German Regional Rail Transport: Between Hope and Failure
A status quo analysis and 2030 projection

a presentation on the research project ‘Regional Railway Transport in Germany after COVID – reduced, recovering or booming?’
Motivation

The punctuality of Deutsche Bahn trains has been a concern, especially for long-distance rail passenger transport and regional rail passenger transport (Bundesnetzagentur, 2022).

"A disaster": How did train travel in Germany get so bad? (THE LOCAL de, 2022)
2. Methodology

2.1 Methods

**Scenario Technique**

... tool for creating & analysing future scenarios to anticipate demand for action

- Scenarios describe potential future situations as network of interconnected factors
- Helps exhausting future opportunities and reducing risk

**Expert Interviews**

... method for gathering information from the factual knowledge & subjective opinion of experts

- Future projections are associated with uncertainty and individual expectations
- Involvement of experts justifies assumptions
2. Methodology

2.2 Approach

STAGE 1
Current stage

Factors influencing GRRT

STAGE 2
Future development

Factor development until 2030

STAGE 3
Measures

Improvement measures of GRRT

Literature review

Factor impact assessment

Expert opinion

Experts’ development expectations

Further improvement measures of GRRT
The current state of factors influencing train sector is known, but their uncertainty and complexity of forecasting increases grows with advancing time.

→ Factors develop into different states, creating multiple scenarios
→ Reasonable combination of manifestations as basis of future strategies
2. Methodology

2.5 Scenario Technique

1. Analysis of scenario field
   - Separating scenario fields in spheres of influence and influencing factors
   - Influence analysis: interconnectedness of factors with each other and object of observation
   - Relevance analysis: determining key factors

2. Look ahead with future projection
   - Identifying characteristic developments of each factor with a fixed time horizon
   - Based on literature and experts’ statements

3. Scenario development
   - Evaluation of consistency of future projections (plausibility of occurrence)
   - Consistent combination of future projections (projection bundles)
2. Methodology

2.4 Expert Interview

**Expert Portrait**

**Interview 1**
- Transport and Environmental Economist
- Researcher at consulting firm focussing on transport planning and traffic-oriented environmental protection)

**Interview 2**
- Employee at Verkehrsverbund Oberelbe (VVO)
- VVO is a linked transport system of local public transport in the wider area of Dresden

**Interview 3**
- Employee at DB RegioNetz Verkehrs GmbH / DB RegioNetz Infrastruktur GmbH
- As a subsidiary of Deutsche Bahn, DB RegioNetz offers local rail passenger services in rural areas
### 2. Methodology

#### 2.5 Interview Guide

<table>
<thead>
<tr>
<th>1. Current Status of the German Regional Railway Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>- How would you describe the current demand and supply situation of German regional railway transport?</td>
</tr>
<tr>
<td>- How important is the state as a source of funding and as political guide for its development?</td>
</tr>
<tr>
<td>- What other influencing factors determine its development (digitisation, prices, environmental awareness etc.)?</td>
</tr>
<tr>
<td>- What has changed in the situation of German regional rail passenger transport due to the COVID 19 pandemic?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Development Expectations until 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Let's first take an optimistic perspective and think of the best possible version of the year 2030. Ecological development goals are frequently discussed. How does German regional passenger transport support their realisation?</td>
</tr>
<tr>
<td>- What other goals are pursued until 2030? What obstacles stand in the way of realising these goals?</td>
</tr>
<tr>
<td>- How do you think demand will actually develop by 2030? And how do you think the situation of the operators will develop by then?</td>
</tr>
<tr>
<td>- You have already mentioned influencing factors. What obstacles could lead to differences between goals and reality in the future?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Measures for the Realisation of Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>- In order to achieve development goals, specific measures are needed. One such measure is the €49 ticket, which is to be available from April 2023. What expectations – and perhaps fears – do you associate with it for the future?</td>
</tr>
<tr>
<td>- What other measures are conceivable for you to achieve development goals by 2030? (not only by the state, but also by operators and customers)</td>
</tr>
<tr>
<td>- What obstacles could make the implementation of such measures more difficult?</td>
</tr>
</tbody>
</table>
PART 1

Current Status of the German Regional Railway Transport
3. Current Status of the GRRT

3.1 Introduction

In Germany, local public transport is the responsibility of 2 bodies by law:

- **Regional rail transport:** responsibility of federal states
- **Regional road transport:** responsibility of municipalities

Traffic volume per mode of transport in millions of passenger trips:

<table>
<thead>
<tr>
<th>Year</th>
<th>Pedestrian traffic</th>
<th>Bicycle traffic</th>
<th>Public road transport</th>
<th>Air traffic</th>
<th>Motorised private transport</th>
<th>Rail traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>96.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2036*</td>
<td>98.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2041*</td>
<td>100.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2046*</td>
<td>102.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2051*</td>
<td>103.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Bundesministerium für Digitales und Verkehr, 2020)
### 3. Current Status of the GRRT

#### 3.3 Factor Weighting

<table>
<thead>
<tr>
<th>Highly relevant</th>
<th>Relevant</th>
<th>Less relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic change</td>
<td>Technological innovation</td>
<td>Market access</td>
</tr>
<tr>
<td>COVID-19</td>
<td>Deutschlandticket</td>
<td>Personnel costs</td>
</tr>
<tr>
<td>Service availability</td>
<td>Deutschlandtakt</td>
<td>Usage of further investment opportunities</td>
</tr>
<tr>
<td>Political Priorities</td>
<td>Market competitiveness</td>
<td>Availability of building materials</td>
</tr>
<tr>
<td>Relative attractiveness</td>
<td>Extension of passenger services</td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Economic outlook</td>
<td></td>
</tr>
</tbody>
</table>

(Own weighting and representation based on remarks from experts & literature)
3. Current Status of the GRRT

3.2 Influencing Factors

Demographic Change

Population in Germany by age group in million

<table>
<thead>
<tr>
<th>Year</th>
<th>0-9 years</th>
<th>10-17 years</th>
<th>18-65 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>7.7</td>
<td>6.7</td>
<td>52.5</td>
<td>17.0</td>
</tr>
<tr>
<td>2036</td>
<td>8.0</td>
<td>6.7</td>
<td>48.1</td>
<td>21.2</td>
</tr>
<tr>
<td>2041</td>
<td>7.9</td>
<td>6.7</td>
<td>48.4</td>
<td>20.9</td>
</tr>
<tr>
<td>2046</td>
<td>8.0</td>
<td>6.6</td>
<td>48.8</td>
<td>20.3</td>
</tr>
<tr>
<td>2051</td>
<td>8.1</td>
<td>6.6</td>
<td>48.8</td>
<td>19.9</td>
</tr>
</tbody>
</table>

Number of urban and rural residents in millions

<table>
<thead>
<tr>
<th>Year</th>
<th>Country dwellers</th>
<th>City dwellers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2040</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2050</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Bundesministerium für Digitales und Verkehr, 2020)
3. Current Status of the GRRT

3.2 Influencing Factors

Demographic Change

Municipalities in western Germany have predominantly experienced population growth between 2015 and 2020.

Municipalities in eastern German states have recorded declining population figures.

Average development of the population between 2015 & 2020 per year:
- < -0.25 %
- -0.25 - 0 %
- 0 - 0.25 %
- 0.25 - 0.5 %
- > 0.5 %

(Deutschlandatlas, 2020)
3. Current Status of the GRRT

3.1 Introduction

Demographic Change

- Society is experiencing sustained demographic change & increasing urbanization
- Population figures in rural regions have been declining for years
- Regional differences: strong traffic increase in southern Germany; shifts from private to public transport in urban areas
3. Current Status of the GRRT

3.2 Influencing Factors

**COVID-19**

In 2020, transport performance in regional passenger rail transport fell by 38% compared to the previous year.

Due to reduced traffic density and an increase in train-path capacity, punctuality improved.

Marked declines were observed among all modes of transport that were directly affected by lockdown measures.

- Strong association between transport accessibility & the spread of Covid-19
- Transport sector negatively impacted by slowdown of economic activities & restrictions on social contacts
- During the pandemic people felt safer using bike or own car
- Low confidence in public transit during pandemic due to people perceiving it as a riskier space
3. Current Status of the GRRT

3.2 Influencing Factors

Service availability
3. Current Status of the GRRT

3.2 Influencing Factors

Personnel availability

Employee availability in the rail industry from 2015 to 2018:

- 2015: 234,000
- 2016: 235,000
- 2017: 240,000
- 2018: 245,000

- Impact of the COVID-19 pandemic affects staff availability → decline in ridership, revenue & employment opportunities
- Sector needs to become more attractive to young people, specialists, engineers & IT experts
- Passenger rail increased market share & jobs: rail industry provides more than 260,000 full-time jobs, trend is rising

(Allianz pro Schiene, 2018)
3. Current Status of the GRRT

3.2 Influencing Factors

Political priorities

Between 1994 & 2010 in Germany, 192 km additional new roads were built per week, compared to only 1,3 km of additional railroads per week → factor of 150

→ All about political decisions!

(Netzwerk europäischer Eisenbahnen, 2019)
3. Current Status of the GRRT

3.2 Influencing Factors

Relative attractiveness and integration

Are regional railway services and other modes of transport, esp. (electric) cars substitutes or complements?
3. Current Status of the GRRT

3.2 Influencing Factors

**Relative attractiveness and integration**

*Are regional railway services and other modes of transport, esp. (electric) cars, substitutes or complements?*

Substitutes:
- Regional railway services and other modes of transport are substitutes → either take train or car to destination

Complements:
- Park and Ride, esp. in smaller cities and towns: take car to train station, park there, then use train to go to work
- Investment in such infrastructure needed (enough parking spaces)
- More important: Integrability needs to be improved
- Does my train ride regularly? Is my train punctual (punctuality in Germany worse than in other European countries)? If not, what are the alternatives? Can I check in easily via an App?
- Intermediate step in shifting from road transport with high emissions to train transport with lower emissions

This debate again, is politically driven. From our opinion, the discussion needs to move away from E-Fuels, towards making a real impact. This can be achieved by first using railway and street transport as complementary goods, and then as substitutes.
3. Current Status of the GRRT

3.2 Influencing Factors

- Traffic increases, but rail network decreases → scarcities
- Accessibility: in 2022, ≈ 1.8 billion EUR invested in building new stations or modernising existing ones → yet, every fifth railway station is not yet accessible without steps
  - Heterogeneity: Saarland 60 %, Schleswig-Holstein 98 %
  - Federal government significantly increased budget for attractive & barrier-free railway stations for 2023 → > 262 million EUR available for coming year

---

**Traffic and Rail Network in Germany**

- Freight traffic
- Passenger traffic
- Rail network

(Allianz pro Schiene, 2022)
3. Current Status of the GRRT

3.2 Influencing Factors

Infrastructure and electrification

Share of electrified lines in the state rail network in Germany in %

Koalitionsvertrag: 75% in 2030 → more investment & further expansion needed

Share of electrically powered transport traffic in Germany, 2020

- Passenger long-distance Traffic: 99%
- Freight traffic: 97%
- Passenger short-distance traffic: 81%

(Allianz pro Schiene, 2022)
3. Current Status of the GRRT

3.2 Influencing Factors

**Technological innovation**

- Besides Electrification:
  - **Hydrogen Railcar** (fuel cell generates electricity from hydrogen)
  - **Battery Multiple-Unit Train** (draws traction current from the overhead line on electrified sections, uses batteries for traction current where no external power supply is available)
    - Advantage: Battery-powered multiple units can use the existing overhead line infrastructure for driving & "refuelling"
    - Disadvantage: Low range when using batteries (only about 100km)
  - **Hybrid Locomotives** (At partial load, locomotive runs on battery power → only when more power is needed, a diesel engine helps out → engine also serves as a power generator to recharge battery)
  - **Dual-mode locomotives** (combine two fully-fledged locomotives in one vehicle → vehicle is a real electric locomotive that runs on electricity from overhead line, but also has a low-emission diesel engine on board)
  - **Last-mile locomotives** (same as Dual-mode, diesel engine is smaller, hence the name)
- More funding needed (between 40-60 % of additional costs for alternate drives are subsidised, compared to 80 % for busses)
- Innovation in battery density needed to extend range of full-battery drive
3. Current Status of the GRRT

3.2 Influencing Factors

Deutschlandticket

Willingness to pay at least 49 EUR for a monthly public transport ticket

- Results from 9 EUR-ticket, which was offered in summer months of 2022
- New permanent offer for public transport in Germany
- Price is 49 EUR per month and is to be valid from May 1, 2023

(Statistisches Bundesamt, 2022)
3. Current Status of the GRRT

3.2 Influencing Factors

**Deutschlandtakt**

- Project to make rail transport in Germany **better coordinated, faster, more frequent** and **more accessible**
- Trains will arrive at the same time & depart again shortly afterwards → optimum transfer opportunities & easy-to-remember timetables
- Increase in **flexibility** of travelers
- Overall travel time is to be shortened
3. Current Status of the GRRT

3.2 Influencing Factors

**Extension of transport services**

Expansion of the range of services needed to stay on top:

- Comfort
- Food & Drink
- Security
3. Current Status of the GRRT

3.2 Influencing Factors

**Economic growth and inflation**

- GDP expected to grow by 1.35% p.a. in real terms until 2040, thereafter 1.26% p.a.
- Overall inflation: fall from 6.9% (2022) to 2.2% (2024)
- Core inflation likely to rise from 4.9% (2022) to 6.3% (2023), decline then to 2.8% (2024)
- Inflation share of energy price will decline strongly
- Assumptions:
  - Commodities & energy don’t become significantly more expensive (current market expectations)
  - ECB continues to raise its key interest rates
3. Current Status of the GRRT

3.2 Influencing Factors

**Market competitiveness**

**Price**

Making train cheaper (e.g. via 49€-Ticket) is only half of the story.

It needs to be cheaper in relative terms (compared to other transport modes), taking all variables into account (duration, full train/empty train, working AC/heating, cleanliness, etc).

**Digitisation**

(“Digitale Schiene”)

Influencing capacity, punctuality, reliability.
3. Current Status of the GRRT

3.2 Influencing Factors

**Market access**

- 446 rail transport companies held a license for the provision of public rail transport services (2020)
- German rail market thus has the highest number of competitors in an international comparison
- Non-federally owned rail transport companies increased their market share
- State railroads from other European countries are active in Germany, which shows that the German rail market is attractive for foreign companies
3. Current Status of the GRRT

3.2 Influencing Factors

Personnel costs

- Costs for driving personnel usually account for about a quarter of the total train transportation costs (i.e. excluding infrastructure usage charges)
- Regional rail passenger transport is a public means of transport and the collective bargaining agreement for the public sector (TVöD) applies to personnel, costs can be higher than in other industries
3. Current Status of the GRRT

3.2 Influencing Factors

**Exploiting further investment opportunities**

- Income from operating business (fare revenue)
- Governmental funding
- Employer contributions in France
- Tolls in England & Sweden to expand rail
- Underground contributions in Vienna

**Two main financing pillars**

**Further financing opportunities**
3. Current Status of the GRRT

3.2 Influencing Factors

**Availability of building material**

- Materials such as rails, sleepers, switches, fastening elements and signals are required for the construction and maintenance of rail tracks in regional passenger rail transport
- Costs may vary depending on availability, supply chain and due to unforeseen events, such as the war of aggression in Ukraine
- Not only the rail industry is affected by these fluctuations, but other industries as well
## 3. Current Status of the GRRT

### 3.3 Factor Weighting

<table>
<thead>
<tr>
<th>Highly relevant</th>
<th>Relevant</th>
<th>Less relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic change</td>
<td>Technological innovation</td>
<td>Market access</td>
</tr>
<tr>
<td>COVID-19</td>
<td>Deutschlandticket</td>
<td>Personnel costs</td>
</tr>
<tr>
<td>Service availability</td>
<td>Deutschlandtakt</td>
<td>Usage of further investment opportunities</td>
</tr>
<tr>
<td>Political Priorities</td>
<td>Market competitiveness</td>
<td>Availability of building materials</td>
</tr>
<tr>
<td>Relative attractiveness</td>
<td>Extension of passenger services</td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Economic outlook</td>
<td></td>
</tr>
</tbody>
</table>

(Own weighting and representation based on remarks from experts & literature)
PART 2
Development Expectations until 2030
4. Development Expectations until 2030

4.0 Economic Assumptions for 2030

- **Gross domestic product**: increases annually by 1.14%.
- **Labour force potential**: falls slightly from 41.5 million to 39.7 million persons.
- **Inflation rates**: fall annually and level off at 2% level by 2030.
- **Number of people in employment**: falls from 39.8 million to 39.0 million persons.

(Strukturdatenprognose 2030, 2022)
4. Development Expectations until 2030
4.1 Political Objectives for 2030

New dawn in mobility policy
Enable sustainable, innovative, intelligent, barrier-free and accessible mobility for all

Climate protection targets
Faster decarbonisation of the mobility sector

Doubling of passenger transport services
Corresponding adjustment of timetable and infrastructure capacity

Increase infrastructure investments & secure them in the long term
Invest considerably more in rail than in street

Innovation
Electrify 75% of the rail network and promote innovative drive technologies

(SPÖ, BÜNDNIS 90 / DIE GRÜNEN & FDP, 2021)
4. Development Expectations until 2030

4.2 Factor Development

- Deployment of rolling stock
- Maintenance & extension of rail network
- Financing

- Sensitivity about environmental issues
- Price
- Quality of transport services
- Digitisation

- Overall prioritising of transport modes
- Rail as tool in fight against climate change
- Industry structure
- Research & Development

- (Sub)urbanisation
- Changes in mobility behaviours
- Shortage of staff & qualified personnel

- Tendering framework
- Interconnection with other transport modes
- Automated train vehicles
- Price-equilibrium

- Infrastructure
- Demography
- Relative attractiveness
- Service availability
- Political priority
## 4. Development Expectations until 2030

### 4.2 Factor Development

<table>
<thead>
<tr>
<th>Political Priority</th>
<th>Specification</th>
</tr>
</thead>
</table>
| Overall political prioritising of transport modes | – Role state attributes to railways in fulfilling its responsibility to provide services of public interest  
– Differs across regions with different mobility attributes and needs |
| Rail as a tool in the fight against climate change | – Reduce CO₂ emissions and forward climate goals: new regulations  
– Direction and extent of political engagement in climate protection |
| Industry structure | – Driven by availability of public funds, standardisation mechanisms (vehicles, infrastructure), legal complexity, price policy |
| Research & Development | – Publicly financed promotion of innovations in technology, production and processes shaping train sector |

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Specification</th>
</tr>
</thead>
</table>
| Deployment of rolling stock | – Availability/appropriateness of vehicles (incl. anti-discriminatory accessibility)  
– Information and communication technology making train sector more efficient and attractive but requiring political intervention |
| Maintenance & extension of rail network | – New and reconstruction measures required for increase in traffic volume  
– Bundesverkehrswegeplan: complete implementation improbable  
– Eliminate bottlenecks: high investments  
– Supplier industry; residents’ resistance |
| Financing | – Subsidisation gets more important  
– Basis of measurements has to be reliable long-term financing  
– Investments take time to make impact |
### 4. Development Expectations until 2030

#### 4.2 Factor Development

#### Relative Attractiveness

<table>
<thead>
<tr>
<th>Factor</th>
<th>Specification</th>
</tr>
</thead>
</table>
| Passengers' sensitivity about environmental issues | – Awareness and problematisation of climate change, noise, fine dust drives transport mode choice  
– Comparatively low decision-making relevance                                                                                                     |
| Price                                       | – Appropriateness and relative expensiveness  
– Driven by energy costs (which make only 10 % of operating costs of train, but 30 % of car) and Deutschlandticket                                                                                     |
| Quality of transport services               | – Reliability (punctuality, effect of delays)  
– Travel time (duration)  
– Accessibility: flexibility (spontaneity & frequency of commencement), land exploitation (connection between starting point & end)  
– Simplicity (journey planning, ticketing)  
– Integration of journey chain (changes, waiting time, separateness)  
– Comfortability, (perceived) security                                                                                                              |
| Digitisation                                | – Innovation changes mobility and transport mode attractiveness  
– Digital distribution channels (multimodal platforms, all-in-one offers)  
– Autonomous driving                                                                                                                                  |
### Demography

<table>
<thead>
<tr>
<th>Factor</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility behaviour of passengers</td>
<td>- Will be influenced by societal change: elderly people get more mobile</td>
</tr>
<tr>
<td></td>
<td>- Increasing single households: increasing spatial interactions and</td>
</tr>
<tr>
<td></td>
<td>broader social contacts’ diffusion</td>
</tr>
<tr>
<td>Population aging</td>
<td>- Elderly people need anti-discriminatory access and simplification of digital</td>
</tr>
<tr>
<td></td>
<td>ticket supply</td>
</tr>
<tr>
<td>Development of income per capita</td>
<td>- Net income p.c. must keep up with ticket prices or outpace them</td>
</tr>
<tr>
<td>(Sub)Urbanisation</td>
<td>- Decreasing rural population, increasing agglomeration</td>
</tr>
<tr>
<td>Decreasing overall workforce</td>
<td>- Migration needs to be upheld</td>
</tr>
<tr>
<td></td>
<td>Better and more recruitment of trainees</td>
</tr>
</tbody>
</table>

### Availability & quality of train services

<table>
<thead>
<tr>
<th>Factor</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated train vehicles</td>
<td>- Rail development organisation is too short dated: lack of planning security</td>
</tr>
<tr>
<td>EU-wide border-crossing mobility</td>
<td>- More supranational train connectivity helps to increase passenger figures</td>
</tr>
<tr>
<td>Technical innovations of service</td>
<td>- Responding to passenger preferences, environmental awareness and</td>
</tr>
<tr>
<td></td>
<td>simplicity to access train services</td>
</tr>
<tr>
<td>Public tendering</td>
<td>- Dogma of “low-cost supplier wins”: loss of service quality: ticket</td>
</tr>
<tr>
<td></td>
<td>classification could be implemented</td>
</tr>
<tr>
<td>Price-quality ratio</td>
<td>- Price-equilibrium between high passengers’ numbers &amp; cost coverage</td>
</tr>
<tr>
<td></td>
<td>- 49 EUR will be in place for two years, costing 1.5 bn EUR per year</td>
</tr>
<tr>
<td></td>
<td>- By 2025, “Deutschlandticket” is supposed to cost at least 69 EUR</td>
</tr>
</tbody>
</table>
4. Development Expectations until 2030

4.3 Negative Scenarios

**Negative Scenario**

- Frequent errors in operations
- Desolate state of infrastructure & transport service
- Hopeless skill shortage
- Growing investment backlog
- Focus on street mobility
- Rail falls behind (limited operations)

- Gets less attractive & remains disadvantageous
- New mobility concepts & innovation make car attractive
- Service suffers from bottlenecks
- Growing investment backlog

- Low importance: replacement & less research
- No standardisation: complexity & high costs
- Less backup, maintenance, rail network
- Financial struggles or unprofitability
- Faster thinning out in rural areas: replacement
- Rapid ageing & migration barriers: limits operations
4. Development Expectations until 2030

4.3 Negative Scenario

- Rail sector is displaced
- Focus on urban connections
- Rails in poor competitive position & withdraws from certain mobility sectors

Progress in car innovations & mobility concepts excluding rail
Transport choice develops in favour of other modes (e.g. long-distance buses)
Cost structure in rail sector disadvantageous
No convergence of rail offers

Negative Scenario in detail

- Low importance attributed to railways
- Research efforts directed towards other means of transport
- No significant progress with Deutschlandtakt & no harmonisation
- Reduction of financial resources & focus on road transport
- Innovation obstacles
- Isolated solutions without standards & alignment

Transport choice develops in favour of other modes (e.g. long-distance buses)
4. Development Expectations until 2030

4.3 Negative Scenario

- Limited operational readiness of infrastructure
- Price-based destructive competition
- No possibilities to expand services
- Further reduction of financial resources up to unprofitability
- Reduced backup trains & focus on maintenance costs
- Tenders focused on costs
- No expansion or even reduction of rail network
- Deterioration of DB AG's economic situation & economic risks
- Following trend of past years
- Lower sense of security, rise in crime
- Unbeneficial development
- Deutschlandticket raises above 49€
- Little public transport services
- Decreasing trains can operate
- Less passengers
- Less personnel training options
- Services under-proportional to GDP
- Less passengers, higher costs
- Unsolved bottlenecks & quality loss
- Less passengers afford tickets
4. Development Expectations until 2030

4.3 Positive Scenario

- Fixed political tool in providing services of general interest
- Increased attractiveness: standardisation, innovation, mobility platforms, tariff unification
- Increasing profitability
- Infrastructure bottlenecks from past

**Positive Scenario**

- Innovations improve quality of services
  - Uniform tariffs & digital distribution increase attractiveness
- Standardisation & unification: higher reliability, lower costs
- Prioritised over other modes: more funding & research

**Increasing population (migration):**
- More personnel & passengers

**Unlikely**
- Increasing profitability
- Infrastructure bottlenecks from past
- Higher investments

**Strict climate protection**

**Integrative mobility platforms:**
- Higher flexibility

**Car innovations fail or too expensive**

**Rural areas get more attractive**
4. Development Expectations until 2030

4.3 Positive Scenario

Positive Scenario in detail

- Rail as widely accepted & used means of transport in society
- Train becomes significantly more attractive compared to car
- Better position of rail in choice of means of transport

Increasing environmental awareness

Car innovations fail or too expensive for general public

Further standardisation of Deutschlandticket

Introduction of uniform mobility platforms & all-in-one offers

Advanced implementation of Deutschlandtakt

Standardisation & harmonisation of infrastructure and vehicles

Prioritising rail, tightening climate protection regulations (e.g. driving bans)

State support for R&D & price increase of combustion engine

More reliable, attractive, comprehensible routes

Cost reduction

Higher market share & financial strengthening

Train mobility becomes cheaper and cleaner
4. Development Expectations until 2030

4.3 Positive Scenario

- Attractiveness increases due to higher safety & speed, better maintenance planning
- Costs decrease due to demand-oriented deployment
- No complete realisation of all infrastructure projects urgent today

- Advanced electrification of trains
  - Innovations in rolling stock for data generation & use
  - U-turn in planning & implementation of construction projects causes high time expenditure

- Increased net income per capita
- Increased working population
- More trainee personnel for DB
- Significant rural passenger growth
- Steady budget for travel possibilities
- Meet demands of Deutschlandtakt
- Less car dependency
- Perfectly matching train travels
- Preventing personnel problems
- Increased customer satisfaction
- Fixed at 49€ & increasing passengers

- Smart street mobility concepts
- Automated trains only
- Unification of digital supply accessibility
- Well accepted Deutschlandticket
- Automated trains only
- Increased customer satisfaction
- Fixed at 49€ & increasing passengers
4. Development Expectations until 2030
4.3 Trend Scenario

**Trend Scenario**

- Deutschlandtakt & -ticket present ambitious goals
- Societal attitude towards car changes
- Accelerated aging of population
- Germany will remain a car industry nation
- Increasing demand for rail services
- 60 billion investment backlog

- Deutschlandtakt postponed
- Deutschlandticket yields new hope for development
- Investment backlog

- Societal change progresses
- Germany as car industry nation
- Cheap tickets: Price effects entail little influence

- Ageing German population
- Urbanisation and thinning of rural areas
- Travel intentions

- Fully automated train operations unrealistic
- Demand for rail services will increase
- New mobility concepts need integration

- Rolling stock improves
- Lower (personnel & energy) costs
- Serious investment backlog on infrastructure

- Travel intentions

New mobility concepts need integration
4. Development Expectations until 2030

4.3 Trend Scenario

- **Better competitive position of rail**
- **Rail gains in cost position**
- **Linking public & motorised individual transport**
- **Some competitive strengthening, but no disruptive change in market share**

- **Car no status symbol & no significant innovation progress**
- **Current weaknesses in rail sector make it less attractive in 2030**
- **High energy/oil prices**
- **New mobility concepts, sharing economy**
- **Declining trend in punctuality, area exploitation & safety, but increasing integration & comfort**

---

- **Slow progress on Deutschlandtakt**
- **Implementation of Deutschlandticket**
- **Continuous increase in regulations**
- **Increase in political importance, but risk of inconsistency in pursuing climate targets**
- **Insignificant improvement in journey time, reliability, comprehensibility**
- **Increases predictability/comprehensibility**
- **Costs rise, competitive position deteriorates**
- **Car less attractive, switch to road in rural regions, gradual improvement via innovation**
4. Development Expectations until 2030

4.3 Trend Scenario

- Increasing performance, cost reduction, but requiring extensive modernisation
- Infrastructure situation doesn’t improve → considerably limits operation & service opportunities
- No turnaround in funding trend until 2030 → not sufficient for development progress

- Innovation on rolling stock (e.g. driver assistance)
- Ageing of rail network & increasing funding backlog; urgent building projects are postponed
- Lack of resources & staff, residents’ resistance grows
- Funding insufficient & current projects are implemented slowly, so project list grows

- Hands-off train operations
- Home office and virtual meetings
- Increasing investments in infrastructure
- Trend in higher service qualities

- More urban & suburban population
- Thinning of rural areas
- More uneven traffic volume
- Changes in travelling reasons

- Higher efficiency of trains
- Lower public transport demand
- Increase of stressed paths
- More private – less business trips

- Visionary, but advanced assistance
- Less travel necessities
- Reduced performance & delays
- Increasing personnel costs

- No turnaround in funding trend until 2030 → not sufficient for development progress
4. Development Expectations until 2030

4.4 Target-Performance-Analysis

- Innovative and accessible mobility for all
- Faster decarbonisation of mobility sector
- Doubling passenger transport
- Increase investments & invest more in rail than in street
- Electrify 75% of rail network & promote technologies

- Standardisation of tariffs
- Increased rail demand, loss of relative attractiveness of car
- Financial and infrastructure hurdles continue to limit service capacity
- Car will continue to dominate mobility sector in 2030
- Funds made available are needed to reduce the huge critical investment backlog

Political prioritising and electrification keep prices constant
The German Regional Rail Transport is highly likely to **grow by 2030** and its modal split will increase, as well. However, **disruptive mobility** changes in favour of the railway are **not expected**. There is a continuously tense financing situation and infrastructure bottlenecks remain unresolved.

Measures addressing both of these problems **need a long time**. What matters, when it comes to the development of the GRRT until 2030 is how **demographic change** is **reacted** to and how **innovation** is going to change the **competitive environment**.
PART 3
Measures for the Realisation of Objectives
5. Measures for the Realisation of Objectives

5.1 Overview

- Personnel problems
- Finances
- Alternative Drives
- Good Service
- Deutschlandticket
- Deutschlandtakt
5. Measures for the Realisation of Objectives

5.2 Financing Measures

- Higher fares → lower demand?
- Eliminate significant deficits in public infrastructure & services
- Shorter implementation times
- 70-80 billion EUR to fix problems (maintenance/construction)
- Infrastructure fund
- Better supply
5. Measures for the Realisation of Objectives

5.3 Service Measures

- Tariffs
- Punctuality
- Travel times
- Deutschland-ticket
- Deutschland-takt

Good Service
5. Measures for the Realisation of Objectives

5.4 Personnel Measures

Personnel problems

- Better working times
- Less stress
- Higher wages
- Financial resources
- Tariffs
5. Measures for the Realisation of Objectives

5.5 Alternative Drives

- Battery Electric Multiple Unit
- Hydrogen Multiple Unit
- Technological developments
- Financial resources

Alternative Drives
Lessons learned

01 Overall condition of the GRRT assessed as good, although some influencing factors pose serious challenges

02 Problems today: demographic change, COVID-19 impact, staff availability, competition from other transport modes, policy priority, infrastructure

03 GRRT will grow until 2030, but disruptive breakthroughs are missing, so that specific targets will be missed

04 Financial barriers and the current state of the infrastructure remain problematic

05 Financing conditions must be improved, since other problems are based on this

06 Working conditions and wages have to be improved
Thank you for your interest!


BMDV (2022) *Infrastrukturdialog: Prognoseinstrument des BMDV und prognostischer Blick in die Zukunft*, Berlin, BMDV.


Sources


Sources

Sozialdemokratische Partei Deutschlands (SPD), BÜNDNIS 90 / DIE GRÜNEN and Freie Demokraten (FDP) (2021) *Mehr Fortschritt wagen. Bündnis für Freiheit, Gerechtigkeit und Nachhaltigkeit: Koalitionsvertrag 2021 - 2025 zwischen SPD, BÜNDNIS 90 / DIE GRÜNEN und FDP.*


VDV & Deutsche Bahn AG (2022) *Deutschland steigt ein. Abschlussbericht zur bundesweiten Marktforschung*. Verband Deutscher Verkehrsunternehmen e. V., Deutsche Bahn AG.