



20 years of German rail reform and Deutsche Bahn AG

Outline

Roland Berger
Strategy Consultants

Commissioned by:



Berlin, January 2014

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



Study commissioned to mark the twenty-year anniversary of the rail reform and look into the challenges facing the rail sector today

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

TOPIC	CONTENT	STAKEHOLDERS
Further unbundling of infrastructure and operations	<ul style="list-style-type: none"> > Call for further unbundling, at least a ban on transfer of profit and loss from infrastructure to holding company 	<ul style="list-style-type: none"> > EC (Fourth Railway Package draft) > Bündnis 90/Grüne party > FDP party
Additional regulation	<ul style="list-style-type: none"> > Stricter regulation of charges for rail infrastructure and stations > Stricter access regulation for rail infrastructure and service facilities > Abuse control in areas of sales and traction power 	<ul style="list-style-type: none"> > Former government (Rail Regulation Act draft) > Federal states
Improved infrastructure financing and development	<ul style="list-style-type: none"> > Prioritize elimination of investment backlog for existing network > Eliminate investment backlog for expansion and new construction projects > More transparency in use of government funds 	<ul style="list-style-type: none"> > Daehre Commission > Bodewig Commission > Pro-Rail Alliance > VDV
Contracting of services and financing in regional transport	<ul style="list-style-type: none"> > Organisation of Europe-wide competitive invitations to tender > Lean contract-award procedures that are attractive to RUs > Standardisation of vehicle requirements > More dynamic approach to regionalisation funds (Regionalisierungsmittel) 	<ul style="list-style-type: none"> > BAG-SPNV > VDV > Federal states

B.

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



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



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

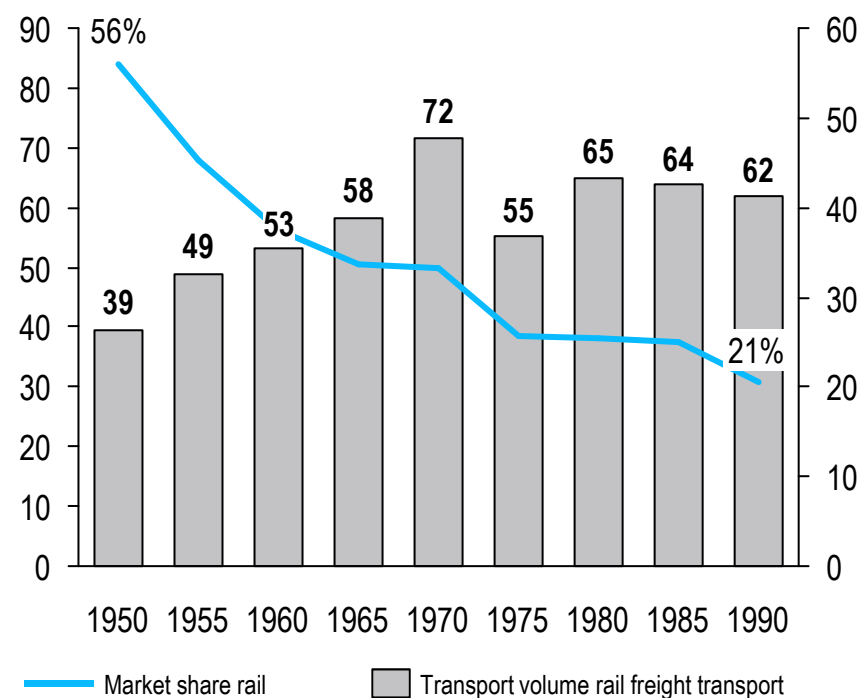
 Core issues, more detail on following pages

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

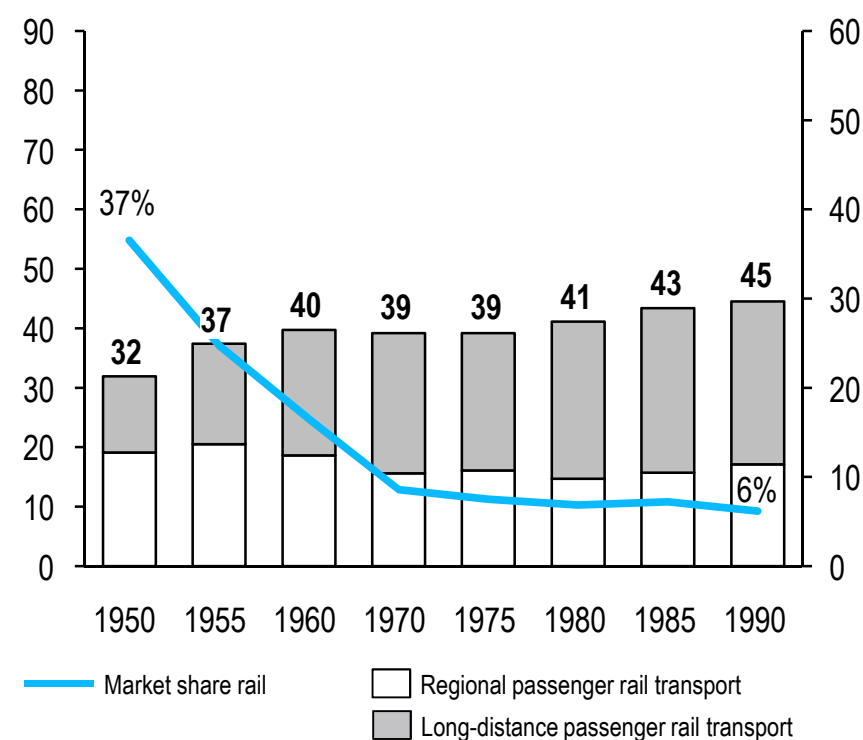
RAIL FREIGHT TRANSPORT

[transport volume in tkm billion, share of modal split in %]



RAIL PASSENGER TRANSPORT

[transport volume in pkm billion, share of modal split in %]



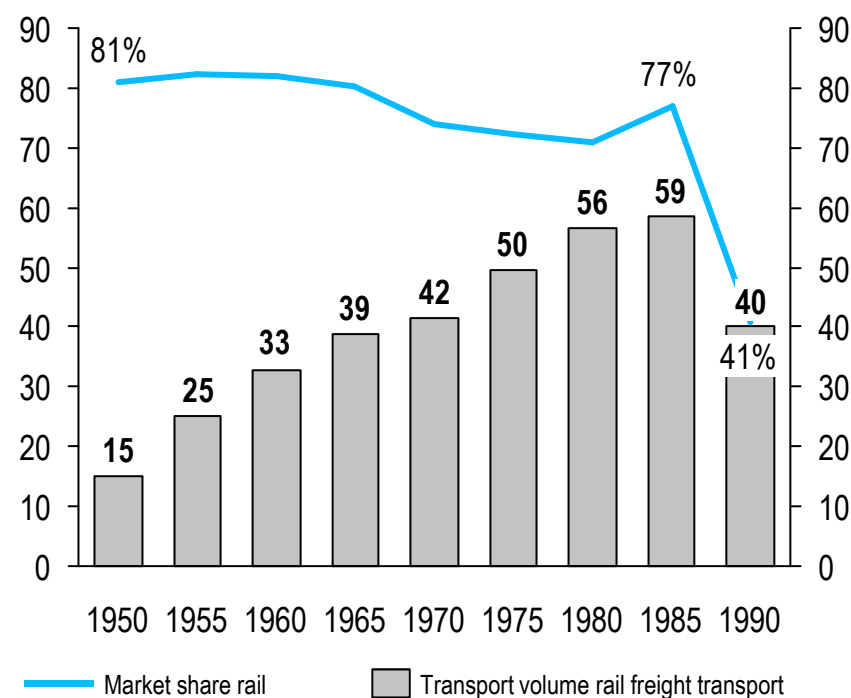
Source: "Verkehr in Zahlen 1991" (government transport figures published annually)

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

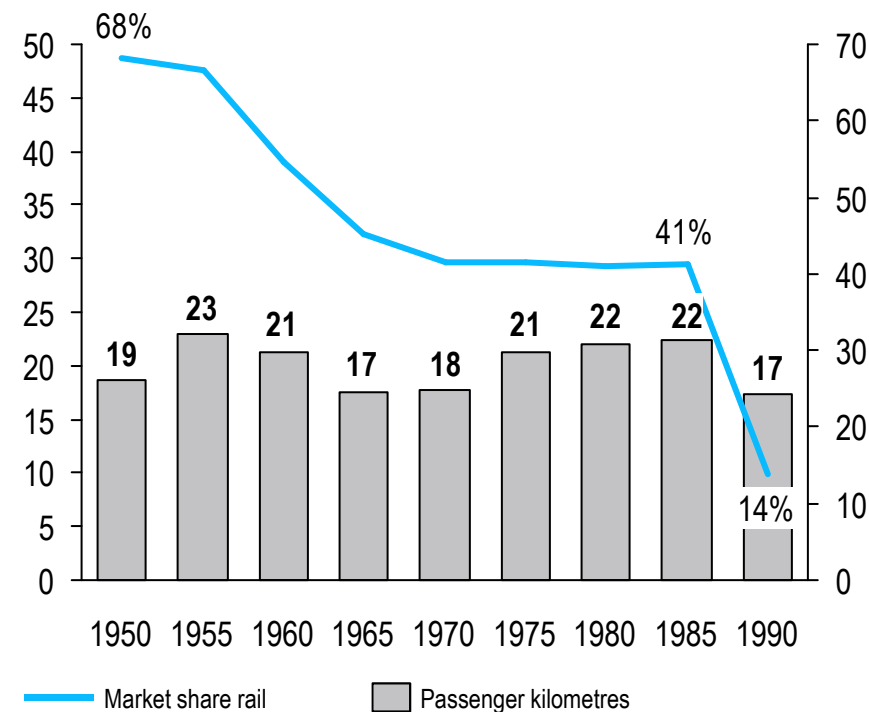
RAIL FREIGHT TRANSPORT

[transport volume in tkm billion, share of modal split in %]



RAIL PASSENGER TRANSPORT

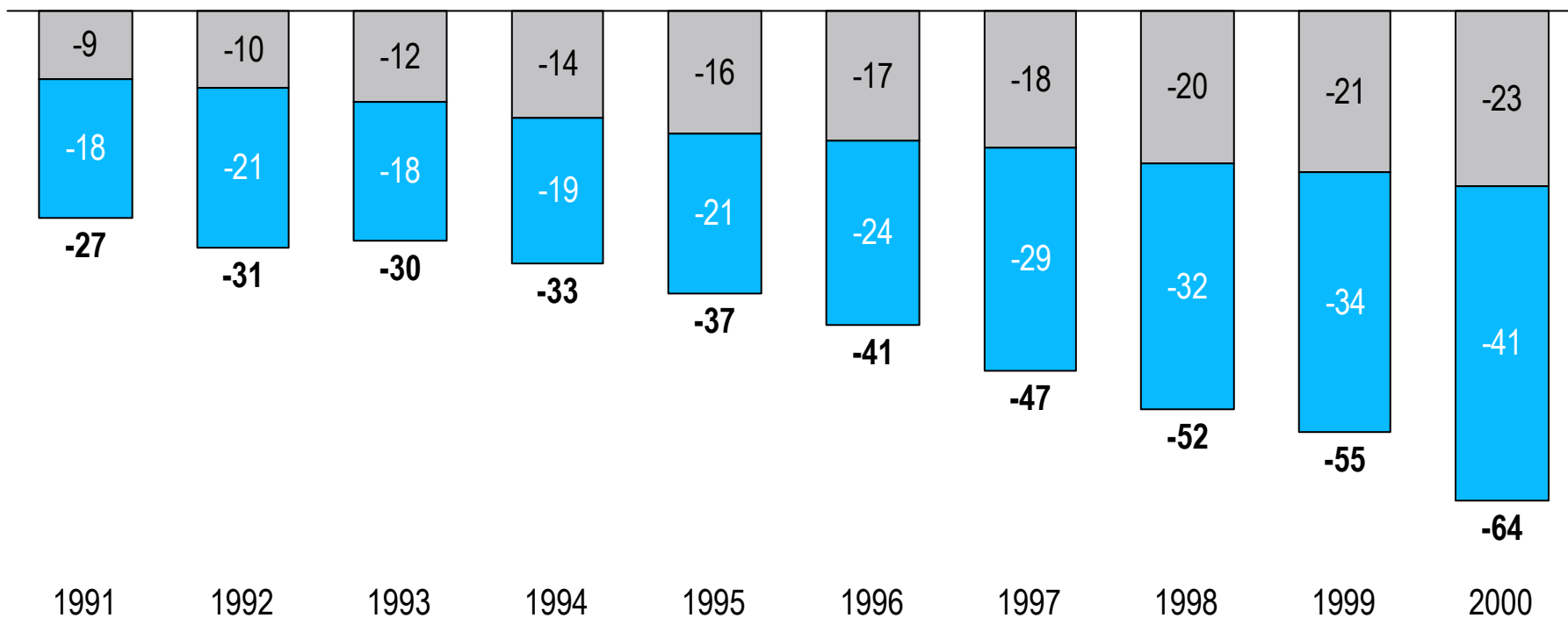
[transport volume in pkm billion, share of modal split in %]



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]



Deutsche Reichsbahn Deutsche Bundesbahn

C.

THE RAIL REFORM

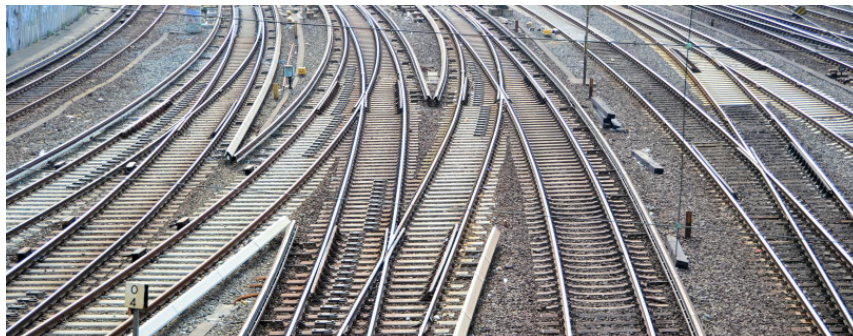


The purpose of the rail reform was to increase rail traffic and provide permanent relief for the federal budget

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



- > Framework established for Deutsche Bahn's private sector activity
- > Design of regionalisation of passenger rail transport services and funding model
- > Assumption by the government of the inherited financial burden
- > Legislative changes in line with European directive 91/440/EEC for opening up rail network to third parties

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

D.

REVIEW OF THE RAIL
REFORM

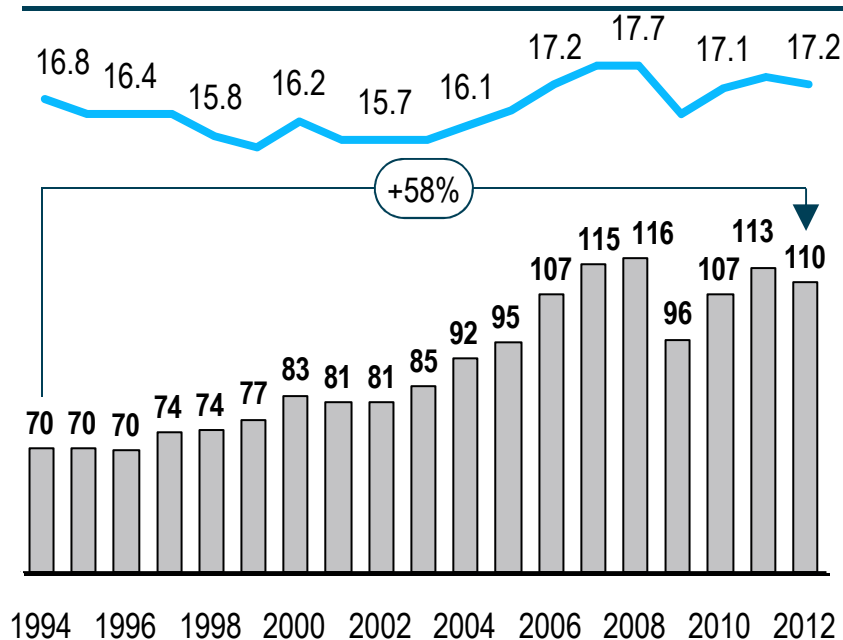


Transport volumes in Germany rose by around 58% in freight transport and 36% in passenger transport following rail reform

Development of freight and passenger transport volumes

RAIL FREIGHT TRANSPORT

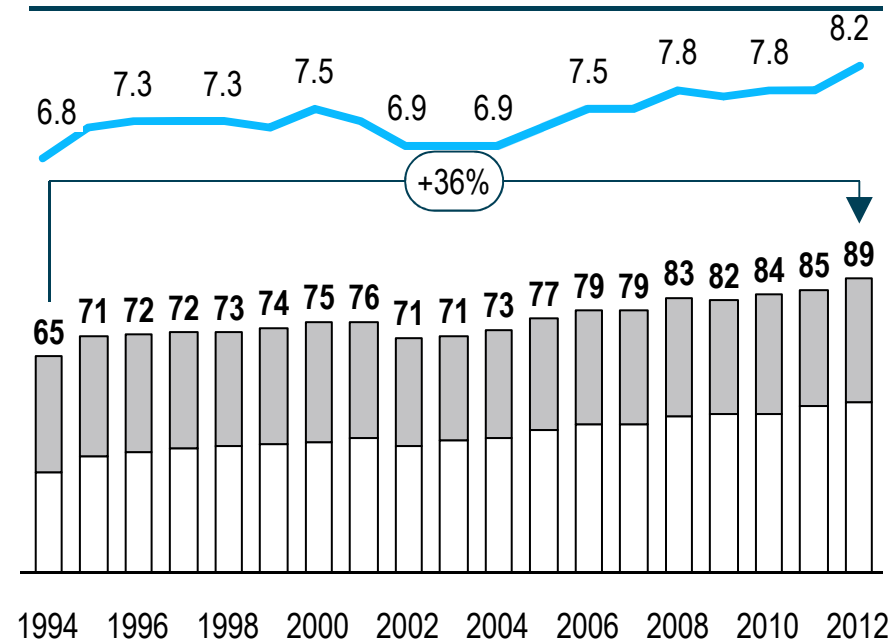
[share of modal split in %, transport volume in tkm billion]



— Market share rail ■ Transport volume rail freight transport

RAIL PASSENGER TRANSPORT

[share of modal split in %, transport volume in pkm billion]

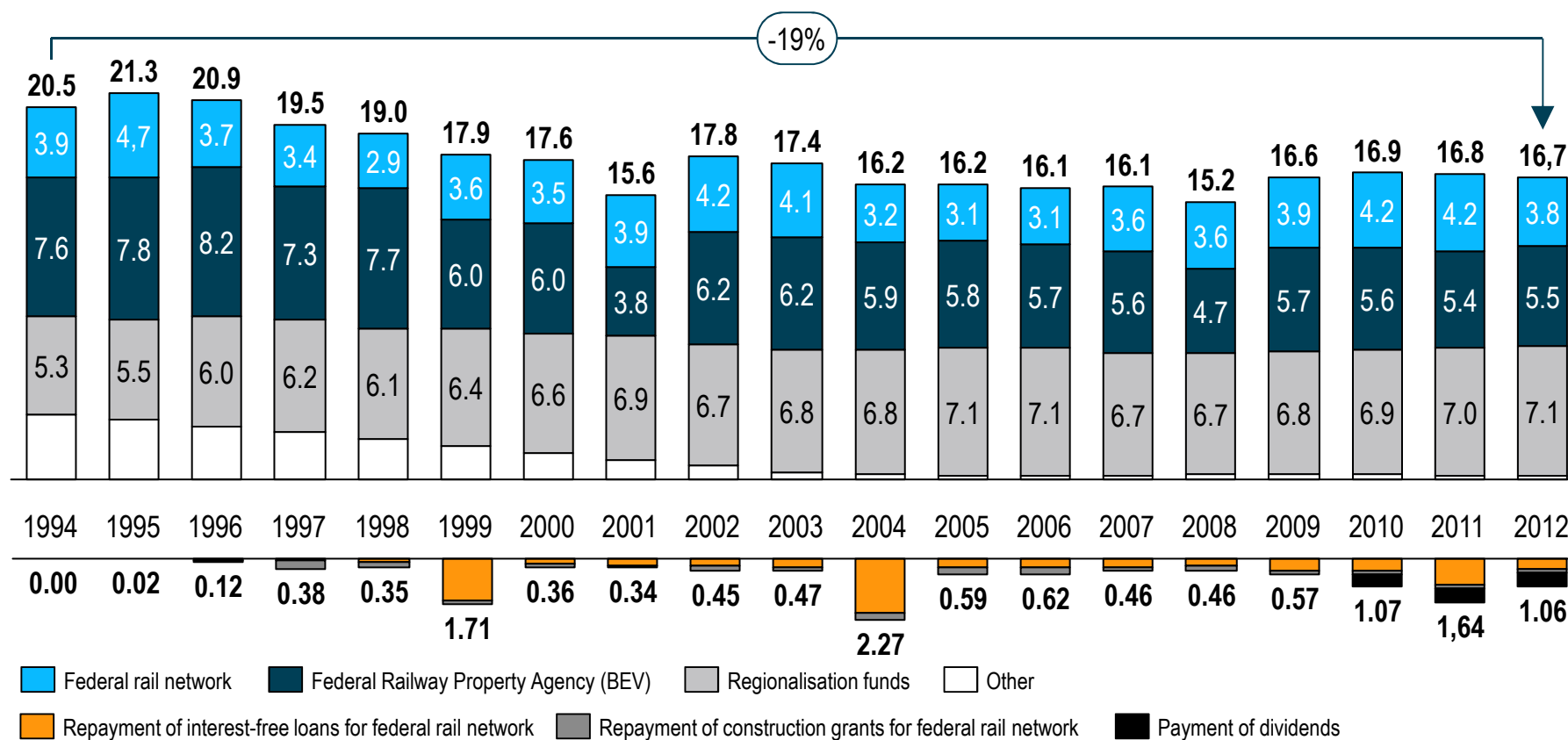


— Market share rail ■ Regional passenger rail transport
 ■ Long-distance passenger rail transport

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

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 CO₂ emissions reduced by 40%, absolute emissions by more than 10%¹⁾
- > Considerable noise abatement efforts made

1) Includes third-party railways

Mixed messages provided by indicators from the national economy – significant problems in vehicle approvals

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

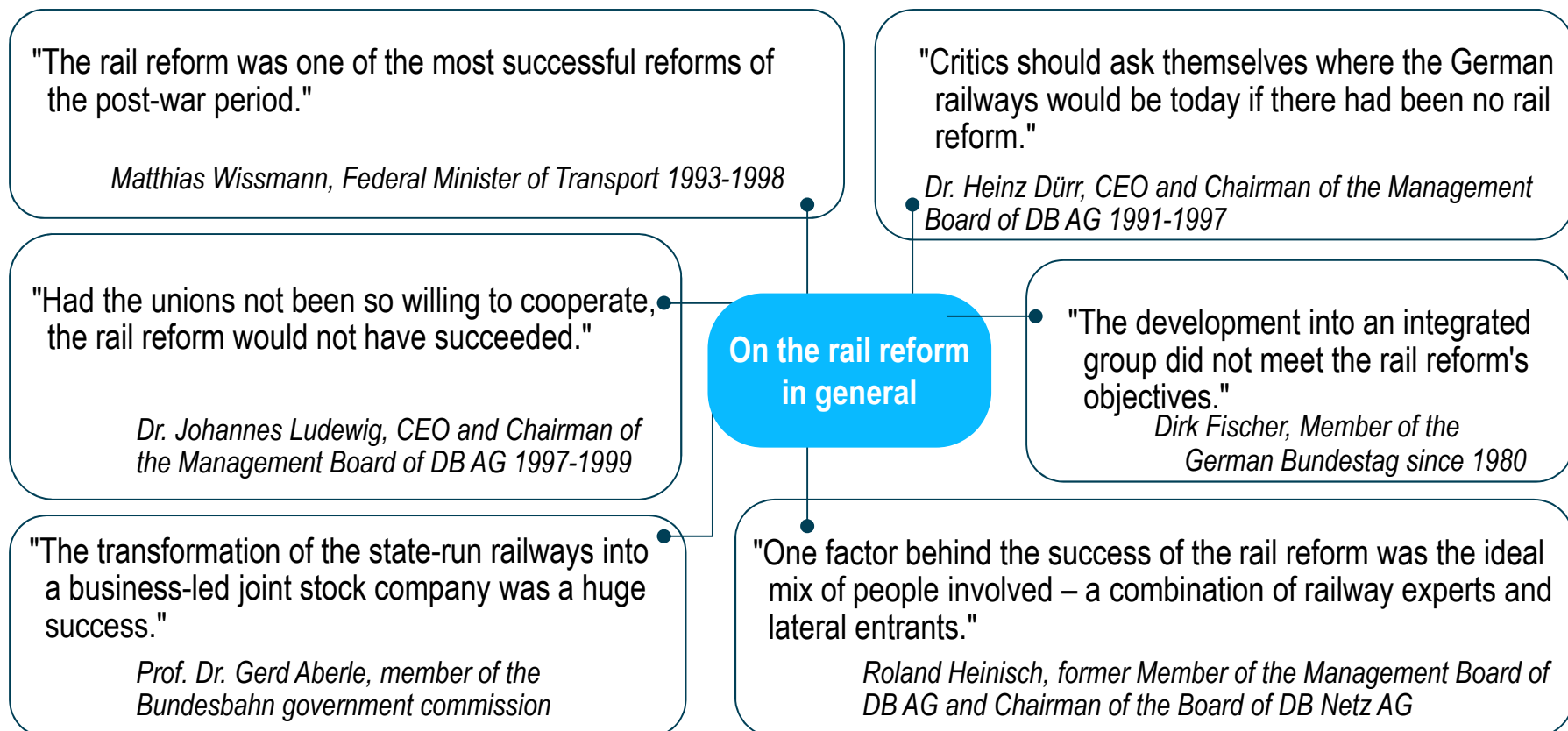


- > Ongoing development of regulatory requirements
- > Problems particularly in vehicle approval by Federal Railway Authority
- > Competition conditions different to those for other modes of transport

1) In both cases 3-year average for 2010-2012 compared with 1994-1996

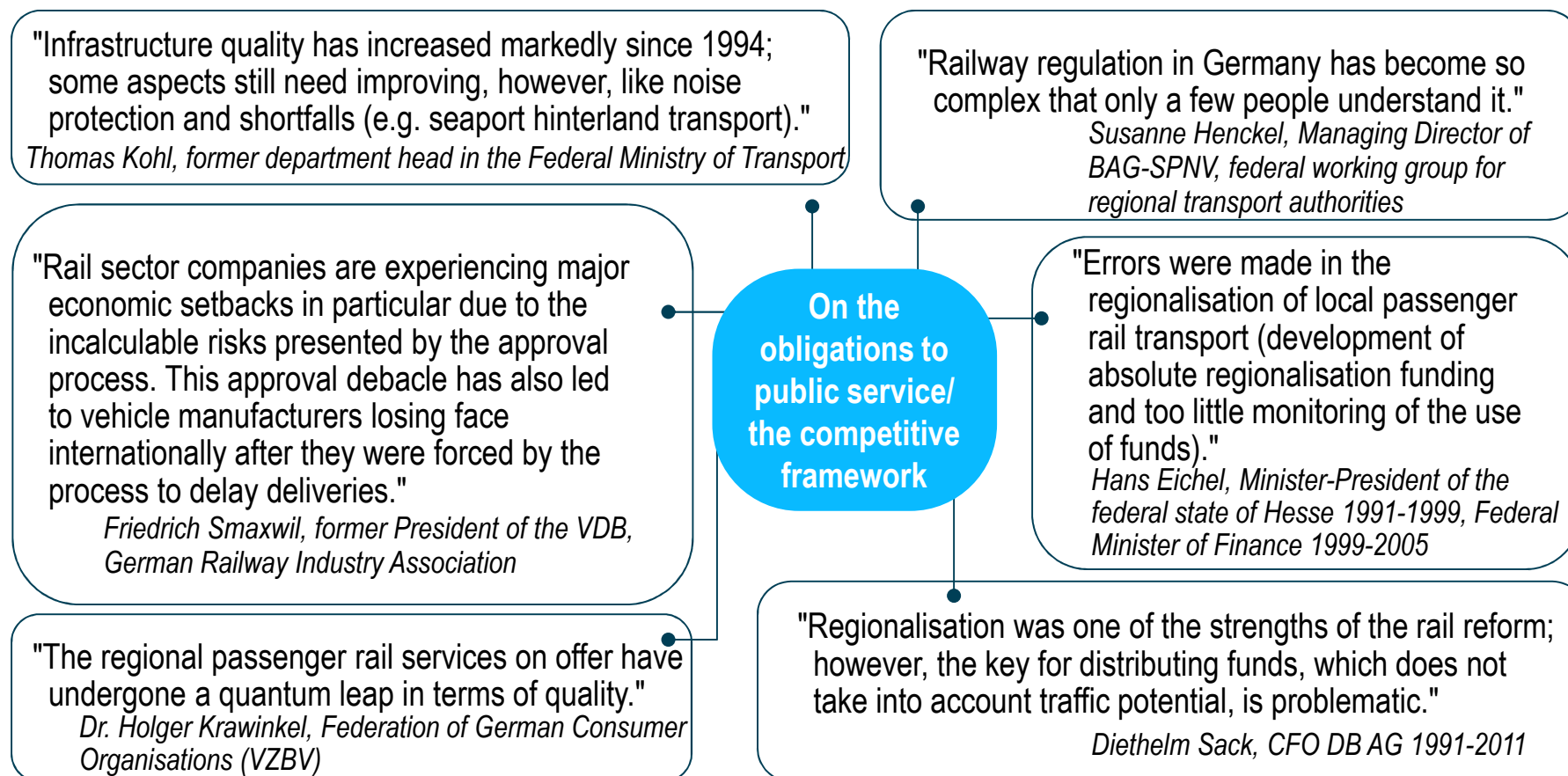
The view that the rail reform was a success is supported by transport experts and protagonists of the reform in interviews

Selected quotes from interviewees (1/2)



Nevertheless, in some aspects a need for adjustment is seen

Selected quotes from interviewees (2/2)



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

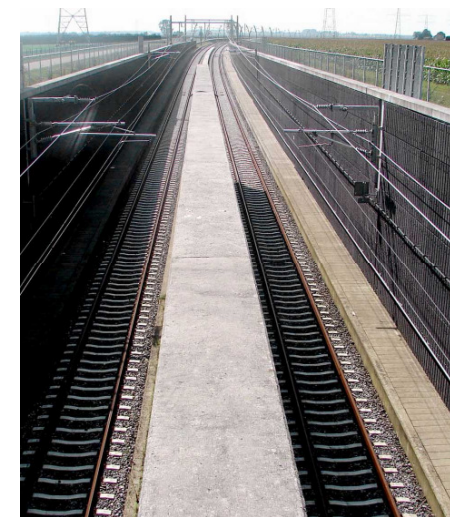
EXISTING NETWORK

- > 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 inflation¹⁾
- > 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



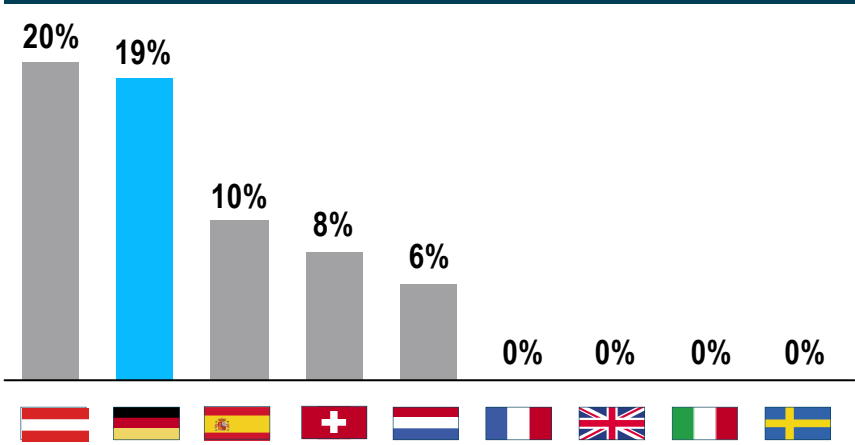
1) The price basis for the current LuFV was determined in 2001

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

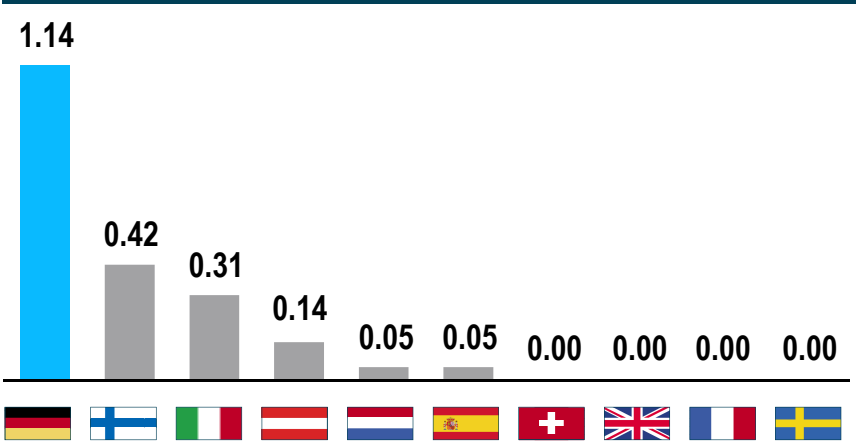
VAT RATES IN LONG-DISTANCE TRANSPORT

[in %]



ELECTRICITY TAX IN RAIL TRANSPORT¹⁾

[in euro cents per kWh]



- > 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

1) Includes the currently limited EEG reallocation charge

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 placing 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

RUs 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

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)

To simplify vehicle approval in Germany and Europe four approaches should be adopted in parallel

Reform vehicle approval processes

Realistic deadlines set by client

- > Planning of realistic deadlines by RUs according to vehicle type (new model, reproduction, etc.)
- > Timeframes required for manufacture and approval of vehicles considered during procurement procedure in regional passenger rail transport by regional transport authority

Fast-tracking of external "Bahn-TÜV"

- > Ministry of Transport's proposal to gradually outsource testing activities to independent, recognised third parties
- > Federal Railway Authority (EBA) then only responsible for overseeing processes and approving testers and operations
- > Apply MoU of 26 June 2013 immediately and adopt in General Railway Act (AEG) as planned

Introduction of type approval

- > Simplified approval by EBA aided by gradual introduction of type approvals
- > After the approval of a vehicle type or series, only spot checks necessary
- > Type approval by EBA already exists for some railway equipment

Strengthening of EU agency ERA

- > Issue of uniform vehicle approval by ERA that is valid EU-wide
- > Harmonisation of application of technical guidelines and dismantling of national provisions
- > New procedure must be suitable for everyday practice and service-driven, involving rail sector to appropriate extent

Railway undertakings must react flexibly to challenges in the markets and the railway environment

Further enhance market alignment and transparency in companies

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



Enhanced market-driven mind-set required by RUs

Consideration of all stakeholders' interests is a major objective, targets for financial returns alone are not enough



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

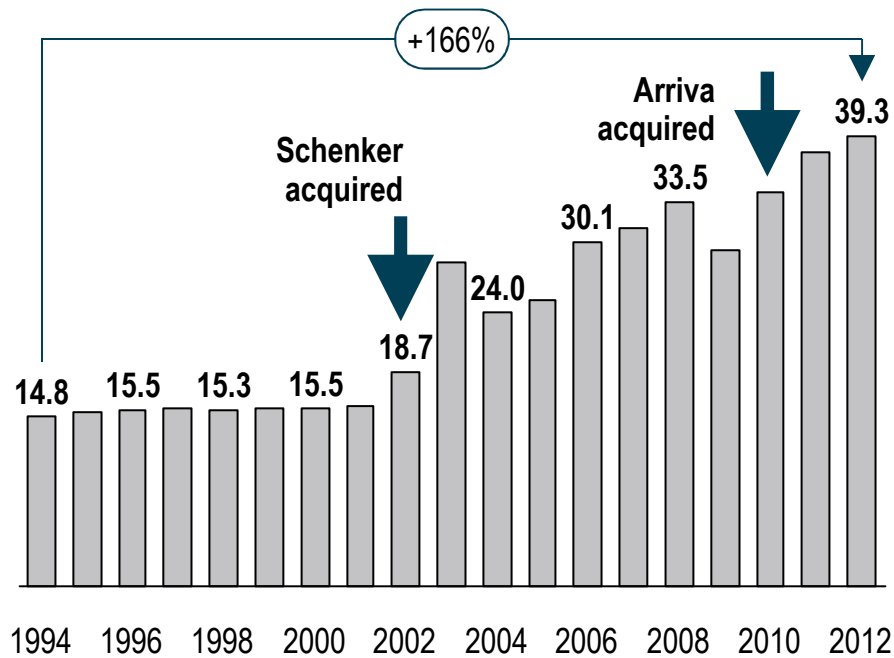
- > Results of analysis
- > Interview index and list of abbreviations



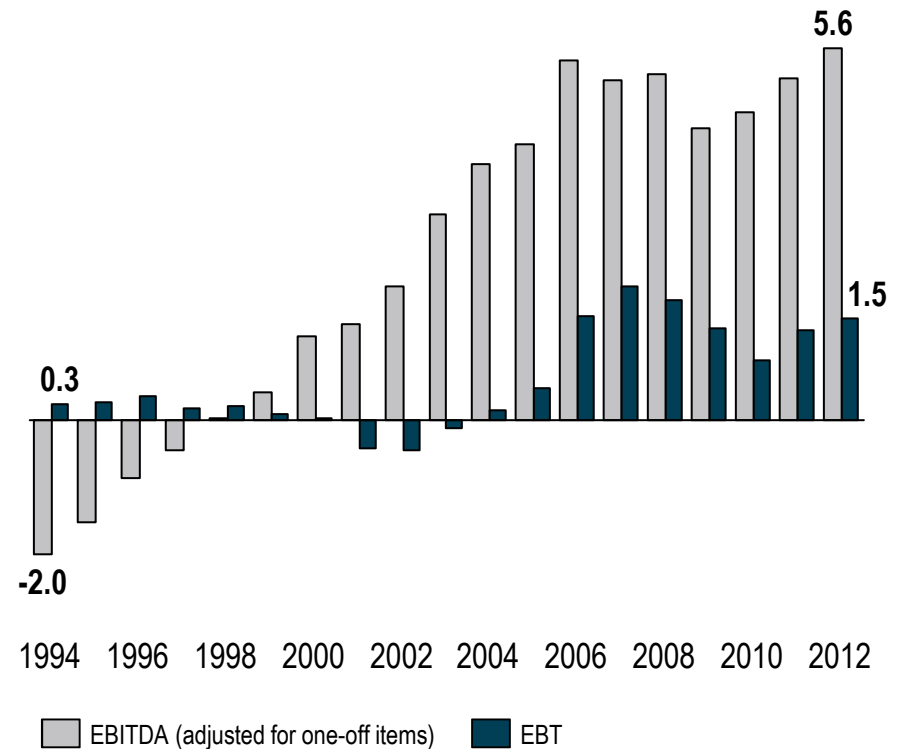
Revenues and results have shown sustainable positive growth – acquisitions of Schenker and Arriva also brought in revenue

Growth in revenues and results at DB AG

REVENUE [in EUR billion]



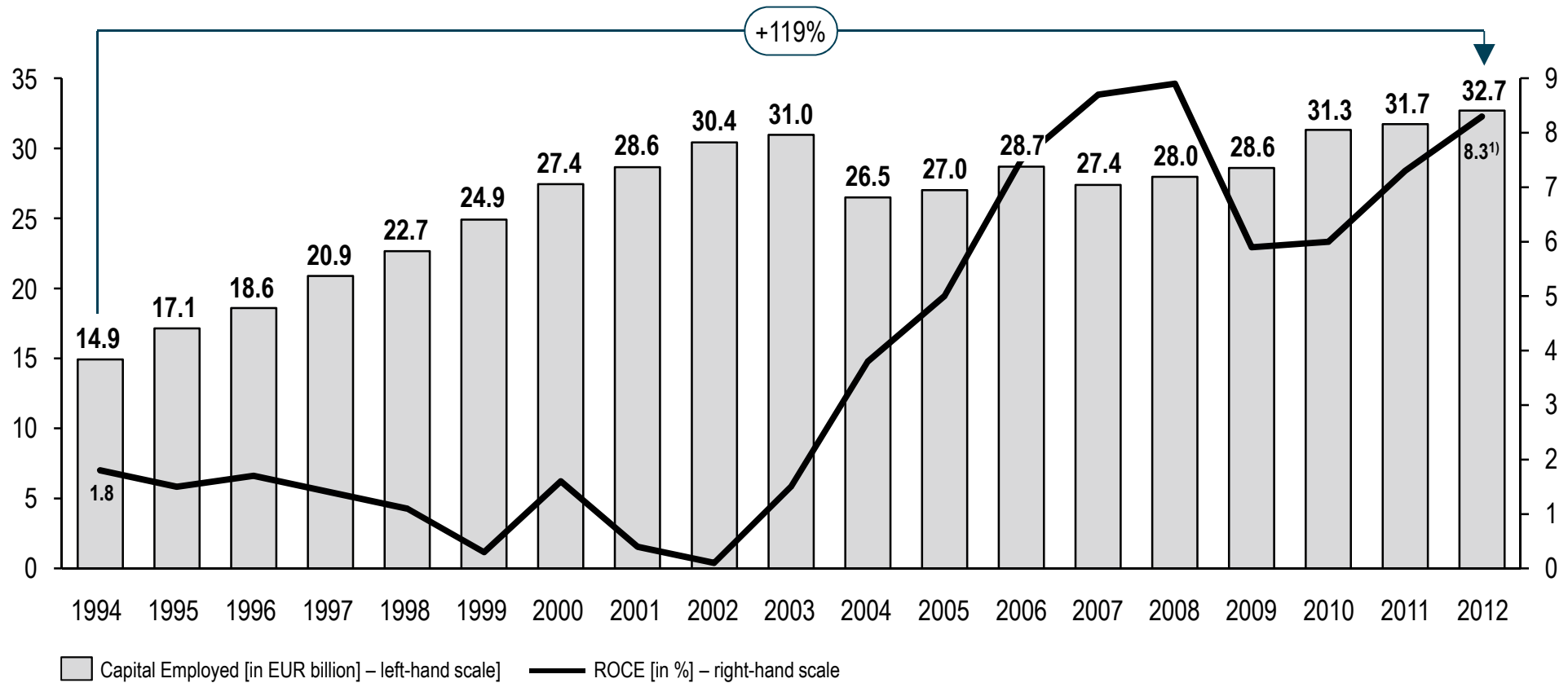
EBITDA AND EBT [in EUR billion]



Source: DB AG annual reports

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

Capital employed and ROCE at DB AG



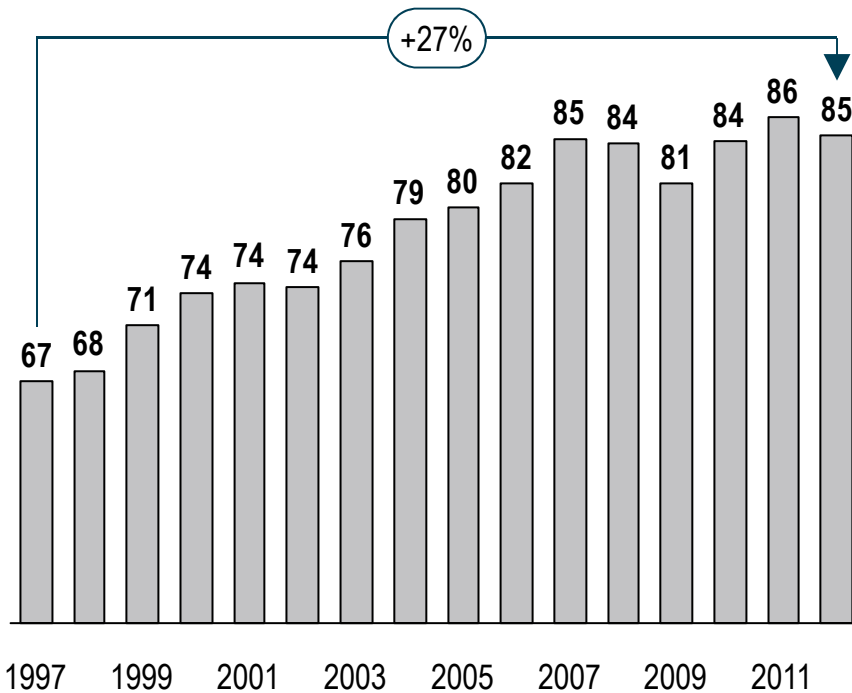
1) In current calculations cost of capital is 8.9%

Following rail reform more trains travel per kilometre of track, while products and equipment are being utilised more intensively

Productivity in the corporate divisions at DB AG

NETWORK UTILISATION

[in trains per track kilometre and day]



Source: DB AG annual reports

PRODUCTIVITY IN TRANSPORT SEGMENTS

Passenger transport (Germany)

1994 100.0 pkm/train-km

2012 128.5 pkm/train-km



Freight transport (Germany)

1994 303.5 tkm/train-km

2012 435.6 tkm/train-km



Wagon utilisation (DB Schenker Rail Europe-wide)

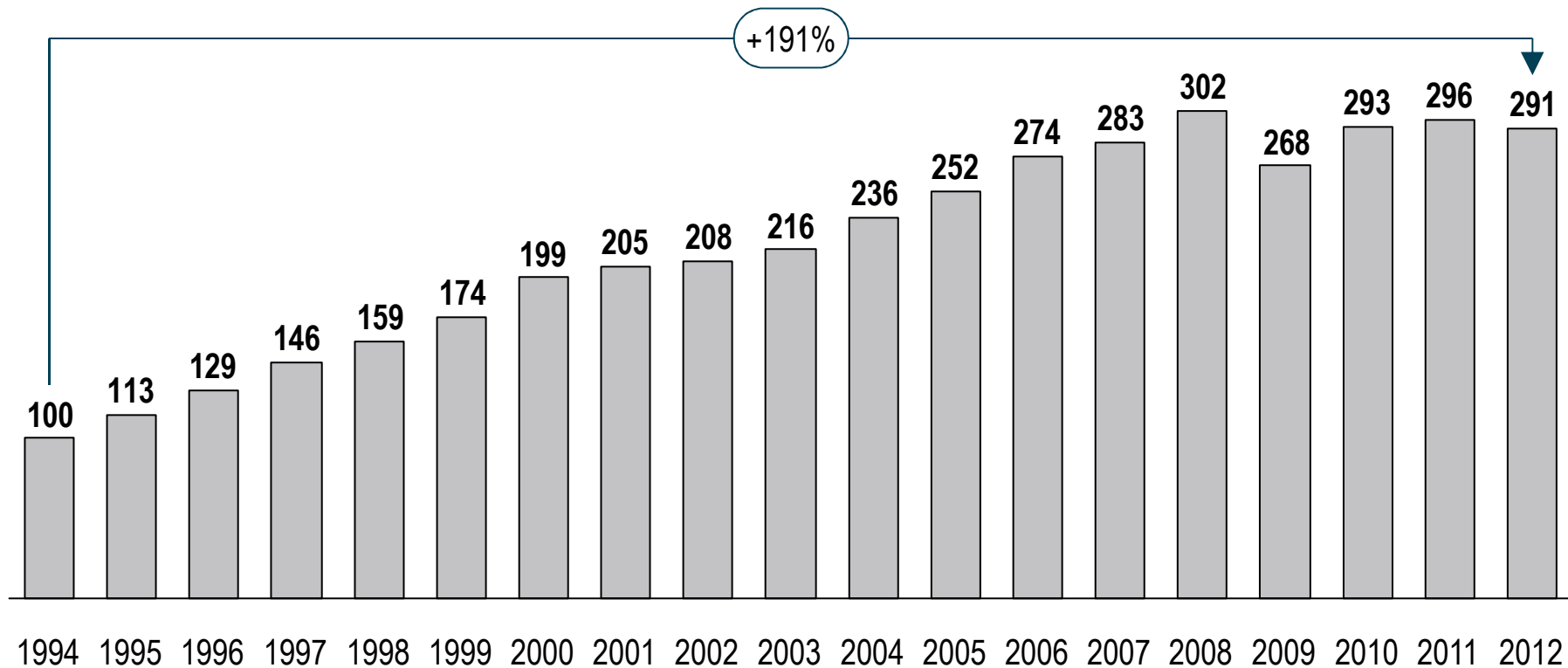
1994 356,444 tkm/freight wagon

2012 1,189,393 tkm/freight wagon



Up to 2008 employee productivity showed a clear rise – maximum potential for efficiency largely realised

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



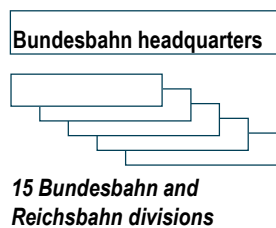
1) Basis: passenger-tonne-kilometres per DB AG employee in main rail segment in Germany (until 2009) and total employees of RIUs and RUs belonging to DB AG (from 2010)

The organisation of Deutsche Bahn AG was successively refined following the rail reform

Organisational development at DB AG

Bundesbahn

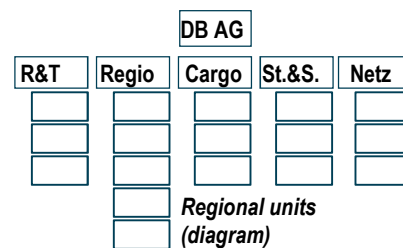
Objective: Fulfilment of duty to provide public transport by regionally organised, integrated rail company



Lack of market and customer orientation, structure of a public authority, low efficiency

DB AG after reform, stages 1 and 2

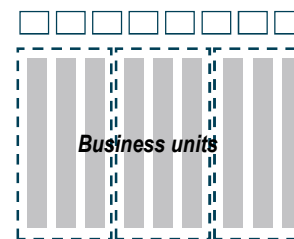
Objective: Strong, market-aligned corporate divisions and a lean holding company



Management companies drifted apart, customer approach not completely uniform

Integrated rail company enhanced

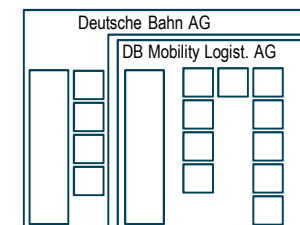
Objective: Realisation of synergies between business units when implementing EU provisions (First Railway Package)



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

Changes to services offered in timetable on selected long-distance routes

1 BERLIN - HAMBURG

	2002	2012
Shortest journey time	02:08	01:37
Direct connections per day	17	23
Transport volume 2002-2012		+80%

2 COLOGNE - FRANKFURT

	2002	2012
Shortest journey time	02:13	01:02
Direct connections per day	19	44
Transport volume 2003-2012 ¹⁾		+58%

3 BERLIN - LEIPZIG

	2002	2012
Shortest journey time	01:51	01:12
Direct connections per day	18	17
Transport volume 2002-2012		+183%

4 LEIPZIG - DRESDEN

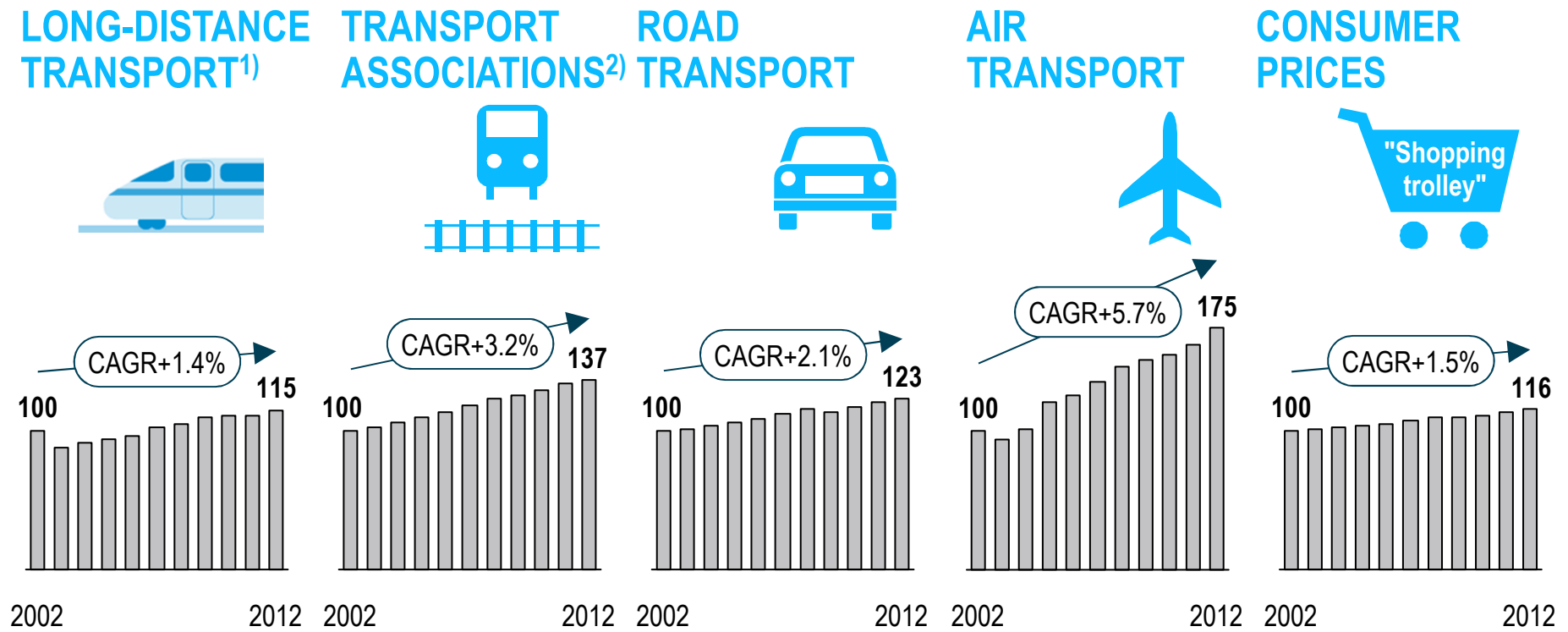
	2002	2012
Shortest journey time	01:08	01:03
Direct connections per day	16	17
Transport volume 2002-2012		+48%

Close temporal link between improvements to infrastructure and significantly higher demand

1) Comparable passenger figures not available for 2002

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

- | | |
|---|-------|
| <ul style="list-style-type: none"> > Clock-face timetabling for regional transport > Better trains > Accessibility > Service, e.g. 1st class service > Information along travel chain (real-time) | PT |
| <ul style="list-style-type: none"> > Lounges > Modern travel centres > www.bahn.de + apps > Repeaters for mobile phones, WLAN | |
| <ul style="list-style-type: none"> > Logistics services from a single source > Better international connections > Stronger customer focus for employees > Consignment tracking in freight transport > More planning security thanks to fixed timetables | FT |
| <ul style="list-style-type: none"> > Modern stations with attractive shops and cafés > Increase in stations with access for people with disabilities > Better equipment (e.g. switch heating, electronic signal boxes, etc.) | Infra |

Satisfaction index 2012¹⁾

Long-distance transport	62
Regional transport	67
DB Schenker Rail	63
DB Netz	73
DB B2C	69
Station & Service B2B	59 ²⁾
Tenants	73 ³⁾

- > **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

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

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

- > 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

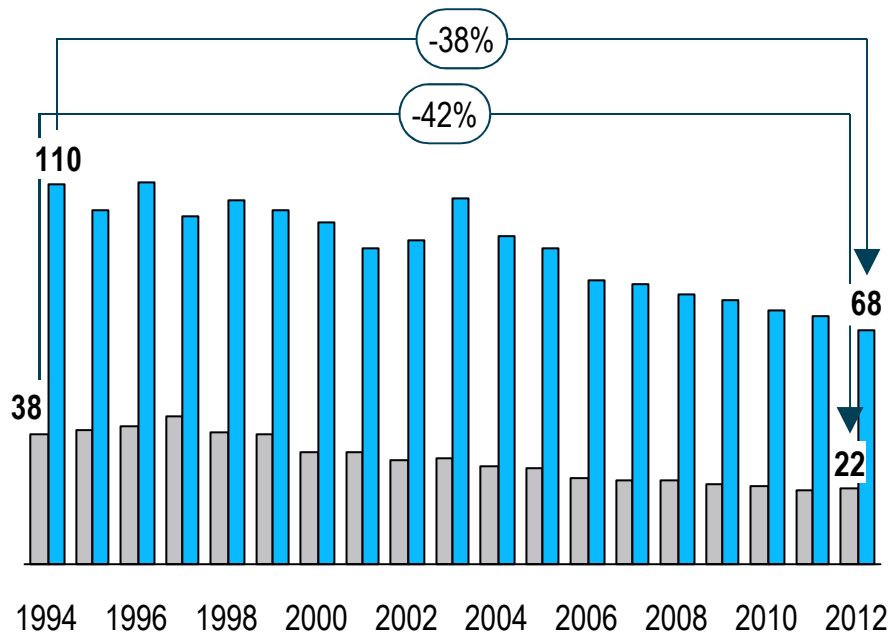
1) On a scale of 1 ("I do not agree at all") to 5 ("I agree completely") employee satisfaction is therefore above the mean value of 3

Relative CO₂ emissions in rail transport have been reduced since 1994 by an average of 40% – decrease also seen in absolute terms

Specific CO₂ emissions in rail transport¹⁾

RELATIVE CO₂ EMISSIONS

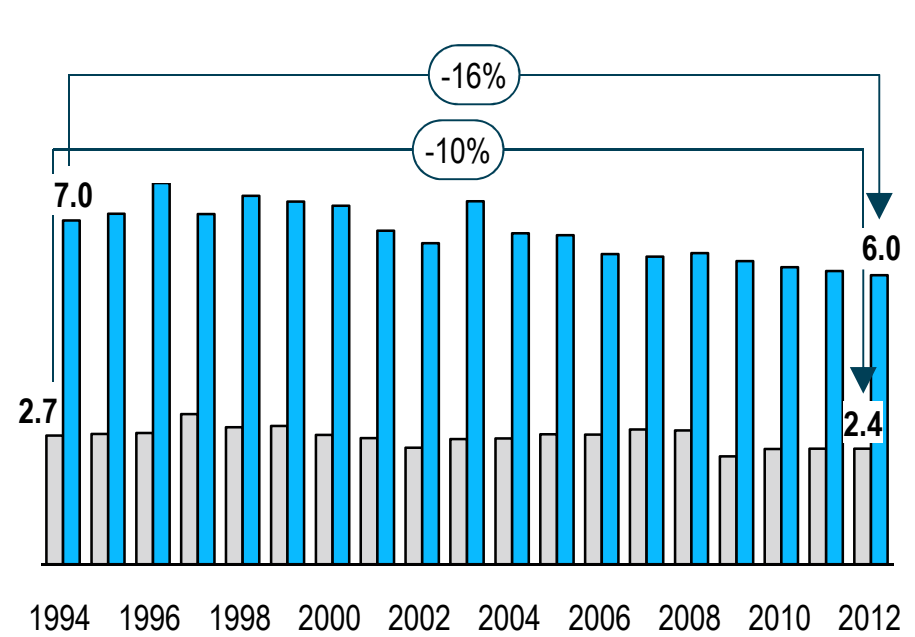
[in g per tkm or pkm]



Grey bar: Freight transport [in g per tkm] Blue bar: Passenger transport [in g per pkm]

ABSOLUTE CO₂ EMISSIONS

[in t million]



Grey bar: Freight transport [in t million] Blue bar: Passenger transport [in t million]

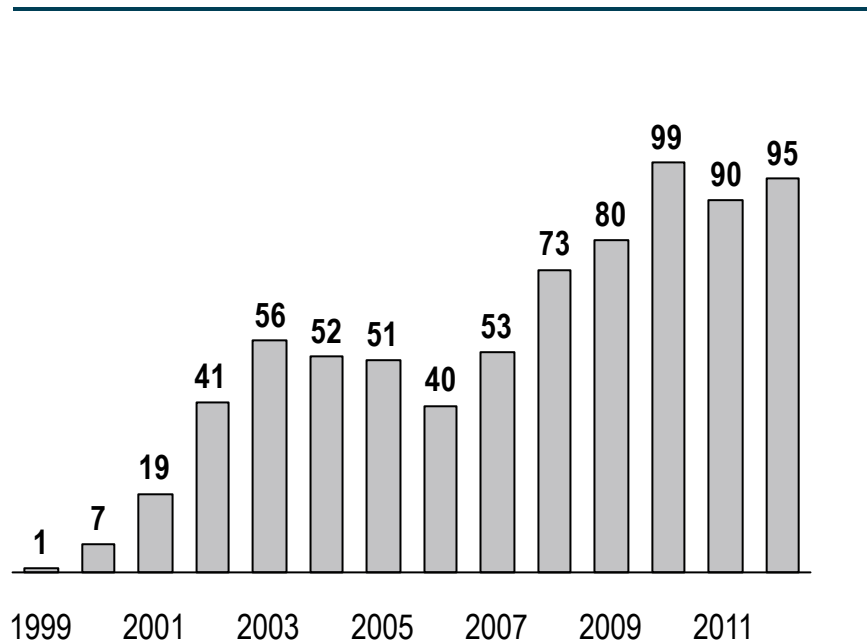
1) Includes third-party railways

Source: ifeu; DB AG

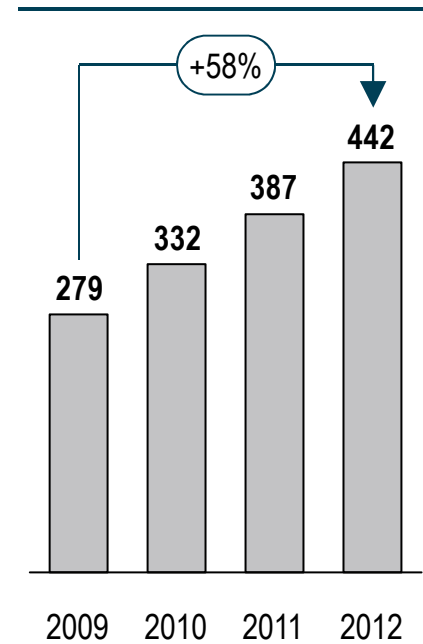
The reduction of railway noise has played an ever greater role in recent years

Investment in noise abatement measures

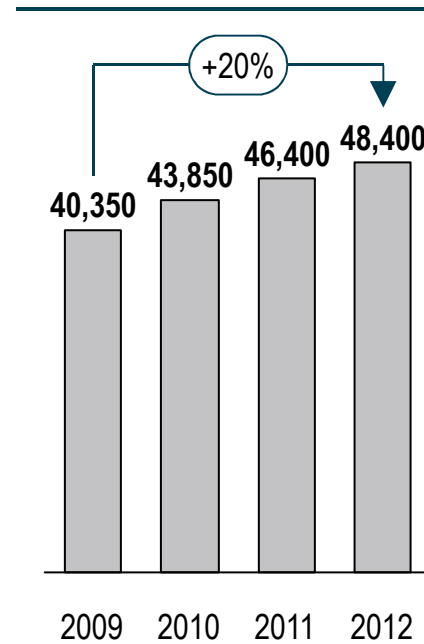
Government investment in **RAIL-NOISE PREVENTION MEASURES**
[in EUR million]



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



Number of flats fitted with **SOUND PROTECTION**



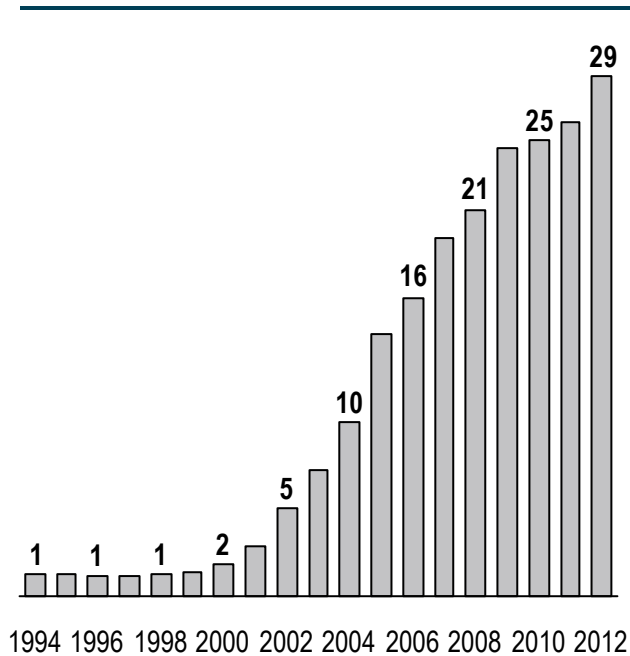
Source: DB AG annual reports

Market share of competitors has increased steadily in regional passenger and freight transport

Competitors' market share in freight transport and regional passenger transport

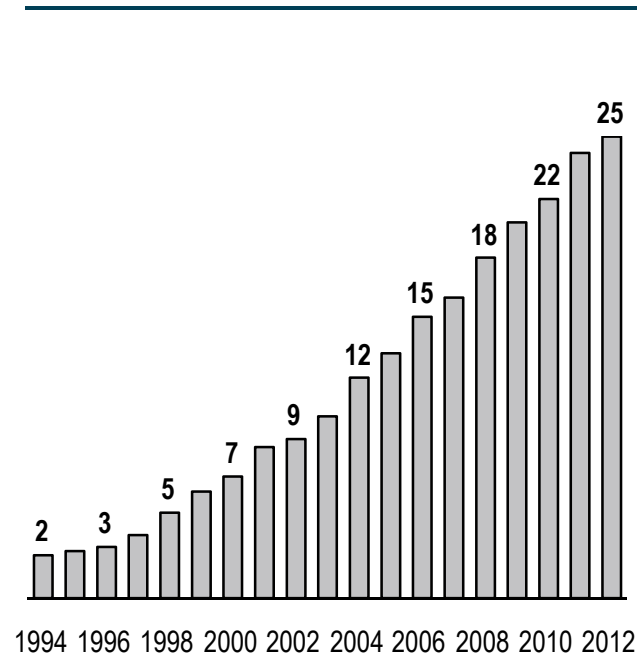
RAIL FREIGHT

[in % of tkm]



REGIONAL PASSENGER RAIL

[in % of train-km]



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

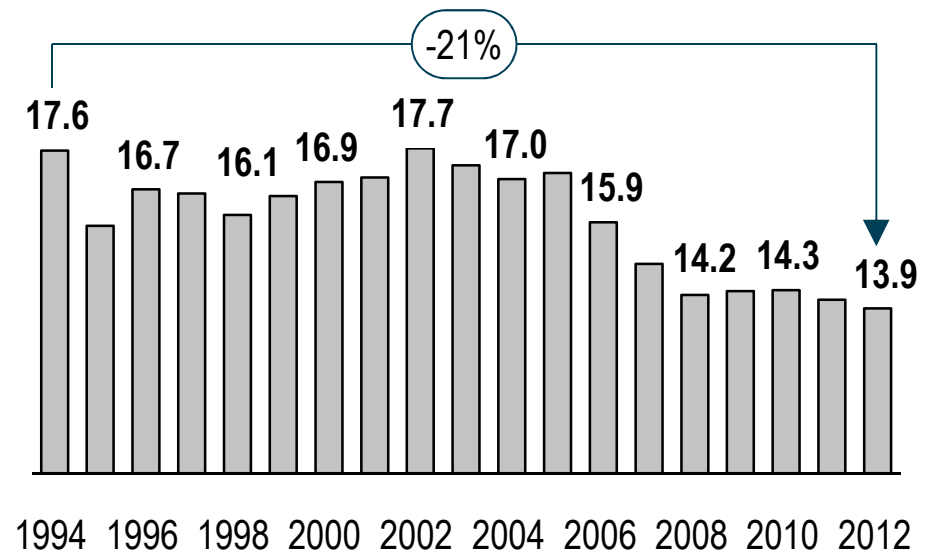
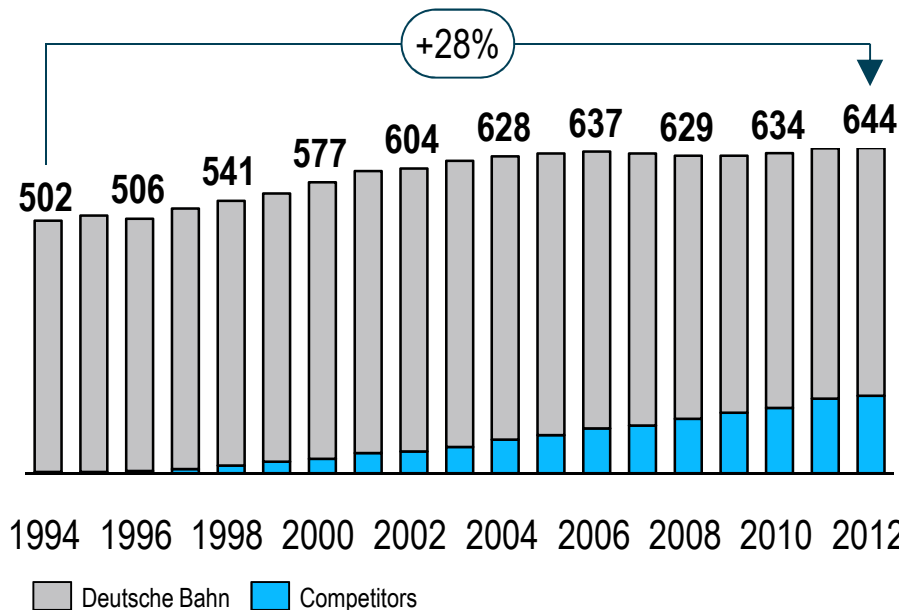
Source: "Verkehr in Zahlen" (government transport figures published annually); DB AG competition reports

Operating performance in regional passenger rail up sharply since 1994 – fees for transport services utilised more efficiently at same time

Operating performance and use of fees for transport services

OPERATING PERFORMANCE IN REGIONAL PASSENGER RAIL [in train-km million]

FEEES FOR TRANSPORT SERVICES IN REGIONAL PASSENGER RAIL [in euro cents per pkm]



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



LOWER SAXONY¹⁾

- > Transport services provided by 10 RUs in LNVG network (including DB Regio and S-Bahn Hamburg)
- > First contract-award competition in 2000 (Weser-Ems network to NordWestBahn)
- > LNVG procures vehicles and operates a vehicle pool with uniform fittings/design
- > Operators must use vehicles from this pool



RHEIN-RUHR REGION²⁾

- > Transport services acquired via invitations to tender since 1996
- > VRR also operates vehicle financing, a total of over 60 railcars have been financed to date
- > Obligation of operator to take on these vehicles (Ex.: RB47 contract between abellio and VRR on the Solingen – Wuppertal route)



SAXONY³⁾

- > Transport services acquired via invitations to tender since 1996
- > Plan to build up a vehicle pool, invitations to tender for procurement and maintenance of 25 electric multiple units in late 2012
- > Plan approved by federal procurement chamber in 2013

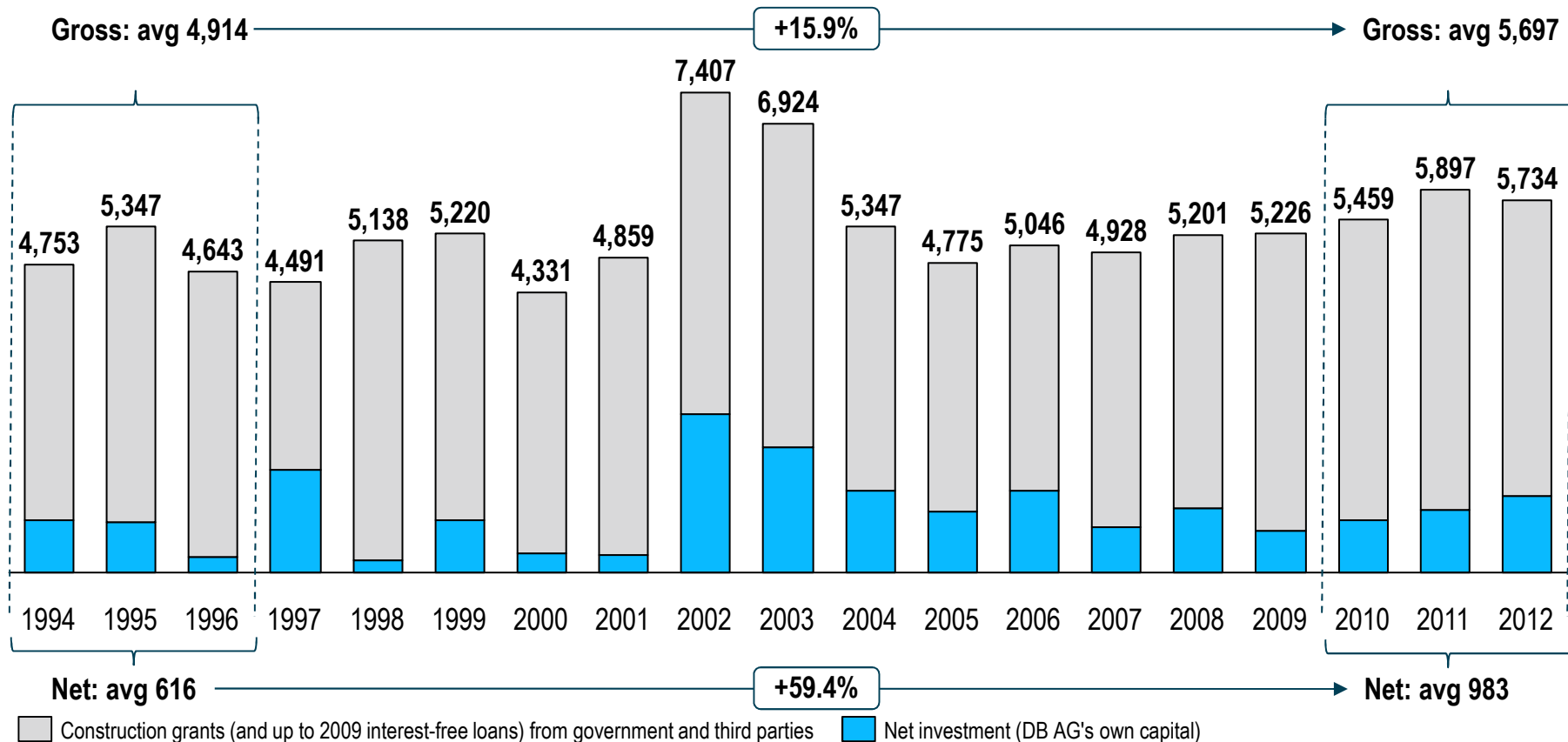


- > Vehicles are therefore tightly bound to the networks they operate on today, harder for used-vehicle market to develop
- > RUs are now only carriers – little entrepreneurial freedom, unattractiveness risks leading to low competition

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⁾



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

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

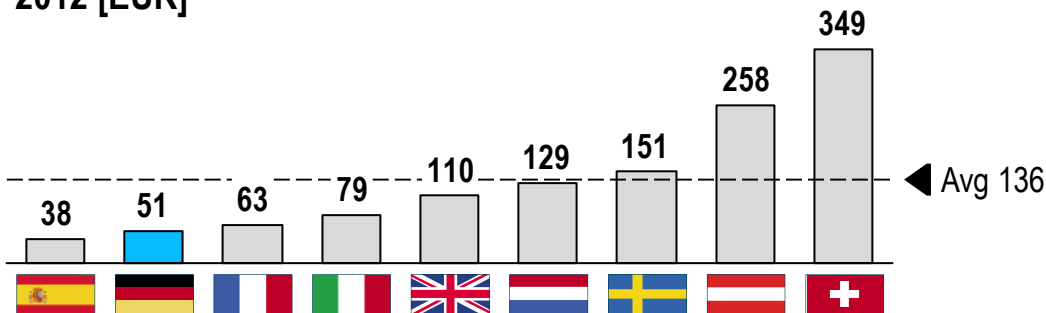
	1994	2012	DIFFERENCE
Network length	40,355 km	33,505 km	-17%
> With electrification	42.3%	59.2%	+40%
> With continuous automatic train control	2.7%	7.2%	+267%
No. of private sidings	11,290	2,374	-79%
No. of level crossings	29,895	14,190	-53%
> With technical safety installations	47%	69%	+47%

- > 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 effecting 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

Compared with other European countries, there is less investment in rail infrastructure in Germany

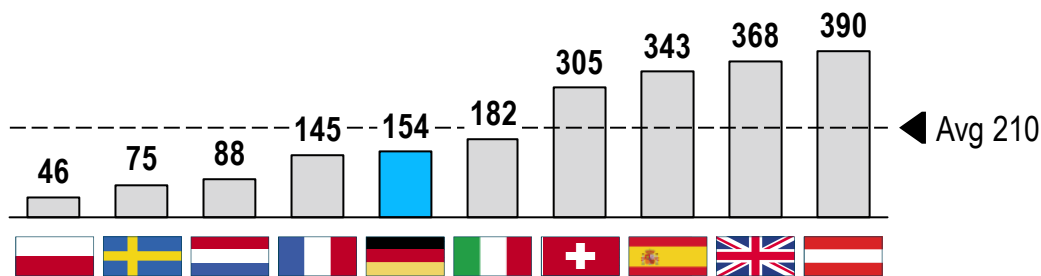
Investment in infrastructure

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



- > Transparent regulation of financing of existing network with Performance and Financing Agreement (LuFV) between government and DB AG
- > International comparison raises question of whether government should do more to fulfil duty to look after infrastructure
- > Example with much press coverage: investment backlog for bridges – deficits in a quarter of all overpasses identified by Federal Railway Authority (EBA) in late 2012

Investment per track km in 2011 [EUR '000]¹⁾



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

"Germany's bridges on brink of collapse."
Die Welt, June 2013

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

Rail transport is still disadvantaged in many ways compared with other modes of transport

Comparison of selected framework criteria

	<u>RAIL TRANSPORT</u>	<u>OTHER MODES OF TRANSPORT</u>
Taxation/charges	<ul style="list-style-type: none"> > Payment of renewables, mineral oil and electricity taxes (incl. EEG reallocation charge) > VAT 19% in long-distance transport and 7% in regional transport > Rail transport fully involved in emissions trading, with resulting cost disadvantages 	<ul style="list-style-type: none"> > Mineral oil tax for road transport > No kerosene tax on domestic flights > No VAT charged on cross-border air traffic
Infra-structure	<ul style="list-style-type: none"> > Lack of government funding for important construction projects from Federal Transport Infrastructure Plan > Rail transport pays charges on all train paths > Rail transport financed by budgetary funds that are subject to economic cycles 	<ul style="list-style-type: none"> > No road tolls for car travel in Germany > Truck toll applies only from total weight of 12 t and not on all roads > Road travel receives funds from toll revenue that is not dependent on economy
Vehicle fleet	<ul style="list-style-type: none"> > High safety requirements imposed by Federal Railway Authority lead to slow and expensive approval processes > No harmonised requirements across Europe, resulting technical and administrative obstacles in European inland transport > Expensive retrofitting of freight wagons with noise-reducing brake blocks necessary by 2020 	<ul style="list-style-type: none"> > Requirements for trucks uniform across Europe > Comparatively easy approval process for trucks and cars > Approval of aircraft simplified by type certification

Numerous interviews were conducted with representatives of associations, experts and protagonists of the rail reform

Interview index

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

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)