

# The German HGV Tolling System:

*System overview, spatial impacts, first experiences and  
Consequences for future European HGV tolling systems*



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# ***Presentation Contents***

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**Part 1. System Overview**

**Part 2. First Results Concerning  
Traffic and Spatial Impacts**

**Part 3. First Experiences  
Current Political Discussions**



# *Part 1.*

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## System Overview



# ***The German HGV Tolling System - Objectives***

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- To ***charge road users*** for road investment and maintenance costs (-> from taxes to user payments)
- To ***ensure future financing*** of further extensions and maintenance of transport infrastructures
- To give ***incentives*** to shift goods transport to more ***environmental-friendly modes***
- To promote development of ***innovative technologies***
- System development by ***private company*** (Toll Collect), authorisation of this company to ***collect the tolls*** on behalf of the Federal Government



# *The German HGV Tolling System - Features*

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- automatically ***differentiate*** pre-defined road sections that are ***charged from none-charged sections***
- take into account the amount of ***vehicle emissions*** as well as the number of ***vehicle axes***
- '***free flowing system***' (i.e. to calculate the toll without having to stop vehicles)
- '***dual system***' for automatic ticketing as well as manual ticketing without discriminating drivers from foreign countries
- Inclusion of all ***technical requirements*** to be used in future in other countries as well

# Turnpike Road Network

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since 1 January 2005

- only **motorways** are charged with **12.4 Cent/km** (legal basis: Directive 1999/62/EC on *charging of heavy goods vehicles for the use of certain infrastructures*)

- for heavy vehicles

altogether

- **12,000 km of motorways**, divided into 5,200 sections

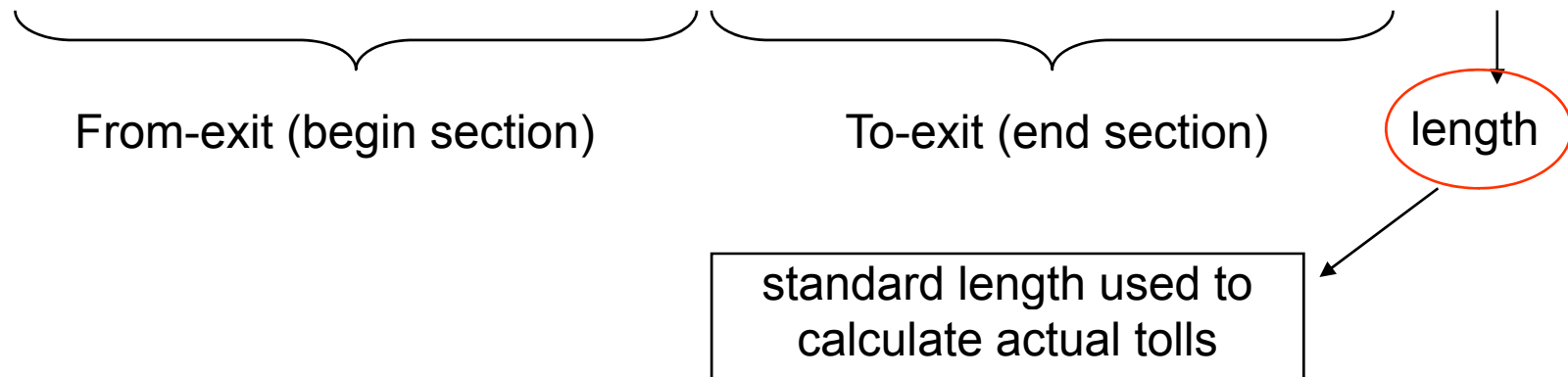
- **2,600 motorway exits**

- **600 parkings**



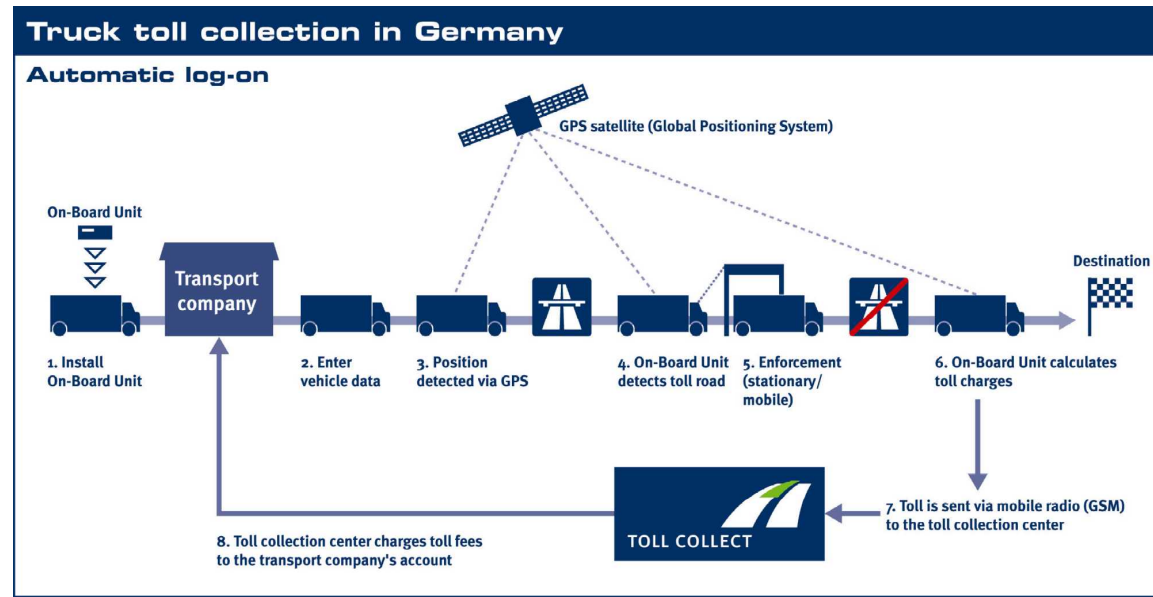
# Road Segments and Costs

A 1						↑
BAB	Von		Nach		Km	
1	-	AN Oldenburg i.H. Nord (Übergang A 1/B 207)	9	AS Oldenburg i.H.-Nord	1,1	
1	9	AS Oldenburg i.H.-Nord	10	AS Oldenburg i.H.-Mitte	1,3	
1	10	AS Oldenburg i.H.-Mitte	11	AS Oldenburg i.H.-Süd	1,0	
1	11	AS Oldenburg i.H.-Süd	12	AS Lensahn	8,2	
1	12	AS Lensahn	13	AS Neustadt i.H.-Pelzerhaken	11,5	
1	13	AS Neustadt i.H.-Pelzerhaken	14	AS Neustadt i.H.-Mitte	5,5	
1	14	AS Neustadt i.H.-Mitte	15	AS Eutin	5,6	
1	15	AS Eutin	16	AS Scharbeutz	2,0	
1	16	AS Scharbeutz	17	AS Pansdorf	3,2	
1	17	AS Pansdorf	18	AS Ratekau	6,6	



# Toll Collect – System Overview

Option 1:  
Automatic detection



Option 2:  
Internet, terminal  
(3,700 all over  
Europe)





# Stationary Toll Terminals (ex. Border DE/PL)

Information on the location of stationary toll terminals are provided through internet:

Maps

Address information



Nr.	Firma	Straße	PLZ	Ort	24h
1	Containerstandort-Zollamt Swiecko/Frankfurt-OA12	TTOC Swiecko II	69105	Swiecko	✓
2	Total Station	Markendorfer Str. 14	15234	Frankfurt / Oder	✓
3	Gerlach Zolldienste GmbH	Zollterminal Swiecko 2	15202	Frankfurt / Oder	✓
4	Shell-Station Quas Handels- und Autoservice GmbH	Berliner Chaussee 99	15234	Frankfurt / Oder	-
5	Aral Autocenter	Frankfurter Straße	15299	Müllrose	✓
6	BAT Biegener Hellen SÜD / Shell	Biegener Hellen Süd	15236	Jacobsdorf OT Pillgram	✓
7	EXPRESSTRANS	Frankfurter Str. 64	15518	Briesen	-
8	Esso Tankstelle	An der B112	15890	Eisenhüttenstadt	✓
9	Containerstandort Biegener Hellen Nord	Biegener Hellen Nord / A 12	15236	Jacobsdorf	✓

## ***Toll Collect – 3-way Control System***

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- ***automatic stationary control*** by means of so-called ‘control bridges’ (300 bridges so far all over Germany)
- ***mobile controls*** through the *Federal Agency for Goods Transport* (Bundesamt für Güterverkehr – BAG)
- ***company controls*** at the premises of the commercial forwarders/operators

# Toll Collect – Enforcement (stationary & mobile)

OBU sensors

cameras



*all pic.: toll collect*

Direct  
communication  
via radio contact

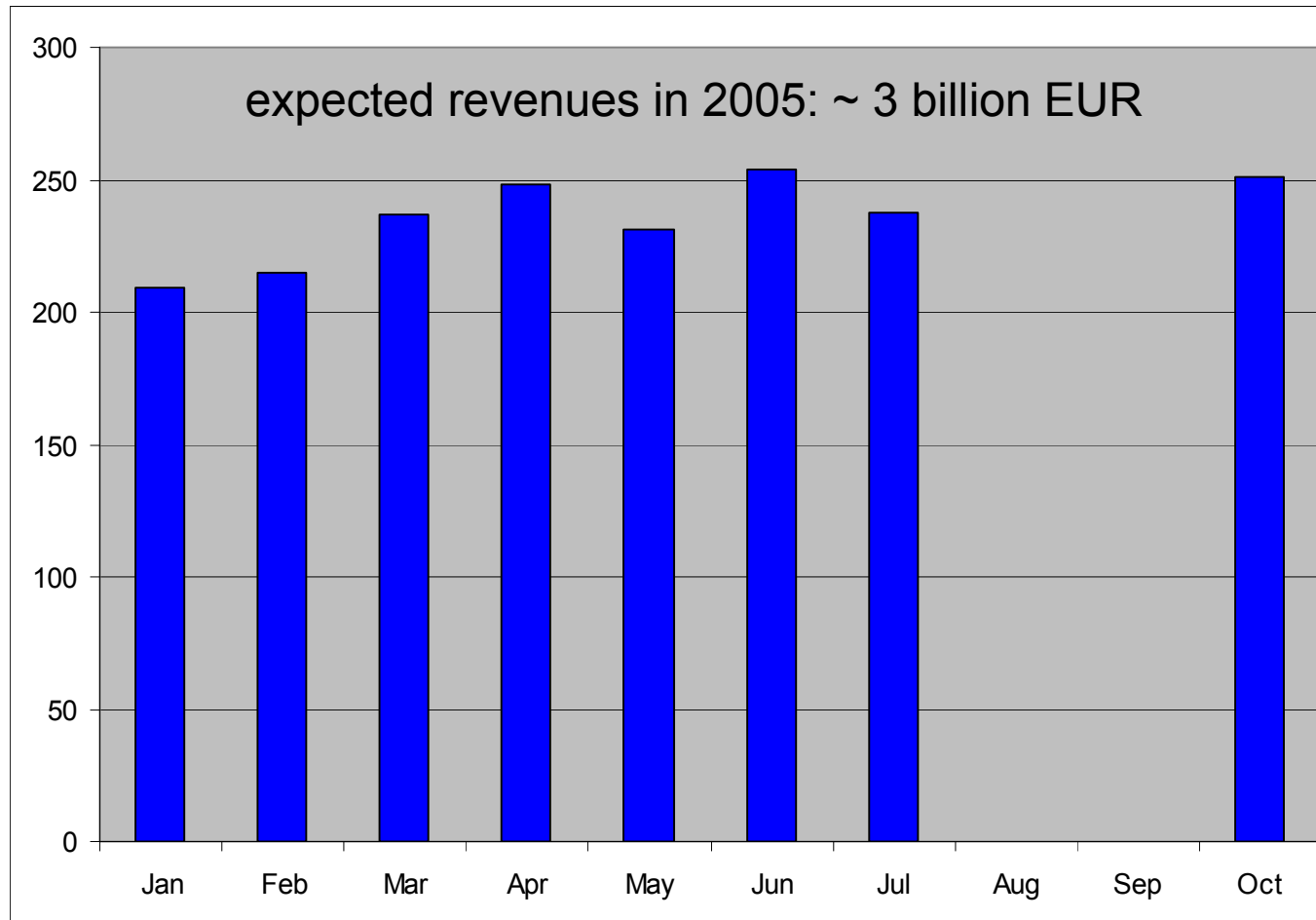
## ***Part 2.***

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# **First Results concerning Traffic and Spatial Impacts**



## Revenues until Oct 2005



Ruidisch et al., 2005;  
BMVBW, 2005

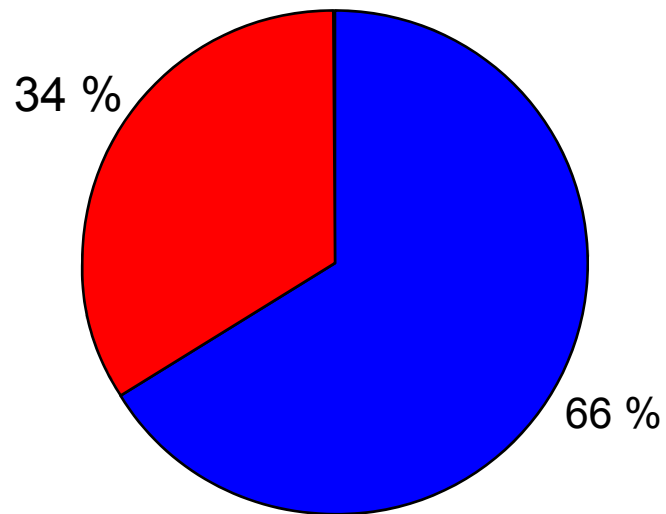
**Revenues earmarked** for targeted transport infrastructure projects, mainly devoted for the further development of the **trunk road network**, but partly also for **railway** and **inland waterway projects**.



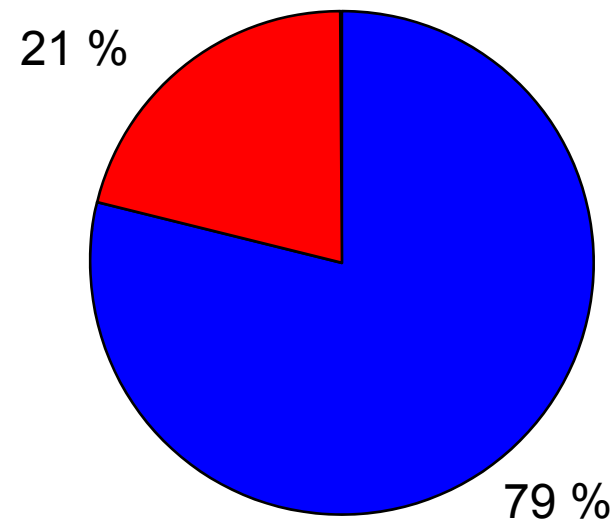
# ***Toll Earnings: Domestic/International***



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**Toll revenues (1st half 2005)**



**Trips (1st half 2005)**



-  German forwarders
-  Foreign forwarders

BAG, 2005

## ***Expected Impact Fields***

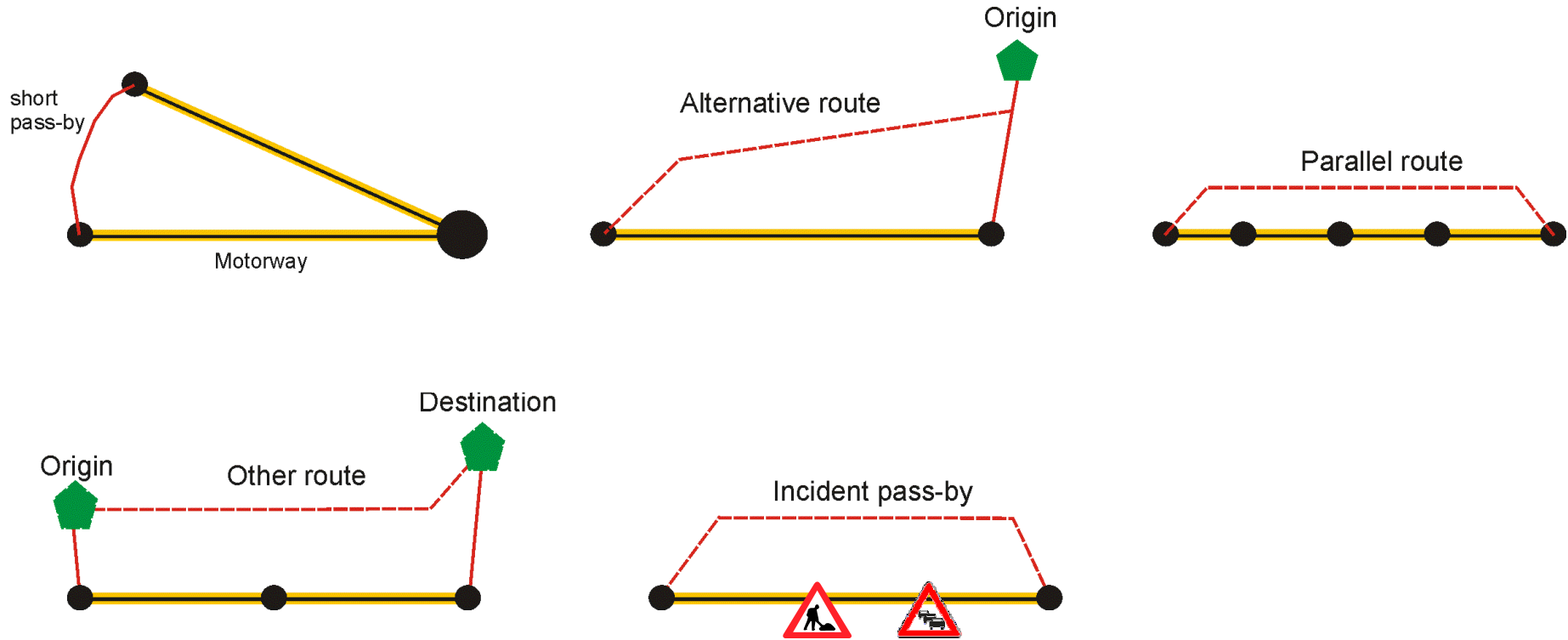
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- ***Route choice (7%)***
- Movements with ***empty trailers*** (deadheads)
- ***Truck weight reduction (< 12 t) (6%)*** and other ***technical measures (8%)***
- ***Passing on*** of tolls ***to orderes***
- ***Modal split***
- ***Re-location of households, firms*** (spatial impacts)
- ***Environmental impacts***

**(8%)** = first survey among German forwarders

no practical experiences so far

# Route choice (Theoretical Considerations)





# Route Choice: From Motorways to Secondary Roads



Shift is of great concern:

It happens **quite often** because of the **high quality of the trunk roads**, but it causes **severe problems within cities and towns**.

## *Empty Movements (Deadheads)*

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First empirical results:

**Reduction** of number of deadheads of about **15 %**



## ***Passing on of Tolls to Orderers***

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General, ***forwarders succeeded*** in ***passing on*** the additional toll charges to the orderers, but:

✘ in ***some market segments*** this turned out to be ***extremely difficult***

✘ for ***local and/or regional transports*** this turned out to be almost impossible

✘ in ***border crossing movements*** German forwarders could not achieve cost-effective prices

✘ Tolls for ***empty movements*** are fully charged to forwarders (exception: exceptional transports)

✓ if the transport is part of an ***overall logistic service***, orderers are willing to take over additional toll costs

but: often ***long-time contracts*** are still in force, so most changes are still to be negotiated between forwarders and orderers



## ***Effects on Modal Share***

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So far, significant effects could not be observed, because:

- many forwarders are ***specialists for road transport***, and see ***little incentives to shift*** to other modes
- for ***overall logistic companies*** it takes time to ***adjust their computer software*** (transition phase not yet completed, maybe greater effects in near future)
- for ***international transports*** the section on German motorways is only small part of overall trip, so ***little incentives to shift*** to other modes
- for ***local/regional transports*** often ***no other mode*** is available at all

but:

- ***general forwarders*** experienced with all modes of transport do have interest in shift to other modes, if it is more cost-efficient
- Shifts might occur as far as ***general logistic services*** are concerned

## ***Part 3.***

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**First Experiences**  
**Current Political Discussions**

## ***Technical Experiences***

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- (too) ***ambitious technical system*** (delay of system start of about 1 year) (-> loss of earnings for federal government. Government tries to enforce 5.1 billion EUR from Toll Collect)
- Installation of ***on-board units*** (OBU, ~ 150 EUR per unit) (-> development of ***support network of lorry garages*** all over Europe)
- Installation of a huge number of ***stationary toll terminals*** all over Germany and also abroad (*Toll Collect Service Network*)
- ***Flexible OBU software*** (->future developments)
- ***Control bridges*** were often mixed up with radar speed traps (->lead to a number of severe accidents)

## ***Political Experiences***

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- Various possibilities for ***system abuse*** (mainly because BAG lacks necessary manpower, 1 staff/142 km motorways)
- ***Discrimination*** of German forwarders (higher taxes compared to other countries, but same charges)
- ***Revenues*** for the first year seems to ***meet expectations, 1/3*** through ***foreign trucks***
- ***System not capable*** to cope with a system ***extension to private cars*** (300,000 trucks vs. 40 Mio cars)
- Toll Collect system also ***recognized in other countries***

# *Transport Experiences*

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- Significant ***shifts in route choices*** (additional congestion problems in secondary road network)
- ***Passing on of additional toll costs*** to orderers ***succeeded*** in many cases, but not always
- ***No effects on shifts in modal share***
- ***Reduction*** of the proportion of ***empty movements*** (15 %)



## ***Current Political Discussions***

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- How to counteract ***abuse*** (~ 2%)? (controls ~ 12%)
- ***Raising per-kilometre charge*** from 12.4 to 15 Cent
- Inclusion of ***indirect costs*** (environmental impacts etc.)
- Distinction between ***high-emitting*** (=higher charges) and ***low-emitting*** vehicles (=lower charges)
- Extension of charged-roads to ***secondary trunk road network*** ('Bundesstraßen', i.e. national roads)
- ***Compensation for German forwarders***
- Inclusion of ***smaller goods vehicles*** (> 3.5 tonnes)
- ***Local tolls*** within cities? ***Closure of roads*** for trucks?
- Extension to ***private cars***
- ***Privatisation*** of German ***motorway network***

## ***Further Information***

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