German PPP F-Model:
Why It Failed and What Could Be Improved

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Paper abstract:
The *Warnowquerung*– a tunnel project near*Rostock* which opened for traffic in September 2003 – was Germany's first privately built and operated road infrastructure. Only 15 months later, in December 2004, the banks which had contributed 68 per cent of the capital, warned that a bankruptcy of the tunnel operating company would be unavoidable within one year due to the unexpectedly low number of users. A similar PPP-based tunnel project near *Lübeck*, the *Herrentunnel*, also spectacularly failed to attract the forecast number of users. In this paper, we will identify the causes behind the commercial failure of both projects and propose an institutional redesign of the underlying *F-Modell*, the PPP variant chosen for both tunnels.

1. Introduction

Public Private Partnerships (PPP) in road infrastructure do not have a long tradition in Germany. There are two alternative variants. The *A-Modell* (which will not be discussed in this paper) is used to increase the capacity of congested motorways. The *F-Modell* was developed for bottlenecks such as bridges and tunnels. It was only implemented twice so far, and both projects – a tunnel in Lübeck and another in Rostock – both flopped commercially. In this paper, we aim to identify the underlying causes which led to their commercial failure. We will first provide a detailed overview of the *F-Modell*. This includes an analysis of its substantial conceptual shortcomings which, in our view, doomed the two projects from the very beginning. Finally, we will derive proposals to improve the *F-Modell*forsimilar future road infrastructure PPPs in Germany.

2. Backgrounder: Road Infrastructure Provision in Germany

Germany is no unitary state but a highly decentralized political entity. In short, the country is organized into three layers of government: the Federal level, the 16*Länder* (states) and the 12,312 local municipalities, 2,077 of which are cities. Only in a few fields have policy competences been exclusively assigned to a specific branch of government. By contrast, it is estimated that around 70 per cent of all legislation must be jointly passed by the *Bundestag* – the German parliament – and the *Bundesrat* (Federal Council, the *Länders*' chamber). Transport infrastructure policy is a case in point (*InstitutfürMobilitätsforschung*, 2007, 84ff.). According to article 90 (1) of the German Constitution, the Federal government is the legal owner of all Federal trunk roads, i.e. of *Autobahnen* and *Bundesstrassen*. However, their administration – including the competence for planning and completion –, rests with the respective state governments by proxy. Moreover, the *Länder* exert substantial influence during the entire the planning process concerning Federal road projects (and any other Federal transport infrastructures as well). Formally, the responsibility for transport infrastructure planning at the Federal level resides with the*BundesministeriumfürVerkehr, Bau und Stadtentwicklung* (*BMVBS*; Federal Ministry of Transport, Building and Urban Affairs). Since the 1970ies, the *Bundesverkehrswegeplan* (Federal Transport Infrastructure Plan) has provided a ranking of all Federal transport infrastructure projects, based on a thorough cost-benefit analysis (complemented by an environmental impact assessment and an assessment of potential regional development effects); it has been updated at irregular intervals and on average less than once in a decade. As a rule of thumb only projects with an expected benefit-cost ration >3.0 will be realized. In addition, until very recently, all road infrastructure projects in Germany have been financed out of general and, though to a much lesser degree, transport-specific tax revenues (i.e. the vehicle tax and the gasoline tax). On January 1st, 2005, however, an electronic toll system was introduced for all trucks with a gross vehicle weight over 12 tons which travel on any *Autobahn*. Finally, the *Fernstraßenbauprivatfinanzierungsgesetz* – the Private Financing of Highway Construction Act– of 1994 created the legal prerequisites for levying tolls for road infrastructure use under certain circumstances.

3. The Political Rationale Behind Road Infrastructure PPPS in Germany

While PPPs are a rather common investment model in most industrialized countries, especially in the Anglo-Saxon world, Germany remains a clear 'latecomer' and 'underperformer' by international standards; a recent study by *PricewaterhouseCoopers*(2005, 37) reveals that PPP projects only account for roughly 0.075 per cent of GDP as opposed slightly more than 0.6

per cent in the UK and 1.2 per cent in Portugal. Politically, there werefour main reasons behind the recent attempt to promote private sector participation with respect to road infrastructure projects in Germany (*Beckers/Hirschhausen*,2005):

- the unabated rise of road transport demand, combined with increasing shortage of available public funding, especially due to the enormous fiscal burden of reunification,has given riseto ever more widespread infrastructure bottlenecks and/or a creeping degradation of road quality standards;
- the wish to correct a fundamental flaw of the traditional tax-based provision of road infrastructure: the lack of market-based scarcity signals to guide investment decisions;
- the (asserted) efficiency gains due to private sector involvement; and finally
- the, at least in some political quarters, ideologically motivated will to reduce the size and scope of the public sector.

It is noteworthy in this context, however, that the expected economic benefits of PPPs, which, in a blatant and often uncritical manner, have been highlighted by the politically influential consultancy-driven or industry-sponsored topical literature, have rarely ever materialized in a real world setting. This is because most of these studies completely ignored the often high transactions costs of PPPs and/or the welfare losses which are the result of opportunistic behaviour on both sides (*Mühlenkamp*2006).

4. The F-Modell

Road infrastructure PPPs were illegal under German law until September 1994when the Federal German government enacted the *Fernstraßenbauprivatfinanzierungsgesetz* – the Private Financing of Highway Construction Act. For the first time ever, this new law formally permitted the transfer of all rightsto private investors, including the explicit right to levy tolls, and duties relating to the provision and operation of Federal (trunk) roads (*Autobahnen* and *Bundesstrassen*). It permitted two alternative PPP variants for road infrastructure projects: the *A-Modell* and the *F-Modell.* The *A-Modell*refers to PPPs for road infrastructure expansion projects. Under this regime the private investor will be able to recoup his investment through a share of the toll levied on all trucks using the relevant sector of the *Autobahn* network.The *F-Modell*, by contrast, was designed for PPP projects for *Sonderbauten* – special structures, i.e. bridges, tunnels,and mountain passes. Essentially a variant of a standard BOT-model, it boasts the following features (*Beckers,* 2005, 158ff.; *Gawel*, 2005, 175):

- Carrying out a *F-Modell*-PPP requires the prior approval of both the Federal government and the affected *Länder* government, i.e. suitable projects are selected jointly. In practical terms, the Federal government is formally represented in the process by a specialist unit of the *BMVBS*, which, in turn, is supported by the *Verkehrsinfrastrukturfinanzierungsgesellschaft*(Transport Infrastructure Financing Agency).
- The selection process begins with a feasibility study. The objective is to assess the business case of every single proposed *F-Modell*-PPP beforehand by comparing the estimated project costs with the assumed revenue streams as a function of different toll levels and structures. In case of a positive assessment – i.e. the proposed project is deemed fit for realisation as a *F-Modell* by the government – this analysis also provides the basis for the calculation of the required Federal launch financing and the future toll level.
- A concession may be granted to the future private operator at either of the two following stages: during or after the formal planning approval procedure. The first option is referred

to as the so-called *Ideenwettbewerb* (“idea competition”) and provides the concessionaire with the – albeit risky – opportunity to influence the final technical design of the project. Under option two – the so-called conventional planning approach – the concession is not awarded until after the approval procedure’s conclusion, depriving the concessionaire of any (legal) influence over the technical aspects of the project.

- Formally, the PPP contract is signed between the private party and the respective *Länder* government (or the local authority). It obliges the designated private party to build or expand the road infrastructure in question, to maintain and to operate it over a period of 30 years, and to transfer it back to the public authorities in a pre-defined condition then.
- At this stage, the principal role of the Federal government remains to provide the launch financing for the project, which normally is limited to 20 per cent of the construction costs; in other words, the private party must raise 80 per cent of the funding required for the construction of the infrastructure.
- However, the administration of every *F-Modell*-PPP – subject to a managerial prerogative which rests with the Federal government – remains under the responsibility of the *Länder* government or of the municipality where it is located.
- Most importantly, the toll – which accrues directly to the concessionaire – must be approved beforehand by the *Länder* government. It is noteworthy in this context that the toll approval process does not follow the internationally accepted economic principles of price regulation. Instead, and as required under the provisions of the*Fernstraßenbauprivatfinanzierungsgesetz*, it follows the traditional cameralistic accountancy principles still in use in Germany’s public sector.

At the time of the conception of the *F-Modell*in the 1990ies, the *BMVBS* drafted a list of 32 potentially promising project. By the end of 2005, it had shrunk to a mere 10 projects (*Gawel* (2005, 174). Only 2 of them – both of them tunnels – have actually been completed and have been fully operational for some time: the *Warnowquerung* (i.e. the *Warnow*river crossing) near *Rostock* and the *Herrentunnel* – a *Trave* river crossing – in *Lübeck.* A third *F-Modell*-project – the *Strelasundquerung*, a 4 kilometer-long suspension bridge which was proposed to link the island of *Rügen*, one of Germany’s most popular seaside resorts on the *Baltic Sea*, with the mainland – failed to attract any viable private sector bid during the tendering stage. As a result, the bidding process was halted on April 29th, 2004. The bridge was built nevertheless but entirely financed the traditional way by the Federal government (with the European Union providing some additional funds). Finally, a fourth project, the *Hochmoselquerung* – a bridge across the river *Mosel* – near the cities of *Bernkastel* and *Wittlich* – is currently on hold after the planning approval procedure was declared nil and void by a local court on environmental grounds. Obviously, the *F-Modell* strikingly failed to produce the anticipated results – both at the political level and as a business model. Why this is so shall be the subject of the next two chapters of this paper which will provide detailed case studies of the two show-case projects which were realised: the *Warnowquerung* and the *Herrentunnel*.

5. Two Case Studies: Warnowquerung and Herrentunnel

5.1 The Warnowquerung in Rostock

5.1.1 Project Background

The *Warnowquerung* – a 730 meters long tunnel – was the Federal Republic of Germany's first tolled road infrastructure based on the *Fernstraßenbauprivatfinanzierungsgesetz*. It opened for traffic on September 12th, 2003 and links, as part of *Bundesstrasse B 103*, the east and the west bank of the river *Warnow*, which divides the port city of *Rostock*. While the residential areas including the inner city are clustered in the western parts of the city, most industrial zones including the seaport are located on the eastern bank. The peculiar geography of *Rostock* required long rides – up to 30 kilometers – or a time-consuming ferry crossing (which was ended after the tunnel's completion) to travel between either part of town before the tunnel was available. Moreover, transit traffic of up to 60,000 vehicles per day on *Bundesstrasse B 105* clogged *Rostock's* inner city and caused long delays (*Brantsch*, 2004, 15).

It is therefore unsurprising that the idea for a tunnel solution was floated as early as the 1960ies in former East Germany. Even after reunification, it was repeatedly put on hold for lack of Federal funding as it was never classified as a priority project in the *Bundesverkehrswegeplan* due to an estimated benefit-cost-ratio of only 2.2 (*Beckers*, 2005, 161).

Briefly after the entry into force of the *Fernstraßenbauprivatfinanzierungsgesetz*, *Rostock's* local government, the city council, opted for the realisation of the tunnel project as a *F-Modell* and kicked of an "idea competition" to select the concessionaire. All bidders were provided by the city with a – legally non-binding – traffic estimate which forecast 30,000 vehicle movements on every weekday and 15,000 daily on weekends (*Beckers*, 2005, 161). On July 25th, 1996, the contract was signed with the successful bidder, a consortium led by the French construction company *BouygesTraveaux Public S.A.* Ground was broken on December 1st, 1999. *Bouygues* which hold a 30 per cent share in the consortium today, and *ETI Macquairie*from Australia – which joined in the late 1990ies, acquiring a 70 per cent share – together contributed 20 per cent of the € 219 million construction costs as equity. 68 per cent were financed as a loan by a banking consortium led by *Deutsche Bank*, *NordLB* and *KreditanstaltfürWiederaufbau* (and guaranteed by the *European Investment Bank*). The remaining 12 per cent were state aids from the EU's TEN programme (€ 8 million) on the one hand and from the *LandMecklenburg Vorpommern* and the city of *Rostock* on the other hand. After the expiry of the concession the tunnel will be transferred for free to the city of *Rostock*.

5.1.2 Commercial performance

From the very beginning, actual traffic figures trailed forecast demand by a substantial percentage (Table 1 see next page).

Table 1: *Warnowquerung* - Average Number of Daily Users

Period	Daily users (average)	Target-Performance Comparison (Break-even point: 20.000 cars/day)
Sept 12th – Oct 31st 2003	6.471	**-13.529**
Dec 2003	6.151	**-13.849**
June 2004	7.878	**-12.122**
Dec 2004	7.928	**-12.072**
June 2005	9.122	**-10.878**
July – Sept 2005	9.750	**-10.250**
Oct – Dec 2005	9.190	**-10.810**
Jan – March 2006	8.447	**-11.553**
Apr – Jun 2006	10.160	**-9.840**
July – Sept 2006	11.082	**-8.918**
Oct – Dec 2006	9.742	**-10.258**
Jan – March 2007	9.167	**-10.833**
April – June 2007	10.662	**-9.338**
July – Sept 2007	11.372	**-8.628**
Oct – Dec 2007	9.897	**-10.103**
Jan – March 2008	9.549	**-10.451**
April – June 2008	10.408	**-9.592**
July – Sept 2008	11.461	**-8.539**
Oct – Dec 2008	10.659	**-9.341**
Jan – March 2009	9.253	**-10.747**
April – June 2009	10.631	**-9.369**
July – Sept 2009	11.538	**-8.462**
Oct – Dec 2009	9.617	**-10.383**
Jan – March 2010	8.509	**-11.491**
April – June 2010	12.009	**-7.991**
July – Sept 2010	13.213	**-6.787**
Oct – Dec 2010	10.890	**-9.110**

Source: *Macquarie Infrastructure Group* (several years)

According to an estimate made by the CEO of *Warnowquerung GmbH*, the tunnel operating company owned jointly owned by *Bouyges* and *Macquairie*, before of the official opening, the number of daily users required to recoup the investment costs, would be 20,000 cars per days at the minimum (*Hamburger Abendblatt*, 2003). based on the original toll levels. Depending on the season – with summer charges being higher – and type of payment these were initially set at € 1.50 (€ 2.50 in summer) per crossing for passenger cars and at € 9 (€ 17.50 during the summer season) for lorries. As Table 1 above revealed, even today – almost 5 years after the opening – the actual number of users stills falls around 50 per cent short of the profitability threshold. Worse still, traffic growth rates are on the decrease, and absolute traffic figures seem to have hit their peak, too.

The most important forecasting error was the way too optimistic demand estimate for lorries whose number failed to exceed 2 per cent of all users in the first months after the opening (*Hamburger Abendblatt*, 2004). In fact, most trucking companies continue to direct their drivers to by-pass the tunnel and make a detour of about 10-15 kilometers on free public roads instead of paying a € 17.50 toll per ride during the summer peak season. As early as December 2004, the then 14 banks which had financed 68 per cent of the investment costs, publicly warned of the imminent bankruptcy of the tunnel operating company if traffic volumes were to remain at the unexpectedly low levels. After two years of negotiations, in June 2006 the city of *Rostock* agreed to prolong the concession by 20 years to a total of 50 years to enable the concessionaire to recoup its investment over a longer period of time (*Deutscher Bundestag*, 2007). In other words, the tunnel will become toll-free only in 2056. In addition, the *Warnowquerung GmbH*was permitted to rebalance its toll structure by substantially increasing charges for passenger cars while lowering tolls for trucks as of January 1st, 2007. Another increase for passenger car tolls and the discounted toll for those users who agreed to direct debit authorisation was implemented in March 2008.

5.2 The Herrentunnel in Lübeck

5.2.1 Project Background

Before the opening of the *Herrentunnel*, the only road crossing the *Trave* river to link *Lübeck* and the neighbouring port city of *Travemünde* on the *Baltic Sea* was the *Herrenbrücke*, a bascule bridge. The bridge, an integral part of *Bundesstrassen B75* and *B104*, was used by 38,000 vehicles per day on average, but has to be closed for road traffic several times a day to accommodate passing ships, resulting in frequent traffic jams.

In 1995, the local authorities had found the bridge – which was opened in 1964 – to be in state of dilapidation. However, the Federal government as the owner refused to fund the more costly replacement tunnel proposed by the city, but accepted to finance a replacement bridge instead. To overcome the stalemate, the Federal government and the city of *Lübeck* agreed on a compromise which permitted *Lübeck* to realize the tunnel solution while the Federal government pledged to commit as much money to this project as the construction of a new bridge would have cost (*Beckers*, 2005, 163). As was the case with respect to the *Warnowquerung*, the city of *Lübeck*, in 1998, also opted for an “idea competition” to determine the concessionaire. On March 12th, 1999, the contract was signed with the successful bidders: the German construction companies *HOCHTIEF PPP Solutions GmbH* and *Bilfinger Berger BOT GmbH*, which jointly set up (and fully own) the tunnel operating company *HerrentunnelLübeck GmbH & Co. KG.*

After the completion of the formal planning approval procedure in February 2001, construction began in mid-October 2001. The tunnel, which is 830 meters long, while the concession road has a total length of 2.215 meters, opened for traffic on August 26th, 2005. After September 2006, the old *Herrenbrücke* – the bridge replaced by the tunnel – was demolished. Total investment costs for the tunnel were € 179 million, € 89 million of which were shouldered by the Federal government as a lost grant, 34 per cent of the sum was financed by a private banking consortium on commercial terms and 11 per cent were raised by the concessionaires. The operating concession is valid until 2035 when the utilisation rights will be transferred to the city of *Lübeck*(*HOCHTIEF PPP Solutions*, 2005).

5.2.2 Commercial Performance

Commercially, the *Herrentunnel* turned out to be a similar ‘white elephant’ as previously the *Warnowquerung*. After a bad start – the toll could not be collected in the first weeks after the opening due to technical problems with the on-board units used by many frequent users – demand remained substantially lower than forecast. By May 2006, only 22,000 cars were counted on average a daily basis, 10 per cent of which were trucks (*KielerNachrichten*, 2006). This is down from the 38,000 cars that had crossed the *Herrenbrücke* before and about one third less than at least 30,000 forecast by the concessionaire (*Hamburger Abendblatt*, 2006a and 2006b). Instead, the number of cars on toll-free by-passes such the *Autobahnen A 1*and *A 226* – a detour of 5 kilometers – rose by 16,000 (*Hamburger Abendblatt*, 2006b). Meanwhile, *Bilfinger Berger*opted for a complete write-off of its investment, while *HOCHTIEF PPP Solutions* was content with a write-off of two thirds of its share. Moreover, in an attempt to reduce losses, the toll – initially set at € 0.90 per passenger vehicle instead of the originally announced € 0.51 – was increased twice, on October 1st, 2006 (with a consequential drop in demand to the tune of 1,000 cars a day) (*LübeckerNachrichten*, 2007), and on January 1st, 2008. It now stands at € 1.20 (and at € 9.50 for heavy vehicles); discounts are available for the Quick-box electronic toll collection option. Finally, at the request of the concessionaires an extension of the concession from 30 to 50 years is currently on the negotiation table.

5.3 Critical Assessment – Why Did the *F-Modell* Fail?

The potential advantages of the *F-Modell* over the traditional tax-based public provision of road infrastructures are obvious. Not only is it the first step of the transition towards a user-pays system which should allow for more efficient infrastructure allocation decisions. Moreover, it has the potential to partly alleviate – though not nearly completely solve – the problem of chronic underinvestment in much-needed road infrastructures in Germany due to the bad shape of public finances in general (including the extraordinary fiscal burdens caused by reunification) and the lack of a legal requirement to fully reinvest the revenues generated by road-transport related taxes into the maintenance and expansion of the road network in particular. Finally, more widespread use of the *F-Modell* might, at least on paper due to the strong incentives for private investors to recoup the costs of their investment as quickly as possible, also speed up the completion of eligible road infrastructure projects.

Unfortunately, the practical lessons learned from the two operational *F-Modell*-PPPs and the fact that most other proposed projects simply failed to attract any private sector interestat all – especially after the first two show-case projects quickly turned out to be ‘white elephants’ rather than attractive investment opportunities –, gives rise to a pessimistic overall assessment of their merits, for the following reasons:

- To begin with, it remains doubtful that any meaningful cost savings compared to the traditional approach could be realised. On the hand, due to their lower ratings, the private investors had to raise the necessary capital at higher interest rates than the government could have. On the other hand, contrary to what was expected beforehand, project implementation from the design stage until the official opening took nearly as long as for comparable strictly public infrastructure projects.
- More importantly, in order to increase the attractiveness of *F-Modell*-PPPs for the private sector, projects risks must be more evenly and fairly allocated between the public and the private parties. Due to the sunk cost characteristics of road infrastructure investments and the extraordinary long time span over which the – often substantial – investment costs must be recouped, the commercial viability requires, with a vengeance, the absence of incalculable political risks. In other words, private investors should be guaranteed some protection against (or compensation for) future political decisions which would have a massive negative impact on their investment. The tax-funded provision of competing toll-free infrastructures after the completion of the toll project – which actually happened in

Lübeck and which effectively killed a third *F-Modell*-PPP, the *Strelasundquerung*, at a very early stage[1] – is a case in point.

- All parties involved massively overestimated future demand levels, resulting in actual traffic volumes falling way short of forecast ones – often by a factor of 100 per cent. Incredibly enough, the private investors failed to take into account some long-standing and well-documented demographic and socio-economic trends which would later turn out to have a strong negative impact on their investment. For example, the city of *Rostock* – like most other East German cities – lost 20 per cent of its inhabitants during the first decade after reunification due to two-digit unemployment rates, and a further reduction by another 15 per cent by 2020 is likely (*Klingholz/Kröhnert/Olst*,2004). Moreover, the number of users of the ferry link which was to be replaced by the tunnel, had shrunk from a peak of 3,500 vehicles per day to around 1,000 to 1,300 due to the expansion of the toll-free road network (*Brantsch* 2004/05, 18).
- In addition, in all cases the reluctance of potential users to pay for the use of a road was substantially higher than anticipated – though hard to explain rationally, given the fact that the additional costs of by-passing the toll road (time, extra fuel etc.) often exceeded the user charge. One possible psychological explanation might be that German motorists have grown accustomed to use the road network 'for free' – unaware that it has been financed by their taxes, including road transport-related specific taxes such as the car tax and the gasoline tax. Alternatively, there seems to exist a widespread feeling that due to already the high tax burden, any additional charge for using the road network is simply a rip-off without any benefits for the user and should therefore be avoided at any cost. It is open to debate whether the inclusion of passenger cars into the *Autobahn* toll system some time in the future, if it were combined with a compensatory reduction of the car and/or gasoline tax, might improve the acceptance of road users charges which would, in turn, brighten up the prospects of future *F-Modell*-PPPs as well.
- It is noteworthy in this context that the aforementioned acceptance problem is severely compounded by the specific legal rules which regulate the calculation of the toll (and the overall toll structure) the concessionaire is allowed to charge under the *F-Modell* (*Kirchner*, 2007, 3f.). As mentioned above, the formal procedure and legal requirements differ strikingly from the principles of price regulation in one crucial aspect: the toll is legally considered to be a user fee in the meaning of German administrative law (*Gebührenrecht*). This severely restricts the pricing strategies the concessionaire is legally allowed to pursue. To be more precise, the toll must include the actual cost of the service offered. Due to the high ratio of fixed to total costs which must be reflected by the calculation, short-run marginal cost pricing – e.g. in the guise of a toll-free passage during the late night period, when demand is extremely low – would run afoul of the law. By the same token, the concessionaire is not allowed to charge a below-cost introductory toll (i.e. to practice penetration pricing) after the opening of the facility in order to attract a large number of users and to familiarize them with the toll system. To conclude, the current legal requirements effectively prevent any meaningful price discrimination among different groups of users to exploit their varying willing to pay or differential pricing over the life-cycle of the investment with low tolls initially, followed by higher tolls during later periods.
- Finally, there is a potentially harmful conflict of interest between the Federal government on the one hand and the affected *Länder* government (and/or local government) on the

[1] The *Länder* government demanded that the *Rügendamm* – the old link between the mainland and the island of *Rügen* – would remain open for traffic at no charge after the completion of the new (parallel) tolled suspension bridge. Predictably under these conditions, all potential private investors decided to drop out of the bidding process as a result.

other which may effectively thwart a *F-Modell* solution – which it did at least in the case of the failed *Stelasundquerung*. While under the traditional system the Federal government provides all the funding with most of the economic benefits accruing to locals, under the *F-Modell* it is the local politicians who have to 'sell' the switch-over from a (publicly perceived) free-of-charge road system to a toll system which primarily affects their local electorate. For obvious reasons, local political and media support for a toll-based solution has so far been lacklustre at best in the case of most proposed *F-Modell*-PPPs (and, for that matter, *A-Modell*-PPPs as well) (*Gawel*, 2005, 181).

6. Conclusion and Outlook

In Germany, the track record of road infrastructure PPP projects so far has not only been disappointing, but outright dismal. Nevertheless although substantial private sector involvement will without any doubt be crucial to maintain a high-quality road network and to overcome the rapidly rising number of infrastructure bottlenecks which to a great deal reflect shifting trade and production patterns and the resulting increasing in transit traffic after the 2005 Eastern enlargement of the EU. Under the current legal and institutional framework and given German motorists' persistent 'free-ride' mentality, it remains doubtful, however, that the role of the private sector will increase as required any time soon.

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