20 years of German rail reform and Deutsche Bahn AG

Outline

Commissioned by:

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CONTENTS

A. Background and objectives  Page 3
B. Situation prior to the rail reform  Page 6
C. The rail reform  Page 11
D. Review of the rail reform  Page 15
E. Future challenges for transport policy and the rail sector  Page 22

Appendix  Page 30
A.

BACKGROUND AND OBJECTIVES
Situation when the "Twenty years of German rail reform" study was commenced

RAIL REFORM 1994

Principal legislative objectives
> To increase rail traffic
> To relieve the federal government's budget

Instruments used in implementation
> Reichsbahn and Bundesbahn transformed into joint stock company with strict entrepreneurial approach
> Debt relief and assumption of inherited financial burden by government
> Responsibility for infrastructure financing and public administration duties remain with government
> Responsibility for regional passenger rail services transferred to individual federal states
> Opening up of rail transport markets to competition

CURRENT CHALLENGES

> Financing of investment in infrastructure
> Acceptance for major infrastructure projects
> Environment, climate protection, noise control
> Changes in customers' mobility needs and increasing quality demands
> Vehicle availability and reliability
> Factor costs and cost-effectiveness in rail freight transport
> Attractiveness of tender in regional passenger rail transport
> Growth of transport markets
> Requirement for companies to demonstrate social responsibility
> Fierce competition for specialist staff in ageing society

Objectives of the "Twenty years of German rail reform" study:
> To investigate to what extent the objectives of the rail reform have been achieved
> To identify future areas for action in transport policy and the rail sector
To meet the current challenges, measures to improve financing and regulation in particular are being discussed.

Overview of requirements

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>CONTENT</th>
<th>STAKEHOLDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Further unbundling of infrastructure and</td>
<td>&gt; Call for further unbundling, at least a ban on transfer of profit and</td>
<td>&gt; EC (Fourth Railway Package draft)</td>
</tr>
<tr>
<td>operations</td>
<td>loss from infrastructure to holding company</td>
<td>&gt; Bündnis 90/Grüne party</td>
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<tr>
<td></td>
<td></td>
<td>&gt; FDP party</td>
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<tr>
<td>Additional regulation</td>
<td>&gt; Stricter regulation of charges for rail infrastructure and stations</td>
<td>&gt; Former government (Rail Regulation Act draft)</td>
</tr>
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<td></td>
<td>&gt; Stricter access regulation for rail infrastructure and service</td>
<td>&gt; Federal states</td>
</tr>
<tr>
<td></td>
<td>facilities</td>
<td></td>
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<tr>
<td></td>
<td>&gt; Abuse control in areas of sales and traction power</td>
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<tr>
<td>Improved infrastructure financing and</td>
<td>&gt; Prioritize elimination of investment backlog for existing network</td>
<td>&gt; Daehre Commission</td>
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<tr>
<td>development</td>
<td>&gt; Eliminate investment backlog for expansion and new construction</td>
<td>&gt; Bodewig Commission</td>
</tr>
<tr>
<td></td>
<td>projects</td>
<td>&gt; Pro-Rail Alliance</td>
</tr>
<tr>
<td></td>
<td>&gt; More transparency in use of government funds</td>
<td>&gt; VDV</td>
</tr>
<tr>
<td>Contracting of services and financing in</td>
<td>&gt; Organisation of Europe-wide competitive invitations to tender</td>
<td>&gt; BAG-SPNV</td>
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<tr>
<td>regional transport</td>
<td>&gt; Lean contract-award procedures that are attractive to RUs</td>
<td>&gt; VDV</td>
</tr>
<tr>
<td></td>
<td>&gt; Standardisation of vehicle requirements</td>
<td>&gt; Federal states</td>
</tr>
<tr>
<td></td>
<td>&gt; More dynamic approach to regionalisation funds (Regionalisierungsmittel)</td>
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</table>
SITUATION PRIOR TO THE RAIL REFORM
Pressure on politicians to take action led to cross-party consensus on introducing comprehensive rail reform in 1993

Situation prior to the rail reform

- Decrease in market share for rail operations
- Little success achieved in previous attempts to reform
- Anticipated growth in traffic due to opening of borders to East and European integration
- Increasing environmental awareness

Cross-party understanding that a COMPREHENSIVE RAIL REFORM was necessary to manage the challenges

- Huge budget risk presented by the two national railways
- Both railways paralysed by political influence
- Integration of Reichsbahn (time pressure of granting workforce civil service status by 1 January 1994)
- Realistic recommendations made by Bundesbahn government commission

Source: Interviews conducted for the "Twenty years of rail reform" study, Roland Berger research
Bundesbahn transport volumes increase until 1990 less strongly than the market as a whole – intermodal market share dropped sharply

Development of freight and passenger transport volumes at Bundesbahn

### RAIL FREIGHT TRANSPORT
[transport volume in tkm billion, share of modal split in %]

<table>
<thead>
<tr>
<th>Year</th>
<th>Transport Volume</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>39</td>
<td>56%</td>
</tr>
<tr>
<td>1955</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>1960</td>
<td>53</td>
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<tr>
<td>1965</td>
<td>58</td>
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<tr>
<td>1970</td>
<td>72</td>
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<tr>
<td>1975</td>
<td>55</td>
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<tr>
<td>1980</td>
<td>65</td>
<td></td>
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<tr>
<td>1985</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>62</td>
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</tbody>
</table>

### RAIL PASSENGER TRANSPORT
[transport volume in pkm billion, share of modal split in %]

<table>
<thead>
<tr>
<th>Year</th>
<th>Transport Volume</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>32</td>
<td>37%</td>
</tr>
<tr>
<td>1955</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>1960</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>1965</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>39</td>
<td></td>
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<tr>
<td>1975</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td></td>
<td>6%</td>
</tr>
</tbody>
</table>

Source: "Verkehr in Zahlen 1991" (government transport figures published annually)
Up until reunification Reichsbahn had a high market share – in 1990 a steep decrease in freight and passenger transport was seen.

Development of freight and passenger transport volumes at Reichsbahn

**RAIL FREIGHT TRANSPORT**
[Transport volume in tkm billion, share of modal split in %]

**RAIL PASSENGER TRANSPORT**
[Transport volume in pkm billion, share of modal split in %]

Source: "Statistisches Jahrbuch der DDR 1990" (GDR government statistics)
Germany's railways were in dramatic state – public budget required to support them up to year 2000 would have been DM 400 billion

Future scenario in budget plan for 1991 to 2000 [in DM billion]

Source: Bundesbahn government commission 1991
C. THE RAIL REFORM
The purpose of the rail reform was to increase rail traffic and provide permanent relief for the federal budget

Overview of targets and instruments of the rail reform

**TARGETS** of the rail reform

- To increase rail traffic
- To relieve the federal government's budget

**INSTRUMENTS** used in the rail reform

- Reichsbahn and Bundesbahn transformed into joint stock company with strict entrepreneurial approach
- Debt relief and assumption of inherited financial burden by government
- Responsibility for infrastructure financing and public administration duties remain with government
- Responsibility for regional passenger rail services transferred to individual federal states
- Opening up of rail transport markets to competition
As part of the rail reform, the German constitution had to be amended, seven new laws passed and 130 further laws changed.

Overview of legal changes implemented in the reorganisation of government duties

**GERMAN CONSTITUTION (Grundgesetz)**

New versions of articles
- **Art. 87e:** Federal railways to be operated as a private company. The government assumes responsibility for guaranteeing services of general interest
- **Art. 106a:** The federal states receive grants for regional passenger rail transport
- **Art. 143a:** The government continues to have power to legislate on matters of the federal railways, also as private companies

Amendments to articles
- Four further articles of the German constitution were also amended

**RAILWAY RESTRUCTURING ACT (ENeuOG)**
- Law on the merging and reorganisation of the national railways (BEZNG)
- Law on the foundation of Deutsche Bahn AG (DBGrG)
- Law on the administration of rail traffic by the government (BEVVG)
- Federal Railway Infrastructure Development Act (BSchwAG)
- General Railway Act (AEG)
- Law on the improvement of the personnel structure at the Federal Railway Property Agency (BEV)
- Regionalisation Act (RegG)

In addition, more than 130 laws and regulations had to be changed.
The "inner rail reform" prepared the way for transforming Deutsche Bundesbahn and Reichsbahn into DB AG

"Inner rail reform"

Transformation elements at DB AG

> Systematic management of entire project (reorganisation, establishing accounting systems, programmes for action) with corresponding resources
> Multi-stage plan for reorganisation (starting structure 1 January 1994, target structure 31 December 1996)
> Rationalisation measures implemented across all business units
> Mobilisation of employees by means of broad-ranging and comprehensive training programme ("Brücke")
> Identification of executives and employees with achieving positive annual results
> Early involvement of trade unions and support during transformation from employee representatives
> Principle of relationship with social partners: no redundancies to be made for operational reasons; 1:1 transfer: every employee guaranteed a job at DB AG
> One Chairman of Board for Bundesbahn and Reichsbahn (from 1 September 1991)
> Hiring of executives from private companies for lateral entry

Source: Interviews, old project documents
D. REVIEW OF THE RAIL REFORM
Transport volumes in Germany rose by around 58% in freight transport and 36% in passenger transport following rail reform.

**Development of freight and passenger transport volumes**

**RAIL FREIGHT TRANSPORT**
[share of modal split in %, transport volume in tkm billion]

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<tr>
<td>Freight transport</td>
<td>70</td>
<td>70</td>
<td>74</td>
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<td>77</td>
<td>83</td>
<td>81</td>
<td>85</td>
<td>92</td>
<td>107</td>
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<tr>
<td>Share of modal split</td>
<td>16.8</td>
<td>16.4</td>
<td>15.8</td>
<td>16.2</td>
<td>15.7</td>
<td>16.1</td>
<td>17.2</td>
<td>17.7</td>
<td>17.1</td>
<td>17.2</td>
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<tr>
<td>Market share rail</td>
<td>+58%</td>
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**RAIL PASSENGER TRANSPORT**
[share of modal split in %, transport volume in pkm billion]

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</thead>
<tbody>
<tr>
<td>Passenger rail transport</td>
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<td>71</td>
<td>72</td>
<td>72</td>
<td>73</td>
<td>74</td>
<td>75</td>
<td>76</td>
<td>71</td>
<td>71</td>
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<tr>
<td>Share of modal split</td>
<td>6.8</td>
<td>7.3</td>
<td>7.3</td>
<td>7.5</td>
<td>6.9</td>
<td>6.9</td>
<td>7.5</td>
<td>7.8</td>
<td>7.8</td>
<td>8.2</td>
</tr>
<tr>
<td>Market share rail</td>
<td>+36%</td>
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</table>

Source: "Verkehr in Zahlen 2012/13" (government transport figures published annually)
The rail reform brought considerable relief for the government budget – annual budget requirement sank by EUR 4 billion

Government funding for the railways in Germany [in EUR billion]¹)

1) Payments made by DB in the form of taxes and contributions not included, repayment of inherited debts not included from 1999 onwards; regionalisation funds from 1996, equivalent figures given for regional passenger rail transport services in 1994 and 1995

Source: German Federal Ministry of Transport, Building and Urban Development (BMVBS); DB AG annual reports
Positive developments can also be seen in other corporate areas – customer satisfaction is however stagnant

Overview of other indicators of success – DB AG as a company

**GROWTH AT DB AG**
- Revenues and results increased, ROCE 2012 8.3%
- Productivity clearly increased in all areas
- Organisation developed further (realisation of synergies and implementation of EU unbundling requirements)

**CUSTOMER FOCUS**
- Range of products and journey times improved
- Vehicle fleet modernised
- Price increases in long-distance transport below average (1.4% p.a.; inflation 1.6%, price increases at transport associations 3.2%)
- Customer satisfaction stagnant

**EMPLOYEES**
- Despite acquisitions, total employee number dropped by 10% to 299,347; in main rail segment in Germany by around 50% to some 150,000; in recent years new increase
- Staff structure (proportion of women/part-time positions) changed in line with labour market trends

**ENVIRONMENTAL PROTECTION**
- Relative CO\textsubscript{2} emissions reduced by 40%, absolute emissions by more than 10%\textsuperscript{1)}
- Considerable noise abatement efforts made

\textsuperscript{1)} Includes third-party railways
Overview of other indicators of success – national economy

**COMPETITION**
- Competitors’ market share increased steadily from 2000 to 2012: regional passenger rail: 25% (train-km), rail freight: 29% (tkm)
- Little intramodal competition in long-distance transport (<1% of train-km)
- Increasing intermodal competition from low-cost airlines and liberalised long-distance bus market

**REGIONALISATION**
- Regional passenger rail transport volumes up by 69% since 1994
- More efficient use of public funds – fees for running transport services down by 21% per pkm
- Disadvantages from heterogeneous ordering behaviour by regional transport authorities

**INFRASTRUCTURE**
- Level of equipment/facilities much improved, volume reduced
- DB’s own contributions rose more strongly (+59.4%) than construction grants (+9.7%)\(^1\)
- Public investment in rail infrastructure lower than in other countries, supply shortfalls foreseeable

**COMPETITIVE FRAMEWORK**
- Ongoing development of regulatory requirements
- Problems particularly in vehicle approval by Federal Railway Authority
- Competition conditions different to those for other modes of transport

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1) In both cases 3-year average for 2010-2012 compared with 1994-1996
The view that the rail reform was a success is supported by transport experts and protagonists of the reform in interviews

Selected quotes from interviewees (1/2)

"The rail reform was one of the most successful reforms of the post-war period."

Matthias Wissmann, Federal Minister of Transport 1993-1998

"Critics should ask themselves where the German railways would be today if there had been no rail reform."

Dr. Heinz Dürr, CEO and Chairman of the Management Board of DB AG 1991-1997

"Had the unions not been so willing to cooperate, the rail reform would not have succeeded."

Dr. Johannes Ludewig, CEO and Chairman of the Management Board of DB AG 1997-1999

"The development into an integrated group did not meet the rail reform's objectives."

Dirk Fischer, Member of the German Bundestag since 1980

"The transformation of the state-run railways into a business-led joint stock company was a huge success."

Prof. Dr. Gerd Aberle, member of the Bundesbahn government commission

"One factor behind the success of the rail reform was the ideal mix of people involved – a combination of railway experts and lateral entrants."

Roland Heinisch, former Member of the Management Board of DB AG and Chairman of the Board of DB Netz AG
Nevertheless, in some aspects a need for adjustment is seen

Selected quotes from interviewees (2/2)

"Infrastructure quality has increased markedly since 1994; some aspects still need improving, however, like noise protection and shortfalls (e.g. seaport hinterland transport)."
Thomas Kohl, former department head in the Federal Ministry of Transport

"Railway regulation in Germany has become so complex that only a few people understand it."
Susanne Henckel, Managing Director of BAG-SPNV, federal working group for regional transport authorities

"Rail sector companies are experiencing major economic setbacks in particular due to the incalculable risks presented by the approval process. This approval debacle has also led to vehicle manufacturers losing face internationally after they were forced by the process to delay deliveries."
Friedrich Smaxwil, former President of the VDB, German Railway Industry Association

"Errors were made in the regionalisation of local passenger rail transport (development of absolute regionalisation funding and too little monitoring of the use of funds)."
Hans Eichel, Minister-President of the federal state of Hesse 1991-1999, Federal Minister of Finance 1999-2005

"The regional passenger rail services on offer have undergone a quantum leap in terms of quality."
Dr. Holger Krawinkel, Federation of German Consumer organisations (VZBV)

"Regionalisation was one of the strengths of the rail reform; however, the key for distributing funds, which does not take into account traffic potential, is problematic."
Diethelm Sack, CFO DB AG 1991-2011
E.

Future challenges for transport policy and the rail sector
Six central areas for action result from the evaluation of the rail reform and developments in the railway community

Outcome and areas for action

**Rail reform MAJOR SUCCESS**
- Increase in transport volumes, stabilisation of intermodal market share
- Clear reduction in the need for public funds
- Positive economic growth at DB AG
- Increased competition
- Improved range of regional passenger rail services
- Reduced environmental impact (e.g. CO₂ emissions)

**Need for ADJUSTMENT**
- Infrastructure financing/development
- Tenders in regional passenger rail transport
- Customer satisfaction at DB AG
- Regulation, vehicle approval

Establish a target system to ensure more transport on the rails and integration of the different modes of transport. Continue to develop framework conditions accordingly.

**CENTRAL AREAS FOR ACTION**

1. Strengthen financing of existing network, eliminate capacity shortages with new and expansion projects
2. Continue to develop tax and energy policy framework for rail
3. Ensure entrepreneurial freedom in regional passenger rail, develop purchaser market and financing framework further
4. Avoid overregulation, guarantee non-discriminatory infrastructure access across Europe
5. Reform vehicle approval processes
6. Further enhance market alignment and transparency in companies
The government should fulfil its responsibility for infrastructure in terms of both the existing network and new/expansion projects

Strengthen financing of existing network, eliminate capacity shortages

**EXISTING NETWORK**

> Adjustment of government's infrastructure contribution in the Performance and Financing Agreement (Leistungs- und Finanzierungsvereinbarung – LuFV) to account for:
  > Increase in transport volumes
  > Many facilities that need to be replaced (e.g. bridges)
  > General inflation

> Continued development of LuFV, including extension of terms of contract to 10 years

**NEW/EXPANSION PROJECTS**

> Sufficient volume of construction grants from government, extension of LuFV to include expansion projects or fund solution

> Develop Federal Transport Infrastructure Plan (accelerated elimination of bottlenecks, planning in corridors and prioritisation of projects based on traffic demand)

> Earlier and stronger involvement of general public by politicians and railways

1) The price basis for the current LuFV was determined in 2001
The tax burden on rail transport should be reduced to the level common in other European countries.

Continue to develop tax and energy policy framework for rail.

Adjustment is recommended in order to make rail transport in Germany more competitive.

No reform of EEG (renewal energy law) reallocation charge to the disadvantage of rail travel.

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1) Includes the currently limited EEG reallocation charge.

Source: European Commission; SBBINFRAS
Ensure entrepreneurial freedom and sufficient financing in regional passenger rail transport

Develop purchaser market and financing framework in regional passenger rail transport

### Guaranteeing Financing
- Continuation of existing financial support
  - Regionalisation Act to include ring-fencing of funds and more dynamic placement of funds aligned to cost development
  - Follow-on regulation under Community Transport Financing Act (GVFG)
- Adjustment of distribution key for regionalisation funds – target: balanced consideration of interests of highly populated areas and structurally weak regions

### Functional Service Descriptions
- Unlike detailed transport service descriptions there should be no fixed specifications for e.g. vehicle use
- Net-cost contract, i.e. incentive for RUs to acquire more passengers
- Setting of minimum standards

RU s have a degree of entrepreneurial freedom; competition increased long-term thanks to attractive nature of business

### Further Areas for Optimisation
- Closer intermeshing of regional and long-distance transport
  - Coordination of connections in timetable
  - Innovative models such as integrated IC services in Lower Saxony from December 2013
- Enhancement of cross-state coordination of regional passenger rail lines
- Uniform vehicle requirements between different regional transport authorities and consequently more options for reuse of vehicles

Source: Discussion paper by the VDV on functional invitations to tender, Roland Berger analyses
Infrastructure access and opportunities for competition should be comparable in all European countries

Guarantee equal opportunities in infrastructure access across Europe

Increasing Europe-wide competition through:

> Complete market opening for commercial transport operations ("open access")
> Competitive tendering in regional passenger rail transport with transparent and fair procedures
> Non-discriminatory and predictable train path and station charges
> Guarantee of non-discriminatory access to essential facilities for all competitors
> Harmonisation of technical standards within Europe
> Separation of infrastructure and operations is not crucial to the growth of competition

Equal access opportunities in all European markets is necessary

(Germany currently among top 3 countries in Liberalisation Index – competitive conditions in neighbouring countries less favourable for DB)

Source: Roland Berger studies: "Experiences in the liberalisation of railways – An evaluation of rail structure models in selected countries" (2010); "The optimal setup of a rail system – Lessons learned from outside Europe" (2012); EVES-Rail study: "Economic effects of Vertical Separation in the railway sector" (2012), IBM Rail Liberalisation Index 2011
To simplify vehicle approval in Germany and Europe four approaches should be adopted in parallel

Reform vehicle approval processes

<table>
<thead>
<tr>
<th>Realistic deadlines set by client</th>
<th>Fast-tracking of external &quot;Bahn-TÜV&quot;</th>
<th>Introduction of type approval</th>
<th>Strengthening of EU agency ERA</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Planning of realistic deadlines by RUs according to vehicle type (new model, reproduction, etc.)</td>
<td>&gt; Ministry of Transport's proposal to gradually outsource testing activities to independent, recognised third parties</td>
<td>&gt; Simplified approval by EBA aided by gradual introduction of type approvals</td>
<td>&gt; Issue of uniform vehicle approval by ERA that is valid EU-wide</td>
</tr>
<tr>
<td>&gt; Timeframes required for manufacture and approval of vehicles considered during procurement procedure in regional passenger rail transport by regional transport authority</td>
<td>&gt; Federal Railway Authority (EBA) then only responsible for overseeing processes and approving testers and operations</td>
<td>&gt; After the approval of a vehicle type or series, only spot checks necessary</td>
<td>&gt; Harmonisation of application of technical guidelines and dismantling of national provisions</td>
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<td></td>
<td>&gt; Apply MoU of 26 June 2013 immediately and adopt in General Railway Act (AEG) as planned</td>
<td>&gt; Type approval by EBA already exists for some railway equipment</td>
<td>&gt; New procedure must be suitable for everyday practice and service-driven, involving rail sector to appropriate extent</td>
</tr>
</tbody>
</table>
Railway undertakings must react flexibly to challenges in the markets and the railway environment

**SELECTED CHALLENGES**
in the railway community

- High demands made by customers
- Innovations in automobile industry (network, safety, energy efficiency)
- Fierce competition for specialist staff in ageing society
- Scarce public funds, debt limit
- Climate change and resource depletion
- Companies expected to demonstrate social responsibility
- General public's critical attitude to infrastructure projects

**STRATEGIC OBJECTIVES**
at the railways

- Ensure customer satisfaction
- Improve competitive position through innovation
- Ensure employee satisfaction and retention, recruit highly qualified specialists
- Satisfy need for transparency, particularly in use of public funds
- Consolidate rail as environmentally friendly mode of transport
- Actively involve general public, reduce noise emissions
APPENDIX

> Results of analysis
> Interview index and list of abbreviations
Revenues and results have shown sustainable positive growth – acquisitions of Schenker and Arriva also brought in revenue

Growth in revenues and results at DB AG

**REVENUE** [in EUR billion]

- 14.8 billion in 1994
- 15.5 billion in 1996
- 15.3 billion in 1998
- 15.5 billion in 2000
- 18.7 billion in 2002
- 24.0 billion in 2004
- 30.1 billion in 2006
- 33.5 billion in 2008
- 39.3 billion in 2010
- 39.3 billion in 2012

**EBITDA AND EBT** [in EUR billion]

- 0.3 billion in 1994
- -2.0 billion in 1996
- -2.0 billion in 1998
- 0.3 billion in 2000
- 2.0 billion in 2002
- 4.6 billion in 2004
- 6.9 billion in 2006
- 8.9 billion in 2008
- 10.6 billion in 2010
- 5.6 billion in 2012

Source: DB AG annual reports
GROWTH AT DB AG

Capital employed has doubled since the rail reform – ROCE still lower than cost of capital

Capital employed and ROCE at DB AG

![Graph showing capital employed and ROCE at DB AG]

- **Capital Employed [in EUR billion] – left-hand scale**
- **ROCE [in %] – right-hand scale**

**Source:** DB AG annual reports

1) In current calculations cost of capital is 8.9%
Following rail reform more trains travel per kilometre of track, while products and equipment are being utilised more intensively

### NETWORK UTILISATION
[Bar chart showing network utilisation in trains per track kilometre and day]

### PRODUCTIVITY IN TRANSPORT SEGMENTS

<table>
<thead>
<tr>
<th>Segment</th>
<th>1994</th>
<th>2012</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger transport</td>
<td>100.0 pkm/train-km</td>
<td>128.5 pkm/train-km</td>
<td>+28%</td>
</tr>
<tr>
<td>Freight transport</td>
<td>303.5 tkm/train-km</td>
<td>435.6 tkm/train-km</td>
<td>+44%</td>
</tr>
<tr>
<td>Wagon utilisation (DB Schenker Rail Europe-wide)</td>
<td>356,444 tkm/freight wagon</td>
<td>1,189,393 tkm/freight wagon</td>
<td>+234%</td>
</tr>
</tbody>
</table>

Source: DB AG annual reports
Up to 2008 employee productivity showed a clear rise – maximum potential for efficiency largely realised

Employee productivity at DB AG [index 1994 = 100]¹)

¹) Basis: passenger-tonne-kilometres per DB AG employee in main rail segment in Germany (until 2009) and total employees of RIUs and RUs belonging to DB AG (from 2010)

Source: DB AG annual reports
The organisation of Deutsche Bahn AG was successively refined following the rail reform.

**Organisational development at DB AG**

- **Bundesbahn**
  - Objective: Fulfilment of duty to provide public transport by regionally organised, integrated rail company.
  - Lack of market and customer orientation, structure of a public authority, low efficiency.

- **DB AG after reform, stages 1 and 2**
  - Objective: Strong, market-aligned corporate divisions and a lean holding company.
  - Management companies drifted apart, customer approach not completely uniform.

- **Integrated rail company enhanced**
  - Objective: Realisation of synergies between business units when implementing EU provisions (First Railway Package).
  - Model did not gain majority vote required for partial-privatisation discussed at the time.

- **Double holding company introduced**
  - Objective: Delimitation of infrastructure division (to remain government property) in further realisation of synergies between business units.
  - Current management model has been stable for many years, legality confirmed by ECJ.
Services improved on many long-distance routes – infrastructure upgrading leads to significant growth in passenger numbers

<table>
<thead>
<tr>
<th>Route</th>
<th>2002</th>
<th>2012</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>BERLIN - HAMBURG</td>
<td>02:08</td>
<td>01:37</td>
<td>+80%</td>
</tr>
<tr>
<td>Direct connections</td>
<td>17</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Transport volume</td>
<td></td>
<td></td>
<td>+80%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COLOGNE - FRANKFURT</th>
<th>2002</th>
<th>2012</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortest journey</td>
<td>02:13</td>
<td>01:02</td>
<td>+80%</td>
</tr>
<tr>
<td>Direct connections</td>
<td>19</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Transport volume 2003-2012</td>
<td></td>
<td></td>
<td>+58%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BERLIN - LEIPZIG</th>
<th>2002</th>
<th>2012</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortest journey</td>
<td>01:51</td>
<td>01:12</td>
<td></td>
</tr>
<tr>
<td>Direct connections</td>
<td>18</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Transport volume</td>
<td></td>
<td></td>
<td>+183%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEIPZIG - DRESDEN</th>
<th>2002</th>
<th>2012</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortest journey</td>
<td>01:08</td>
<td>01:03</td>
<td></td>
</tr>
<tr>
<td>Direct connections</td>
<td>16</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Transport volume</td>
<td></td>
<td></td>
<td>+48%</td>
</tr>
</tbody>
</table>

Close temporal link between improvements to infrastructure and significantly higher demand

1) Comparable passenger figures not available for 2002

Source: DB AG
Prices for long-distance transport rise more slowly than those for transport associations and other modes of transport

Development of prices for main modes of transport [index 2002 = 100]

1) Standard fare; however, tickets for 90% of DB long-distance journeys are purchased with an additional discount (BahnCard, saver fares) or other fare types (commuter, group)
2) Ten largest transport associations in Germany

Source: "Verkehr in Zahlen 2012" (government transport figures published annually), Destatis; DB AG
The objective improvement to passenger rail services is not well reflected in customer satisfaction levels

## Customer satisfaction

### Selected improvements to services since the rail reform

<table>
<thead>
<tr>
<th>Category</th>
<th>Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clock-face timetabling for regional transport</td>
<td>PT</td>
</tr>
<tr>
<td>Better trains</td>
<td>PT</td>
</tr>
<tr>
<td>Accessibility</td>
<td>PT</td>
</tr>
<tr>
<td>Service, e.g. 1st class service</td>
<td>PT</td>
</tr>
<tr>
<td>Information along travel chain (real-time)</td>
<td>PT</td>
</tr>
<tr>
<td>Logistics services from a single source</td>
<td>FT</td>
</tr>
<tr>
<td>Better international connections</td>
<td>FT</td>
</tr>
<tr>
<td>Stronger customer focus for employees</td>
<td>FT</td>
</tr>
<tr>
<td>Consignment tracking in freight transport</td>
<td>FT</td>
</tr>
<tr>
<td>More planning security thanks to fixed timetables</td>
<td>FT</td>
</tr>
<tr>
<td>Modern stations with attractive shops and cafés</td>
<td>Infra</td>
</tr>
<tr>
<td>Increase in stations with access for people with disabilities</td>
<td>Infra</td>
</tr>
<tr>
<td>Better equipment (e.g. switch heating, electronic signal boxes, etc.)</td>
<td>Infra</td>
</tr>
</tbody>
</table>

### Satisfaction index 2012

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-distance transport</td>
<td>62</td>
</tr>
<tr>
<td>Regional transport</td>
<td>67</td>
</tr>
<tr>
<td>DB Schenker Rail</td>
<td>63</td>
</tr>
<tr>
<td>DB Netz</td>
<td>73</td>
</tr>
<tr>
<td>DB B2C</td>
<td>69</td>
</tr>
<tr>
<td>DB Station&amp; Service B2B</td>
<td>59</td>
</tr>
</tbody>
</table>

### Source

- Trend: customer satisfaction in long-distance and regional transport stagnant since 1994, marked by individual occurrences
- Rating for current journey usually much better than general ratings (approx. 75 points)
- Passenger transport and infrastructure satisfaction figures published regularly in recent years

Source: Investor Relations DB AG

1) Very good >85; good 75-84; average 50-74; poor <50
2) RUs, regional transport authorities
3) Tenants
Group employee numbers dropped despite acquisitions made; employee structure changed in line with labour market trends

Employee figures at DB AG

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2012</th>
<th>DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of employees (nat. persons)</td>
<td>331,101</td>
<td>299,347</td>
<td>-10%</td>
</tr>
<tr>
<td>&gt; Proportion of female employees (DE)</td>
<td>18.1%</td>
<td>21.9%</td>
<td>+21%</td>
</tr>
<tr>
<td>&gt; Proportion of part-time positions (DE)</td>
<td>2.3%</td>
<td>8.1%</td>
<td>+252%</td>
</tr>
<tr>
<td>Average salary</td>
<td>EUR 27,200</td>
<td>EUR 37,200</td>
<td>+37%</td>
</tr>
<tr>
<td>New hirings p.a.</td>
<td>2,223</td>
<td>13,200</td>
<td>+494%</td>
</tr>
<tr>
<td>Employee satisfaction</td>
<td>--</td>
<td>3.6&lt;sup&gt;1)&lt;/sup&gt;</td>
<td>--</td>
</tr>
<tr>
<td>Suggestions for improvement</td>
<td>3,951</td>
<td>12,198</td>
<td>+209%</td>
</tr>
</tbody>
</table>

<sup>1)</sup> On a scale of 1 ("I do not agree at all") to 5 ("I agree completely") employee satisfaction is therefore above the mean value of 3

> Higher proportion of female and part-time employees achieved since 1994
> Annual new hirings increased strongly; in recent years increase in total number of employees
> Average increase in salary is higher than inflation rate of 32% (1994-2012)
> Employee satisfaction is average compared with other companies worldwide

Source: DB AG annual reports
Relative CO\textsubscript{2} emissions in rail transport have been reduced since 1994 by an average of 40% – decrease also seen in absolute terms.

Specific CO\textsubscript{2} emissions in rail transport\textsuperscript{1)}

\textbf{RELATIVE CO\textsubscript{2} EMISSIONS}  
[in g per tkm or pkm]

\textbf{ABSOLUTE CO\textsubscript{2} EMISSIONS}  
[in t million]

\textsuperscript{1)} Includes third-party railways  
Source: ifeu; DB AG
The reduction of railway noise has played an ever greater role in recent years.

Investment in noise abatement measures

Government investment in **RAIL-NOISE PREVENTION MEASURES** [in EUR million]

<table>
<thead>
<tr>
<th>Year</th>
<th>1999</th>
<th>2001</th>
<th>2003</th>
<th>2005</th>
<th>2007</th>
<th>2009</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR million</td>
<td>1</td>
<td>7</td>
<td>19</td>
<td>41</td>
<td>56</td>
<td>52</td>
<td>51</td>
</tr>
</tbody>
</table>

Length of **NOISE BARRIERS** [in km]

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>km</td>
<td>279</td>
<td>332</td>
<td>387</td>
<td>442</td>
</tr>
</tbody>
</table>

Number of flats fitted with **SOUND PROTECTION**

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flats</td>
<td>40,350</td>
<td>43,850</td>
<td>46,400</td>
<td>48,400</td>
</tr>
</tbody>
</table>

Source: DB AG annual reports
Market share of competitors has increased steadily in regional passenger and freight transport

Competitors' market share in freight transport and regional passenger transport

**RAIL FREIGHT**  
[in % of tkm]

- 1994: 1%
- 1996: 1%
- 1998: 1%
- 2000: 2%
- 2002: 5%
- 2004: 10%
- 2006: 16%
- 2008: 21%
- 2010: 25%
- 2012: 29%

**REGIONAL PASSENGER RAIL**  
[in % of train-km]

- 1994: 2%
- 1996: 3%
- 1998: 5%
- 2000: 7%
- 2002: 9%
- 2004: 12%
- 2006: 15%
- 2008: 18%
- 2010: 22%
- 2012: 25%

**LONG-DISTANCE PASSENGER RAIL**

- Hardly any intramodal competition in long-distance passenger rail transport (constant at approx. 1%)
- The only significant competitors at the current time: InterConnex and HKX
- High investment costs and revenue risk are considerable barriers to market entry
- Alternative low-cost airline and long-distance bus services render market entry even more difficult

Source: "Verkehr in Zahlen" (government transport figures published annually); DB AG competition reports
Operating performance in regional passenger rail up sharply since 1994 – fees for transport services utilised more efficiently at same time

Source: DB AG annual reports and competition reports
In regional passenger rail, the 27 transport authorities' contract-award practices vary – often little entrepreneurial freedom for railways

Consequences of regionalisation

**DEVELOPMENTS**

> Commissioning/optimising of regional passenger rail services by each regional transport authority is highly specific to region and requirements

> Due to federal structure, tendering and contract-award practices vary highly among the 27 regional transport authorities:
  
  − Often very high production depth imposed by regional transport authorities (details regarding timetable, product, pricing policy, rolling stock, etc.)
  
  − In some cases, setting up of vehicle pools by regional transport authority and obligation to use the vehicles

> Low coordination between regional transport authorities, highly complex procedures

**CONSEQUENCES**

> Restricted entrepreneurial freedom for the railways
  
  − Unattractive business jeopardises competition in future (fewer parties bidding for tenders)
  
  − Contradicts main concept of the rail reform

> Partial building up of extensive resources/organisations at the regional transport authorities

> Disadvantages for customers who
  
  − travel beyond the regional transport authorities' regions (some badly coordinated timetables)
  
  − use both long-distance and regional transport (poor connections)

> Lack of functioning market for used regional passenger rail vehicles (important for healthy competition and low costs in regional passenger rail transport)
Some transport authorities intervene directly in vehicle procurement for contract-awarding networks and impose use of vehicle pools

### Consequences of regionalisation – example

<table>
<thead>
<tr>
<th>LOWER SAXONY&lt;sup&gt;1)&lt;/sup&gt;</th>
<th>RHEIN-RUHR REGION&lt;sup&gt;2)&lt;/sup&gt;</th>
<th>SAXONY&lt;sup&gt;3)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Transport services provided by 10 RUs in LNVG network (including DB Regio and S-Bahn Hamburg)</td>
<td>&gt; Transport services acquired via invitations to tender since 1996</td>
<td>&gt; Transport services acquired via invitations to tender since 1996</td>
</tr>
<tr>
<td>&gt; First contract-award competition in 2000 (Weser-Ems network to NordWestBahn)</td>
<td>&gt; VRR also operates vehicle financing, a total of over 60 railcars have been financed to date</td>
<td>&gt; Plan to build up a vehicle pool, invitations to tender for procurement and maintenance of 25 electric multiple units in late 2012</td>
</tr>
<tr>
<td>&gt; LNVG procures vehicles and operates a vehicle pool with uniform fittings/design</td>
<td>&gt; Obligation of operator to take on these vehicles (Ex.: RB47 contract between abellio and VRR on the Solingen – Wuppertal route)</td>
<td>&gt; Plan approved by federal procurement chamber in 2013</td>
</tr>
<tr>
<td>&gt; Operators must use vehicles from this pool</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Vehicles are therefore tightly bound to the networks they operate on today, harder for used-vehicle market to develop
- RUs are now only carriers – little entrepreneurial freedom, unattractiveness risks leading to low competition

---

1) LNVG, Landesnahverkehrsgesellschaft Niedersachsen; 2) VRR, Verkehrsverbund Rhein-Ruhr; 3) VMS, Verkehrsverbund Mittelsachsen
Net investment (DB AG's own capital) rose markedly more strongly than gross investment in three-year average

Investments in DB AG's infrastructure [in EUR million]¹)

Gross: avg 4,914


4,753 5,347 4,643 4,491 5,138 5,220 4,331 4,859 7,407 6,924 5,347 4,775 5,046 4,928 5,201 5,226 5,459 5,897 5,734

Net: avg 616

1) Total corresponds to gross investment; in five-year comparisons 1994-99 and 2007-12 gross investment rose by +10.6% and net investment by +26.0%

Source: "Verkehr in Zahlen" (government transport figures published annually); DB AG

¹) Source: "Verkehr in Zahlen" (government transport figures published annually); DB AG
The volume of DB AG's infrastructure has been reduced since the rail reform – while the level of equipment and facilities has improved.

### Selected key infrastructure figures

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2012</th>
<th>DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network length</strong></td>
<td>40,355 km</td>
<td>33,505 km</td>
<td>-17%</td>
</tr>
<tr>
<td>&gt; With electrification</td>
<td>42.3%</td>
<td>59.2%</td>
<td>+40%</td>
</tr>
<tr>
<td>&gt; With continuous</td>
<td>2.7%</td>
<td>7.2%</td>
<td>+267%</td>
</tr>
<tr>
<td>automatic train control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>No. of private sidings</strong></td>
<td>11,290</td>
<td>2,374</td>
<td>-79%</td>
</tr>
<tr>
<td>**No. of level</td>
<td>29,895</td>
<td>14,190</td>
<td>-53%</td>
</tr>
<tr>
<td>crossings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; With technical</td>
<td>47%</td>
<td>69%</td>
<td>+47%</td>
</tr>
<tr>
<td>safety installations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

> Network length reduced since 1994, but still considerably higher than figure calculated by Bundesbahn in 1976 for a "Economically Optimum Operating Network", which was rejected by the government.

> Electrification of network advanced further – positive effects on cost-effectiveness, journey times and environment.

> Number of private sidings reduced to optimum level for operations – without affecting transport volumes.

> Number of level crossings dramatically reduced, through e.g. construction of intersection-free solutions, likewise number of level crossings without technical safety installations – significant increase in traffic safety.

Source: "Verkehr in Zahlen" (government transport figures published annually); DB AG
Compared with other European countries, there is less investment in rail infrastructure in Germany

Investment in infrastructure

Per-capita government investment in rail infrastructure in 2012 [EUR]

- Avg 136

Investment per track km in 2011 [EUR '000]

- Avg 210

1) Investment figures for Spain and Netherlands refer to 2010

Source: Reuters (5 December 2012); Handelsblatt Online; Die Welt Online; Pro-Rail Alliance; Performance and Financing Agreement; data from various infrastructure operators

"Dilapidated bridges present Deutsche Bahn with a problem worth billions."  
Handelsblatt, December 2012

"Germany's bridges on brink of collapse."  
Die Welt, June 2013
Rail transport is still disadvantaged in many ways compared with other modes of transport

<table>
<thead>
<tr>
<th>Taxation/charges</th>
<th>RAIL TRANSPORT</th>
<th>OTHER MODES OF TRANSPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Payment of renewables, mineral oil and electricity taxes (incl. EEG reallocation charge)</td>
<td>Mineral oil tax for road transport</td>
</tr>
<tr>
<td></td>
<td>VAT 19% in long-distance transport and 7% in regional transport</td>
<td>No kerosene tax on domestic flights</td>
</tr>
<tr>
<td></td>
<td>Rail transport fully involved in emissions trading, with resulting cost disadvantages</td>
<td>No VAT charged on cross-border air traffic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infra-structure</th>
<th>RAIL TRANSPORT</th>
<th>OTHER MODES OF TRANSPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lack of government funding for important construction projects from Federal Transport Infrastructure Plan</td>
<td>No road tolls for car travel in Germany</td>
</tr>
<tr>
<td></td>
<td>Rail transport pays charges on all train paths</td>
<td>Truck toll applies only from total weight of 12 t and not on all roads</td>
</tr>
<tr>
<td></td>
<td>Rail transport financed by budgetary funds that are subject to economic cycles</td>
<td>Road travel receives funds from toll revenue that is not dependent on economy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vehicle fleet</th>
<th>RAIL TRANSPORT</th>
<th>OTHER MODES OF TRANSPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High safety requirements imposed by Federal Railway Authority lead to slow and expensive approval processes</td>
<td>Requirements for trucks uniform across Europe</td>
</tr>
<tr>
<td></td>
<td>No harmonised requirements across Europe, resulting technical and administrative obstacles in European inland transport</td>
<td>Comparatively easy approval process for trucks and cars</td>
</tr>
<tr>
<td></td>
<td>Expensive retrofitting of freight wagons with noise-reducing brake blocks necessary by 2020</td>
<td>Approval of aircraft simplified by type certification</td>
</tr>
</tbody>
</table>
Numerous interviews were conducted with representatives of associations, experts and protagonists of the rail reform.

<table>
<thead>
<tr>
<th>LAST NAME</th>
<th>FIRST NAME</th>
<th>POSITION</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hädrich</td>
<td>Volker</td>
<td>DB AG, Corporate Representative for the Free State of Thuringia</td>
<td>3 May + 21 May</td>
</tr>
<tr>
<td>Dr. Ludewig</td>
<td>Johannes</td>
<td>Former CEO and Chairman of the Management Board of DB AG</td>
<td>15 May</td>
</tr>
<tr>
<td>Prof. Dr. Aberle</td>
<td>Gerd</td>
<td>Former member of the Bundesbahn government commission</td>
<td>24 May</td>
</tr>
<tr>
<td>Dr. Bender</td>
<td>Wilhelm</td>
<td>Former Head of Mgmt Board Office Deutsche Bundesbahn, Managing Director of Deutsches Verkehrsforum</td>
<td>27 May</td>
</tr>
<tr>
<td>Münchschwander</td>
<td>Peter</td>
<td>Former Member of the Management Board of DB AG</td>
<td>27 May</td>
</tr>
<tr>
<td>Prof. Dr. Pachl</td>
<td>Jörn</td>
<td>Technische Universität Braunschweig, Head of the Institute of Railway Systems Engineering</td>
<td>27 May</td>
</tr>
<tr>
<td>Eichel</td>
<td>Hans</td>
<td>Former Minister-President of the federal state of Hesse and Federal Minister of Finance</td>
<td>28 May</td>
</tr>
<tr>
<td>Dr. Henke</td>
<td>Martin</td>
<td>Association of German Transport Companies (VDV), Managing Director for Railway Transport</td>
<td>28 May</td>
</tr>
<tr>
<td>Kirchner</td>
<td>Alexander</td>
<td>Railway and Transport Union (EVG), Chairman</td>
<td>3 June</td>
</tr>
<tr>
<td>Fischer</td>
<td>Dirk</td>
<td>Member of the CDU/CSU parliamentary group, transport policy spokesperson</td>
<td>5 June</td>
</tr>
<tr>
<td>Dr. Krawinkel</td>
<td>Holger</td>
<td>Federation of German Consumer Organisations (VZBV), Head of Department for Transport</td>
<td>6 June</td>
</tr>
<tr>
<td>Wissmann</td>
<td>Matthias</td>
<td>Former Federal Minister of Transport</td>
<td>7 June</td>
</tr>
<tr>
<td>Kohl</td>
<td>Thomas</td>
<td>Former department head in the Federal Ministry of Transport</td>
<td>12 June</td>
</tr>
<tr>
<td>Flege</td>
<td>Dirk</td>
<td>Pro-Rail Alliance, Executive Director</td>
<td>17 June</td>
</tr>
<tr>
<td>Henckel</td>
<td>Susanne</td>
<td>Federal working group for regional transport authorities (BAG-SPNV), Managing Director</td>
<td>20 June</td>
</tr>
<tr>
<td>Sack</td>
<td>Diethelm</td>
<td>Former Member of the Management Board of DB AG</td>
<td>28 June</td>
</tr>
<tr>
<td>Heinisch</td>
<td>Roland</td>
<td>Former Member of the Management Board of DB AG</td>
<td>25 June</td>
</tr>
<tr>
<td>Dr.-Ing E.h. Mehdorn</td>
<td>Hartmut</td>
<td>Former CEO and Chairman of the Management Board of DB AG</td>
<td>4 July</td>
</tr>
<tr>
<td>Dr.-Ing E.h. Dürr</td>
<td>Heinz</td>
<td>Former CEO and Chairman of the Management Board of DB AG</td>
<td>12 July</td>
</tr>
<tr>
<td>Smaxwil</td>
<td>Friedrich</td>
<td>Former President of the German Railway Industry Association (VDB)</td>
<td>17 July</td>
</tr>
</tbody>
</table>
List of abbreviations

BAG-SPNV  Bundesarbeitsgemeinschaft der Aufgabenträger des SPNV (federal working group for regional transport authorities)
BEV  Bundeseisenbahnvermögen (Federal Railway Property Agency)
CAGR  compound annual growth rate
ECJ  Court of Justice of the European Union
DB  Deutsche Bundesbahn
DB AG  Deutsche Bahn Aktiengesellschaft
DR  Deutsche Reichsbahn
EBA  Eisenbahn-Bundesamt (Federal Railway Authority)
ERA  European Railway Agency
EVG  Eisenbahn- und Verkehrsgewerkschaft (Railway and Transport Union)
FT  freight transport
GVFG  Gemeindeverkehrsfinanzierungsgesetz (Community Transport Financing Act)
kWh  kilowatt-hour
LuFV  Leistungs- und Finanzvereinbarung (Performance and Financing Agreement)
MoU  memorandum of understanding
pkm  passenger kilometres
PT  passenger transport
RIU  railway infrastructure undertaking
ROCE  return on capital employed
RU  railway undertaking
tkm  tonne-kilometres
train-km  train-kilometres
VDV  Verband Deutscher Verkehrsunternehmen (Association of German Transport Companies)