HGV tolls in Germany based on satellite and mobile communications technology: innovative, environmentally friendly and fair

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Infrastructure (1/2)

- **Federal motorways**
  - Length: 12,000 km
  - Junctions: 2,200
  - Interchanges: 250

- **HGVs liable to pay tolls**
  - approx. 1.5 million p.a.

- **Mileage subject to tolls**
  - approx. 22.7 bn vehicle km p.a.
  - approx. 35% foreign HGVs
### Infrastructure (2/2)

- **Infrastructure costs of federal motorways** | € 7.5 bn
  - Infrastructure costs imposed by HGVs | € 3.4 bn
  - Mileage subject to tolls | 22.7 bn km
  - Average toll rate | 15 cents/km
  - Lower rate to reduce the burden on the haulage industry | 12.4 cents/km
Strategic objectives

- Additional revenue for transport infrastructure funding
- Application of the ‘user pays’ principle
- More efficient use of transport capacities
- Emission-related tolls to protect the environment
- Fairer competition between road transport and the railways
System requirements

- **Free flow of traffic**
  - No need to stop
  - No need to slow down
  - Roadside infrastructure not required

- **Flexibility**
  - Toll variable according to place and time of day
  - Implementation of new toll rates

- **Forward-looking**
  - Unique combination of satellite and mobile communications technology
  - Interface for interoperability with microwave systems
  - Basis for value-added services
Project organization

- Federal Ministry of Transport, Building and Urban Affairs (BMVBS)
- Federal Office for Goods Transport (BAG)
- Consultants
  - TÜV InterTraffic – consulting engineers
  - Freshfields, Bruckhaus, Deringer – lawyers
  - PriceWaterhouseCoopers – financial consultants
  - Bearing Point – project monitoring
Project type: PPP

- One operator for the entire project → PPP
- The tender only stipulated what was to be achieved, but not how; the technology was not prescribed; Europe-wide procurement
- Construction, financing and operation of an HGV tolling system on German motorways
- Pre-financing by the private partner
- All tolls transferred to the contracting authority without any reduction
- Performance-related remuneration
Lessons learned from the project (1/5)

- PPPs make it possible to exploit the strengths of every party involved → win-win situation.
- PPPs require optimum control during every phase of the project.
- Distinctive features of controlling a PPP project
  - project management
  - documentation requirements
  - the general public (important!)
Lessons learned (2/5)

Project management

- PPP management issues are mostly identical to those in other large-scale projects.
- But: 10 years ago, PPP was something very new for public authorities – in some areas of the public sector it still is today.
- There are hardly any PPP experts in the public sector.
- A public authority has to monitor the whole process. It is not enough to order and wait.
- The public sector must develop expertise in the strategic preparation and operational management of PPP projects.
Lessons learned (3/5)

- Documentation requirements

  - Numerous provisions oblige the public sector to thoroughly document all PPP projects (public procurement law; Freedom of Information Act since 1 January 2006).
  - Public authorities must be able to justify any decision taken in a project. The private sector will have to adapt to this situation.
  - Citizens and Parliament have a right to learn how taxpayers’ money has been spent – even years later.
The general public

- PPP projects of this size and nature will always be at the centre of public attention:
  - ‘Tiny’ decisions can lead to considerable public debate.
  - The public get to hear almost everything.
  - Parliament requests information.
  - Journalists investigate.
- A coordinated communications strategy of the public and private sector partners is needed: The partners must present a uniform face to the outside world.
What does all this mean?

- A crucial factor determining whether a PPP-project is successful or not is that the decisions taken have to be easy to understand and communicate.

- Both partners – the public sector and private enterprise – have to be committed to this.
Legal framework

- HGVs with a maximum permissible weight of 12 t or more
- Launched in 2005
- Average toll rate: 12.4 cents/km
- Varied toll rates according to number of axles and emission categories: 9-14 cents/km
- Charges based on the exact number of kilometers driven
- Earmarking of revenue
System structure

Automatic tolling
- GPS
- HGV on-board unit
- Satellite positioning via GPS, data transmission via mobile communications network

Manual booking
- Internet
- Terminal
- Toll Collect data processing centre

Toll revenue invoicing and remuneration, toll recovery and fines

Federal Office for Goods Transport
Automatic Toll Collection - Satellite-based positioning system (GPS) and virtual collection points

- GPS: Global Positioning System
- GSM: Global Standard for Mobile Communications
- AS: Motorway junction

- Virtual collection points

Diagram showing the flow of vehicles through motorway junctions with GPS satellites transmitting signals to the vehicles, which are then processed by a central system via GSM for toll collection.
System structure

Automatic log-on 88 %

Manual log-on

Internet

Terminal

OBU

12 %
2005: € 2.86 bn (gross)
Impact on freight logistics

- The number of loaded runs increased by 2.1% to a total of 82.1 %
- There was an approx. 15% reduction in the number of empty runs
- The number of containers carried by rail increased by about 7 %
Facts and figures (3/4)

**Enforcement**

- Effective enforcement by means of spot checks
- Four different types of spot check
  - Automatic checks backed up by video
  - Stationary checks following automatic checks
  - Mobile checks
  - Checks on the premises of German haulage companies
Facts and figures (4/4)

- **Results of checks**
  - Spot checks: 10 % of trips
  - HGVs checked in 2005: 17.6 m
  - Violations: below 2 % (original estimate: 5 %)

- **Fines**
  - up to € 20,000

- **Fines for first offenders:**
  - Haulier (intentional offense): € 400
  - Haulier (negligence): € 200
  - Driver: half the company fine
Prospects and opportunities

- A key component of Germany’s transport policy has been implemented successfully.
- Toll Collect is efficient and a world leader in tolling technology.
- Opportunities for marketing the technology abroad are available.
- Toll Collect has set the stage for the future development of transport management technology.
Thank you for your attention.