definitions of tariff zones (location and time windows) have to be present in the OBE. It is expected that special tariffs will mostly apply to heavily congested road segments and areas. This will only cover a minor part of the road network, no information on the major part of the network is therefore needed in the OBE. Both the data size of the tariff information and the required update frequency can be kept low.

### *Enforcement concept*

The envisaged enforcement concept makes use of ANPR and short-range communication with the OBE. The compliance checking equipment may verify if operational OBE is present in the vehicle, whether the claimed identity corresponds to the visual number plate, whether the current tariff category and location is correct and a few other aspects relating to the correct operation of the unit. A mix of fixed and mobile equipment is foreseen. The use of transportable/mobile equipment is of crucial importance for the enforcement strategy, in order to have a balanced coverage of the large road network to be covered.

A number of other choices regarding systems architecture are currently still subject to discussion.

## **7 TIME SCHEDULE**

The envisaged overall time schedule is summarized in the table below:

Parliament decision on plan for preparation phase	June 2008
Large scale proof of concept	2010 – 2011
Start of operations for freight	2011
Start of operations for passenger cars	2012
All Dutch vehicles included in the scheme	2016