

CORRIDOR CAPITALISATION PLAN

for the Free State of Saxony

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1. INTRODUCTION

Germany is experiencing significant growth in transport performance, with more and more goods being transported over ever-greater distances. Current forecasts assume that transport performance will increase by around 40 % by 2030 compared to 2010, which can lead to multiple transport and environmental problems (e.g. increase in traffic-related emissions of climate-damaging greenhouse gases, capacity bottlenecks).¹ Current approaches to solutions require a significant improvement of the modal split, i.e. the distribution of freight traffic among the different modes of transport.

In this context, the rail transport mode is seen as having the most significant possible potential as a core element of sustainable mobility and transport strategy at the federal level. However, this claim is at odds with the current development of the transport performance of individual freight transport modes in Germany. In recent years, road transport has grown disproportionately stronger than railway and inland waterway transport. Currently, the share of road transport in total freight transport performance is around 79 % (Saxony: 71.5 %).²

The Federal Government's declared goal is to increase the share of freight transport by rail to at least 25 % by 2030. With the Rail Transport Master Plan (*Masterplan Schienenverkehr*) and similar strategies, there are many recommendations to increase the share of rail freight and other sustainable modes of freight transport in Germany. A key element is equal access to the rail network for industry and commerce. In this context, sidings for industrial and commercial areas are considered an important prerequisite for transporting goods by rail in a time- and cost-efficient manner. Public access points to the rail network, such as loading roads, combined transport (CT) transshipment terminals and multifunctional transshipment facilities for CT and conventional wagonload traffic, so-called railports, are an alternative.

Against this background, it is important to develop the existing transport infrastructure in the Free State of Saxony, which is currently being expanded, in such a way that it offers incentives to shift traffic from the roads to alternative modes of transport. The corridors of the Trans-European Transport Network TEN-T are of particular importance in this context, as they should offer favourable framework conditions for participation in international trade in addition to their transit function for the regionally based, import- and export-intensive economy. These corridors should thus "capitalise" on the region. For example, the planned new Dresden-Prague railway line for freight transport and high-speed passenger traffic is intended to eliminate a major capacity bottleneck in the TEN-T core network corridor "Orient/Eastern Mediterranean". Due to the emerging bottleneck on the Dresden-Prague section and the limited capacity along alternative TEN-T corridors, the areas along the OEM corridor are characterised by regional differences in multimodal accessibility for efficient freight transport, which limits their competitiveness. At the same time, increasing traffic volumes, the focus on road transport and the goal of combating climate change reinforce the need for environmentally friendly and low-emission freight transport systems. In this situation, the new Dresden-Prague railway line is expected to create new opportunities for efficient and environmentally-friendly freight transport and improve the multimodal accessibility of Central European regions. Accordingly, there is a need for strategies and action plans to prepare for the improvements and take advantage of the new opportunities for regional development and logistics.

Currently, the existing practice of corridor development focuses mainly on infrastructure standards and the technical environment of the infrastructure system, following the principles of sectoral planning. The approach followed in the CORCAP project goes beyond this practice. It aims at elaborating consolidated

¹ cf. BMVI (ed.): *Masterplan Schienengüterverkehr*, Berlin 2017, p. 5

² cf. DESTATIS (ed.): *Güterverkehr*, <https://www.destatis.de/DE/Themen/Branchen-Unternehmen/Transport-Verkehr/Gueterverkehr/Tabellen/gueterbefoerderung-lr.html> (accessed on 10 January 2022)



strategies focused on the interaction of regional development and transport infrastructure development, also considering the operational requirements of multimodal logistics sites and transport services.

This document, therefore, addresses the question of which planning, technical and regional economic framework conditions can be used to achieve the objectives described above from the perspective of the Free State of Saxony. This is done through an analytical consideration of the existing infrastructure and the tasks of regional planning and transport planning to improve the accessibility of transshipment points for rail freight transport as well as inland navigation and their consideration in the designation of commercial and industrial areas. In addition, transport aspects and development opportunities resulting from the infrastructure projects and financing instruments of structural change in the two Saxon coalfields are considered.

Furthermore, the corridor capitalisation plan should contribute to a better (cross-border) understanding of the effects of the new Dresden-Prague railway line for the Elbe Valley and the adjacent regions on both sides of the border. This is done by identifying (cross-border) development potentials and opportunities at the local and sub-regional levels.

2. INITIAL SITUATION

2.1. Target statements in the regional plans

While public passenger transport is counted as part of the general provision of services of general interest in terms of infrastructure and operational organisation and is supported accordingly, in the past, the areas of freight transport and logistics were primarily seen as the subject of private-sector action. On the one hand they are subject to state market regulation, not least at the European level, but on the other hand, they are only to a limited extent in the public focus when it comes to holistic regional planning and infrastructure development or even incentive systems for modal shift.

However, not least the effects of the Corona pandemic have shown how important reliable national and international supply chains are for all areas of life and the functioning of economic cycles as the basis of social prosperity. And the current climate debate also sees energy-efficient and thus climate-friendly rail transport as an essential element of the transport turnaround.

This raises the question of how this paradigm shift is already reflected in regional planning as an essential strategic development instrument at a regional level or how it should be addressed more strongly there in future. The State Planning Act assigns regional planning as a mandatory state task to regional planning associations with a municipal structure. This means considerable planning competence and responsibility for the municipal level. The regional planning associations are public corporations. They are made up of the independent cities and districts of the respective planning region. The four regional planning associations in Saxony are:

- Leipzig-West Saxony
- Chemnitz region
- Upper Elbe Valley / Eastern Ore Mountains
- Upper Lusatia-Lower Silesia

The planning associations are obliged to draw up a regional plan for their planning region. These regional plans were analysed with regard to the consideration of rail freight transport and logistics issues. The focus here was on the regional provision sites for industry and manufacturing, since in these - among other things in view of the current climate protection and traffic reversal debate - access to rail should be guaranteed for the settlers in principle.

In evaluating the review of the regional plans, the following summarised statements can be made:

In some cases, it is pointed out in the planning premises that when planning larger new commercial building areas, care must be taken to ensure a rail connection is guaranteed. In the sense of regional planning, larger industrial and commercial areas are areas with more than 25 ha. The subsequent connection of large commercial areas along the connection and development axes defined in the regional development plan should also be examined and, if necessary, implemented.

Measured against this requirement, however, there are evident deficits in the designation of provision sites in the individual planning regions, both in terms of direct rail connections and the designation or consideration of public intermodal access points such as CT terminals or railports.

The majority of the designated provision sites do not currently have a rail connection. This is especially true for sites with more than 75 hectares. Thus, the precautionary sites cannot primarily make a significant contribution to shifting freight traffic to the railways.

For the criterion of supra-regional and regional accessibility to transport infrastructure, the regional plans often refer primarily to the accessibility of federal motorways, federal and state roads and airports. However, rail connections and suitable rail freight access points in the direct vicinity are only mentioned or



considered in more detail to a limited extent, despite the reverse prioritisation from a transport policy perspective. With regard to transport connections, it is generally only stated that the sites must be connected to the public transport system. As a result, rail freight transport is partly not taken into account. On the other hand, the regional plans explicitly state that existing transshipment facilities, industrial sidings and private sidings should be sustainably secured in order to further expand rail freight transport.

Based on these findings, in-depth studies were carried out within the framework of the project on the possibilities of rail connections to the existing industrial and commercial areas as well as the precautionary sites. The aim should therefore be to be able to anchor access to rail freight transport and inland ports in the individual regional plans with the following premises:

- on the TEN-T corridors running through Saxony
- to the most efficient access points for rail freight transport (terminals, railports, inland ports)
- preferably in densely populated urban areas as well as in densely populated rural areas
- with effect beyond the area of the respective regional plan

The results of the analyses are explained in the section 4.2.

2.2. Freight transport infrastructure

The Free State of Saxony has a dense, extensive road and rail network. The road network has a length of 13,427 km (as of 2018). At 728 km/1,000 km², the road network density is above the average for Germany as a whole of 643 km/1,000 km². The public railway network in the Free State of Saxony currently covers approx. 2,500 km.

The Saxon railway network is integrated into the TEN-T corridors of the

- North-South connection via Leipzig and Dresden with the Orient/Eastern Mediterranean and Scandinavia/Mediterranean corridors and the
- West-East connection via Berlin to the North Sea-Baltic Sea corridor (cf. Figure 1).

The public railway network in the Free State of Saxony currently covers approx. 2,500 km (as of 2017). Along these lines, there are approx. 500 serviced transport stations (stations and stops) as access points for rail passenger transport as well as access points for rail freight transport. In addition, connecting railways are available for rail freight transport as non-public railway infrastructure.

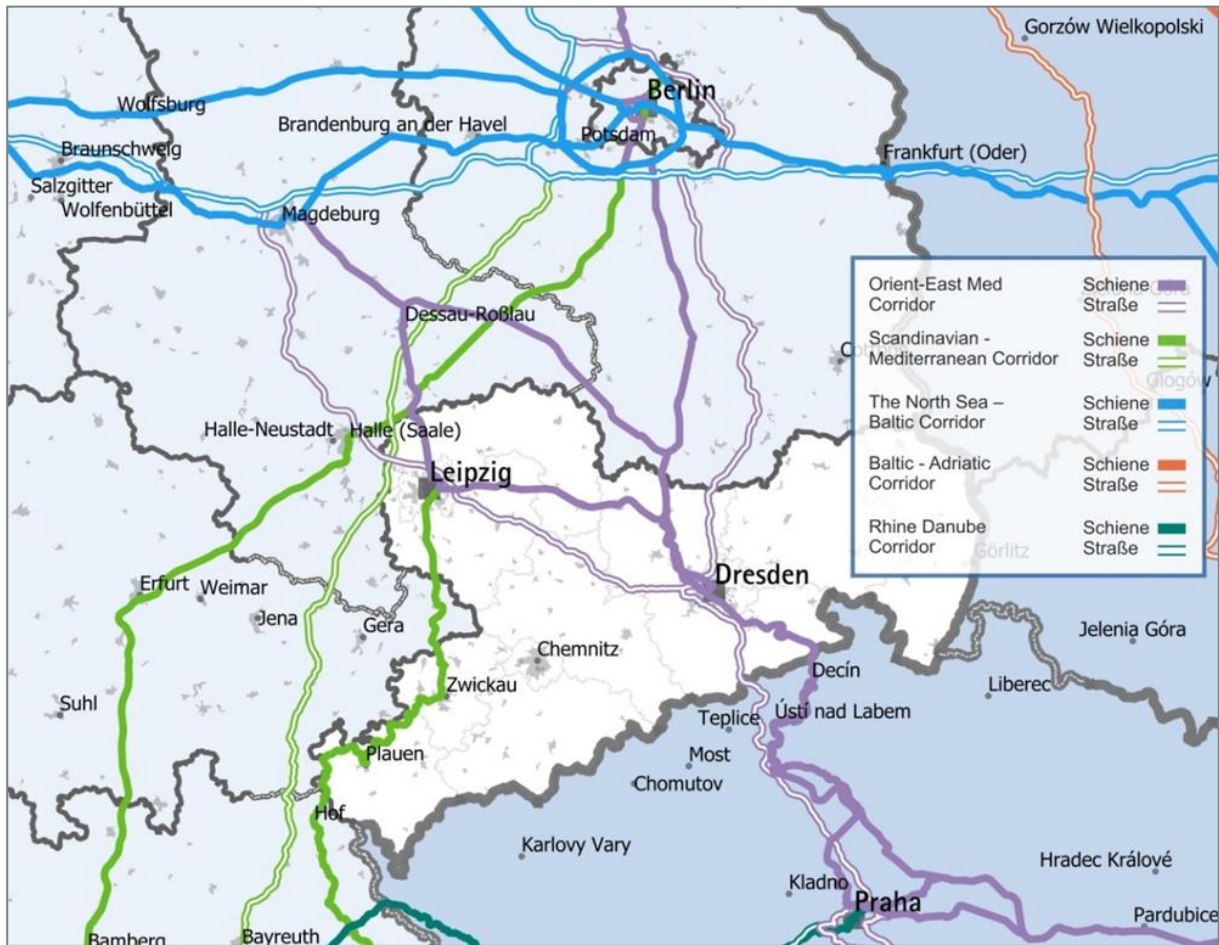


Figure 1: Connection of Saxony to the TEN-T

Figure 2 shows the transport infrastructure in Saxony that is essential for land transport. It shows the trunk roads (motorways and federal roads), the important railway lines as well as inland ports, freight transport centres and transshipment terminals for combined transport (CT). In addition, various railway infrastructure projects of importance for Saxony are also listed. These are the new and upgraded Berlin-Munich line running via Leipzig as well as the Lower Silesian Magistrale (in the course Knappenrode - Horka/Grenze PL). Both projects were opened to traffic in 2018. The Lower Silesian Magistrale primarily serves freight traffic in the direction of Poland and Eastern Europe and, in addition to the connection via Frankfurt (Oder), is intended to develop into an efficient freight traffic axis to Poland. In the further course towards the east, the creation of a further axis for train connections of the "New Silk Road" from or to China - with the option of connecting Saxon logistics nodes - is possible here.

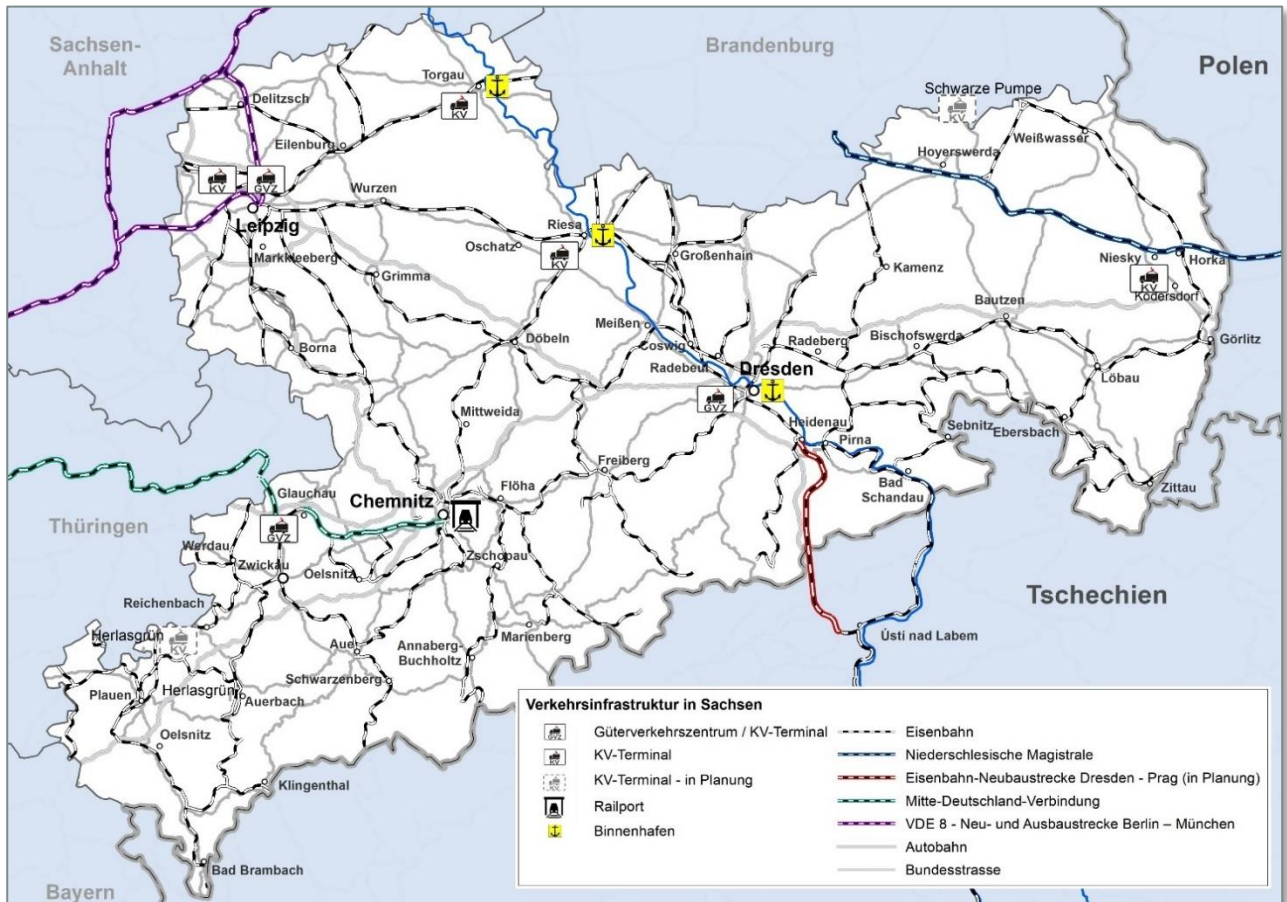


Figure 2: Transport infrastructure for freight transport and logistics in the Free State of Saxony

The planned new Dresden-Prague railway line with the cross-border section between Heidenau and Ústí nad Labem is also shown. This cross-border project will eliminate an existing bottleneck on the route between the North Sea and Baltic Sea ports and the Czech Republic as well as in the direction of south-eastern Europe and relieve the current route through the tourist area Elbe Valley of freight transports. On the initiative of the Free State of Saxony and on the basis of the Saxon-Czech preliminary planning study of 2015, the new line was included in the priority needs of the Federal Transport Infrastructure Plan 2030 in 2017.

With the transfer of the planning task to DB Netz AG by the Federal Ministry of Transport in 2018, the course was set for the expansion of the European high-speed network in this section. For the regional planning procedure (*Raumordnungsverfahren ROV*), DB Netz AG submitted 7 route variants to the Saxony state directorate for assessment of use and environmental conflicts. As a result of the spatial planning assessment, the spatial compatibility for a full-tunnel corridor and a partially open corridor with conditions was confirmed in August 2020.

In the summer of 2020, DB Netz AG began to explore the subsoil. As part of the preliminary planning, DB Netz AG has been developing a specific route within each of the two corridors since 2021. Once the comparison of variants has been completed in 2024, a preferred variant will be proposed to the Federal Ministry of Transport. The project will then be submitted to the German Bundestag which decides on the proposed variant and on the further progress of the project. As in the entire planning process, this is based on close coordination with the Czech Republic. An international treaty is being drawn up for the joint construction of the line. Commissioning is expected at the end of the 2030s.



The overall project for the new Dresden-Prague line is divided into the following sections, which are shown on the map in Figure 3:

Dresden - Ústí nad Labem:

- Cross-border planning section of DB Netz AG and Správa železnic
- Undercrossing of the Ore Mountains with a tunnel at least 25 km long
- High-speed freight and passenger traffic with a planned speed of up to approx. 200 km/h

Ústí nad Labem - Litoměřice:

- Undercrossing of the Bohemian low mountain range with approx. 18 km long tunnel
- Freight and high-speed passenger traffic with a planned speed of 250 km/h

Litoměřice - Prague:

- High-speed section with a planned speed of up to 320 km/h for high-speed passenger traffic only
- a new railway station "Roudnice VRT" is being built in Roudnice

In April 2016, the European Grouping of Territorial Cooperation (EGTC) was founded for the new Dresden-Prague railway line. The objective of the EGTC is to provide cross-border support for realising this major European infrastructure project

- at the official-organisational level
- at the professional and political level
- in the field of public relations
- in acquiring funding to support the project via projects

in close cooperation with the infrastructure operators DB Netz AG and Správa železnic as well as the state geological services of both countries. With its members, the EGTC forms an organisational structure that facilitates and promotes cross-border cooperation and strengthens the close neighbourly cohesion between Saxony and the Czech Republic. The EGTC has its headquarters in Dresden.

The EGTC is committed to providing in-depth technical support for the planning of the new line from a regional perspective, e.g. through participation in the EU project CORCAP.

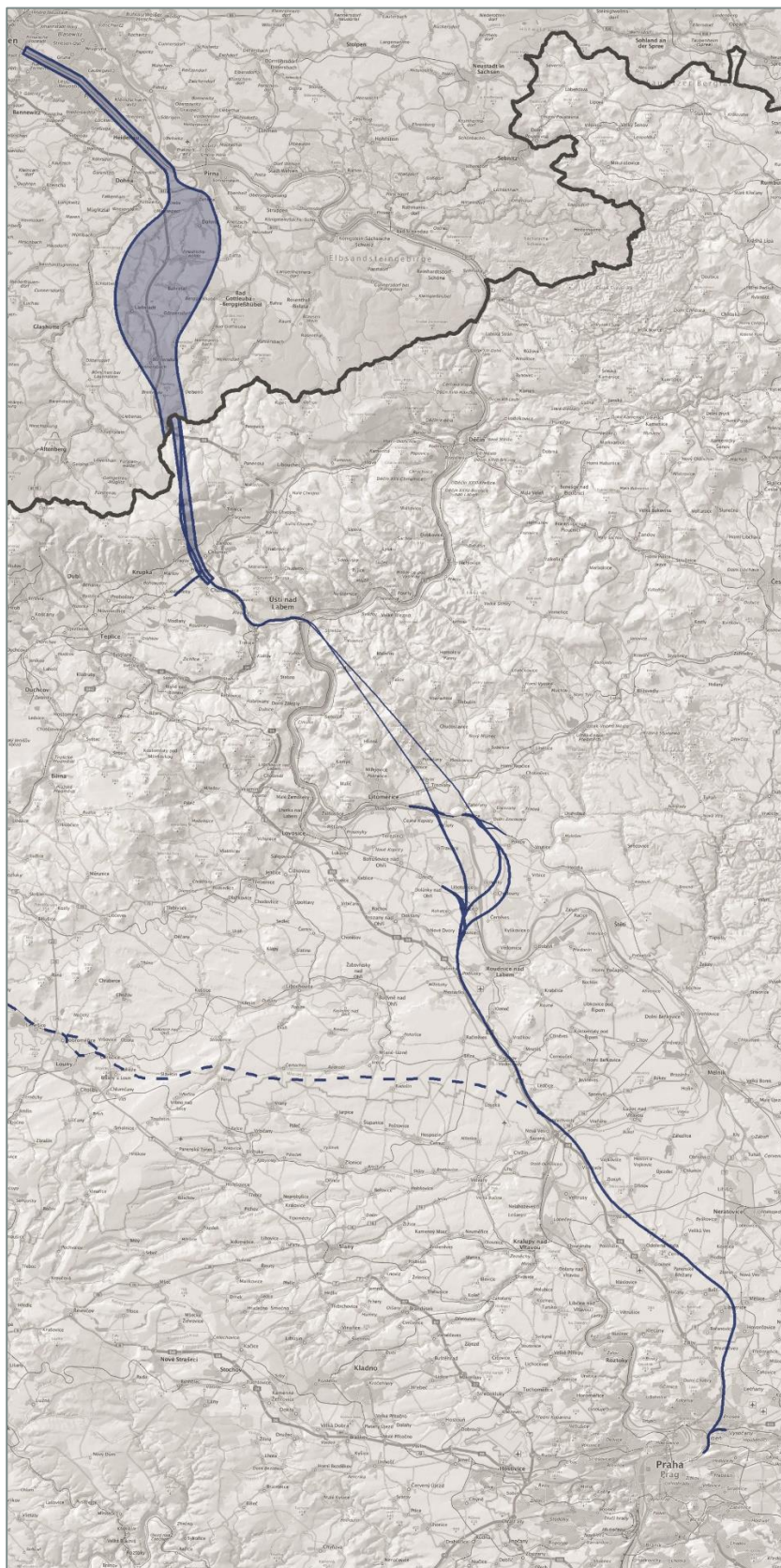


Figure 3: Planning sections of the Dresden-Prague railway connection (Source: Správa železnic)



2.3. Access points for intermodal freight transport

In addition to private sidings, public loading roads and railports, companies' access to rail freight transport is provided in particular by combined transport transshipment terminals (cf Figure 4), where the goods are not loaded directly onto the railway (in contrast to wagonload traffic), but are transferred between road and rail in standardised, cranable transport containers (containers, swap bodies, semi-trailers).

In addition to freight transport by road and rail, inland waterway transport is also important for the Saxon-Czech border region. The Elbe is part of the TEN-T corridor Orient/East-Med. Saxony has three ports for cargo handling: Dresden, Riesa and Torgau. These are operated by the state-owned group of companies Sächsische Binnenhäfen Oberelbe GmbH (SBO). In addition, the Czech ports in Lovosice and Děčín and the port of Dessau-Roßlau in Saxony-Anhalt also belong to the SBO port group. The source or destination of most goods transports on the Elbe is usually the port of Hamburg or ports in the West German river and canal network. The Elbe is connected to the latter in particular via the Mittelland Canal, which branches off the Elbe north of Magdeburg.

For Saxony's economy, the Elbe is an important - albeit not easy due to pronounced periods of low water - transport route. Transport on inland waterways is an environmentally friendly way of moving large volumes of goods. For Saxony in particular, in addition to the transport of bulk goods on the Elbe, large-volume and heavy goods transport also play an important role. These are goods which, due to their dimensions or weight, cannot be transported by road or rail, or only to a limited extent. The sources of these volumes are in particular the heavy industry in Dresden and Görlitz (e.g. transformers and turbines), but also goods from the Leipzig, Chemnitz and Vogtland areas.

The stabilisation and improvement of the navigation conditions is, among other things, the subject of the "Overall Concept for the Elbe". The aim of the concept is

- to reduce contradictions between the different interests of use as far as possible and to identify potential synergies,
- to develop guidelines for the sustainable development of the inland Elbe for this purpose,
- to formulate options for measures for the conflict-prone stretches of the Elbe, in particular for the so-called residual stretch and the erosion stretch
- and to prepare a proposal for further communication and cooperation following the overall concept.

The concept was drafted within a federal and state working group with the support of an advisory board with representatives from

- environment and nature conservation (NABU, BUND, WWF, Bürgerinitiative Pro Elbe),
- economy and transport (Elbe/Oder Chamber Union, Bundesverband Öffentlicher Binnenhäfen e.V., ElbeAllianz, Verband für Schiffbau und Meerestechnik e.V., Transportwerk Magdeburger Hafen GmbH),
- churches (Evangelical Church in Central Germany, Regional Church Office of the Evangelical Lutheran Church of Hanover)
- and a representative of the Czech Ministry of Transport.

The first concrete result for the waterway infrastructure is the provision of additional personnel resources in the Directorate-General for Waterways and Shipping (GDWS) for the planning support of maintenance and repair measures on the Elbe.

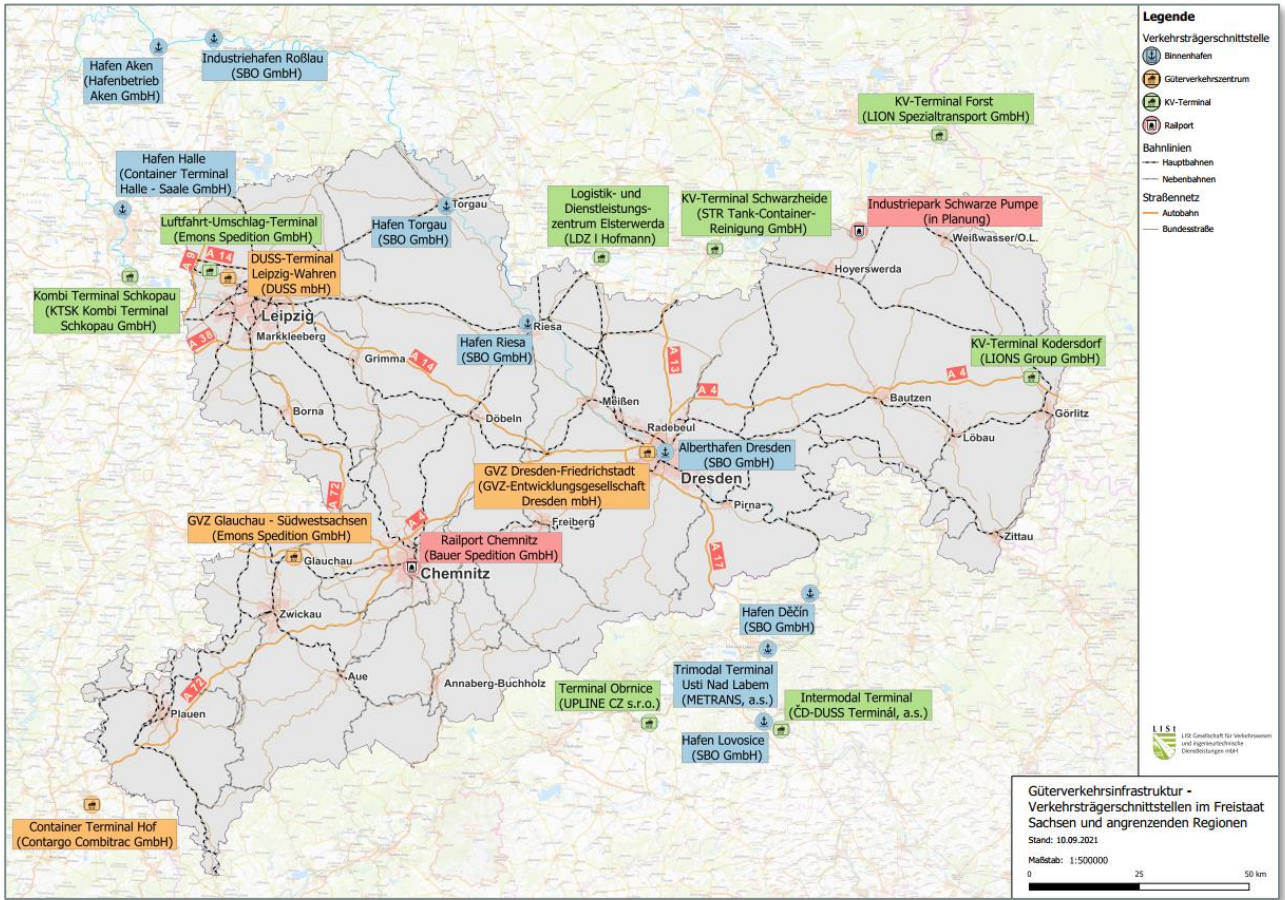


Figure 4: Transport mode interfaces in the Free State of Saxony and neighbouring regions (Source: LIST GmbH)

The following maps provide an overview of the public charging points (cf. Figure 5 and of the private sidings (cf. Figure 6) for conventional wagonload traffic in Saxony.

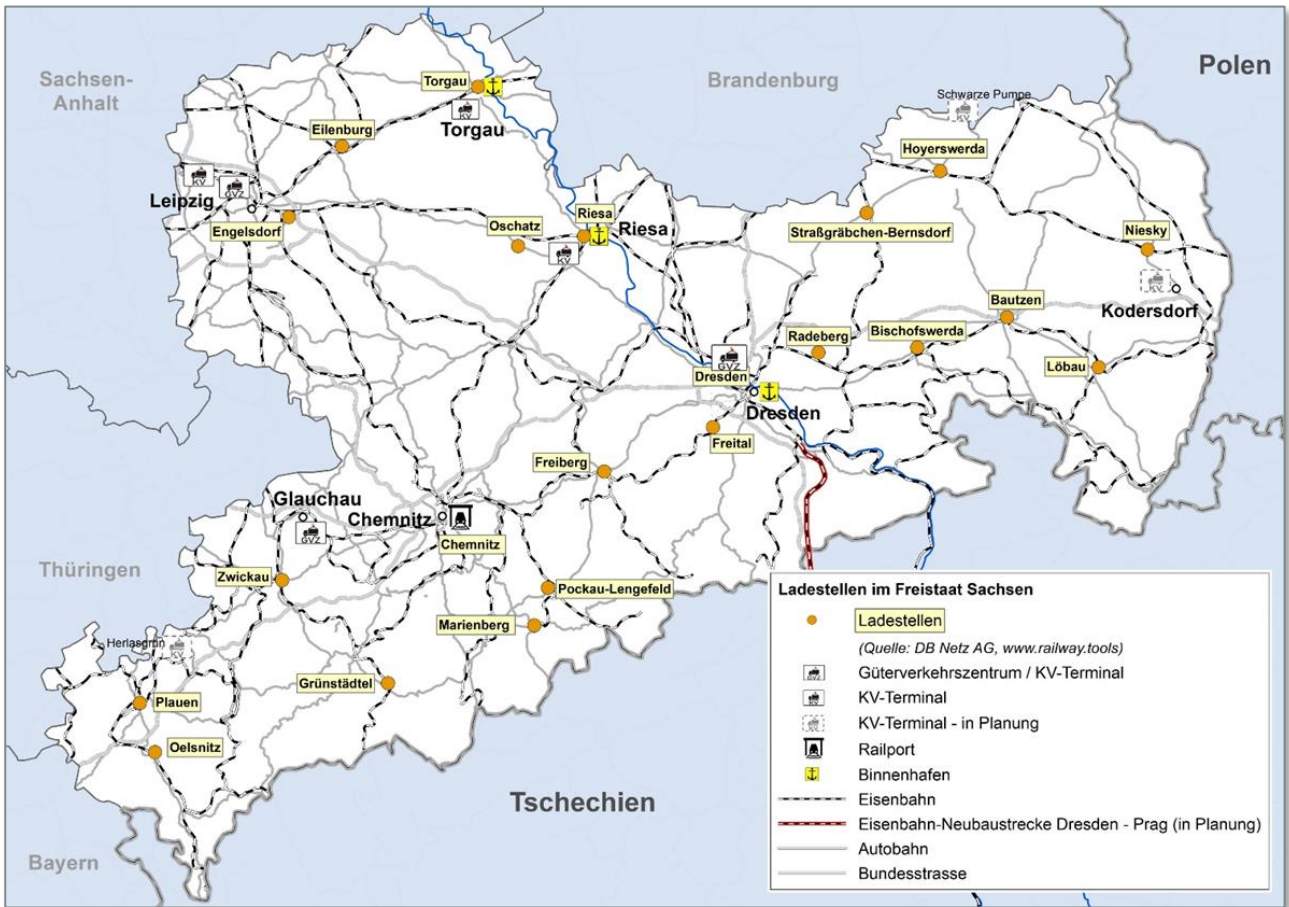


Figure 5: Public charging points in the Free State of Saxony

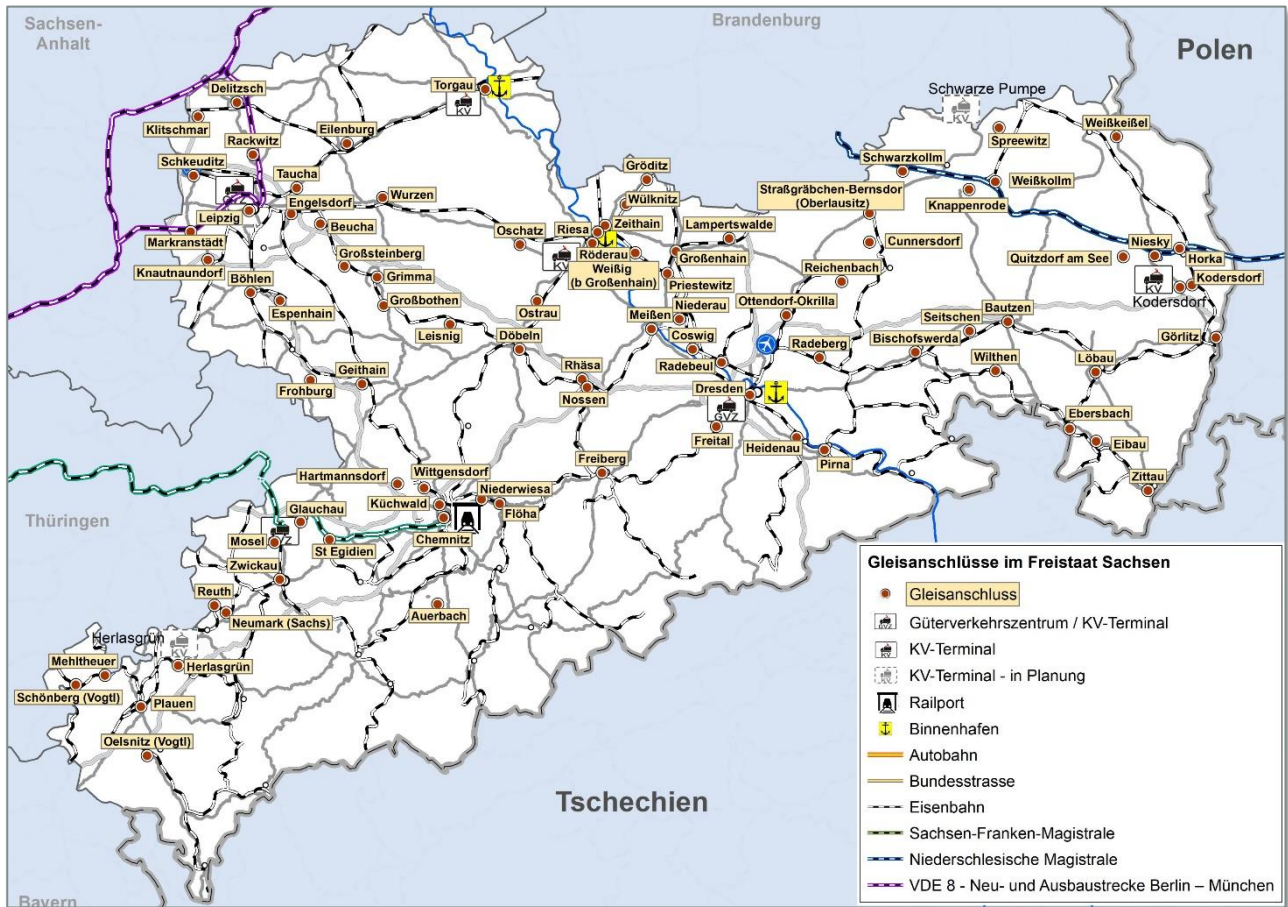


Figure 6: Sidings in the Free State of Saxony

2.4. Logistics-intensive locations and commercial sites

For logistics locations, the accessibility of all modes of transport is an essential location criterion. However, accessibility is defined very differently for different types of logistics locations: Depending on the needs of the individual companies, very different criteria can come into play. For example, depending on the company's business model, a rail or port connection can be given higher or lower priority. Proximity to a motorway junction is one of the location factors that is generally considered to be significant.

The following map (Figure 7) shows that most of Saxony can be reached by motorway in about 30 minutes. After the section of the BAB 72 south of Leipzig is completed, which has already been taken into account in the map and is currently under construction, there will be almost complete access in the triangle south-west Saxony - Dresden - Leipzig. After realisation of the extension and new construction of the B87 in the direction of Torgau, the BAB 14 will be accessible much better in this region. In eastern Saxony, a similar effect will occur with the complete realisation of the extension and new construction of the B178 between Zittau and the BAB 4. In the north of the Free State, an efficient east-west connection parallel to the BAB 4 and BAB 14 is planned with the motorway-like federal road link Mitteldeutschland-Lausitz (MiLau).

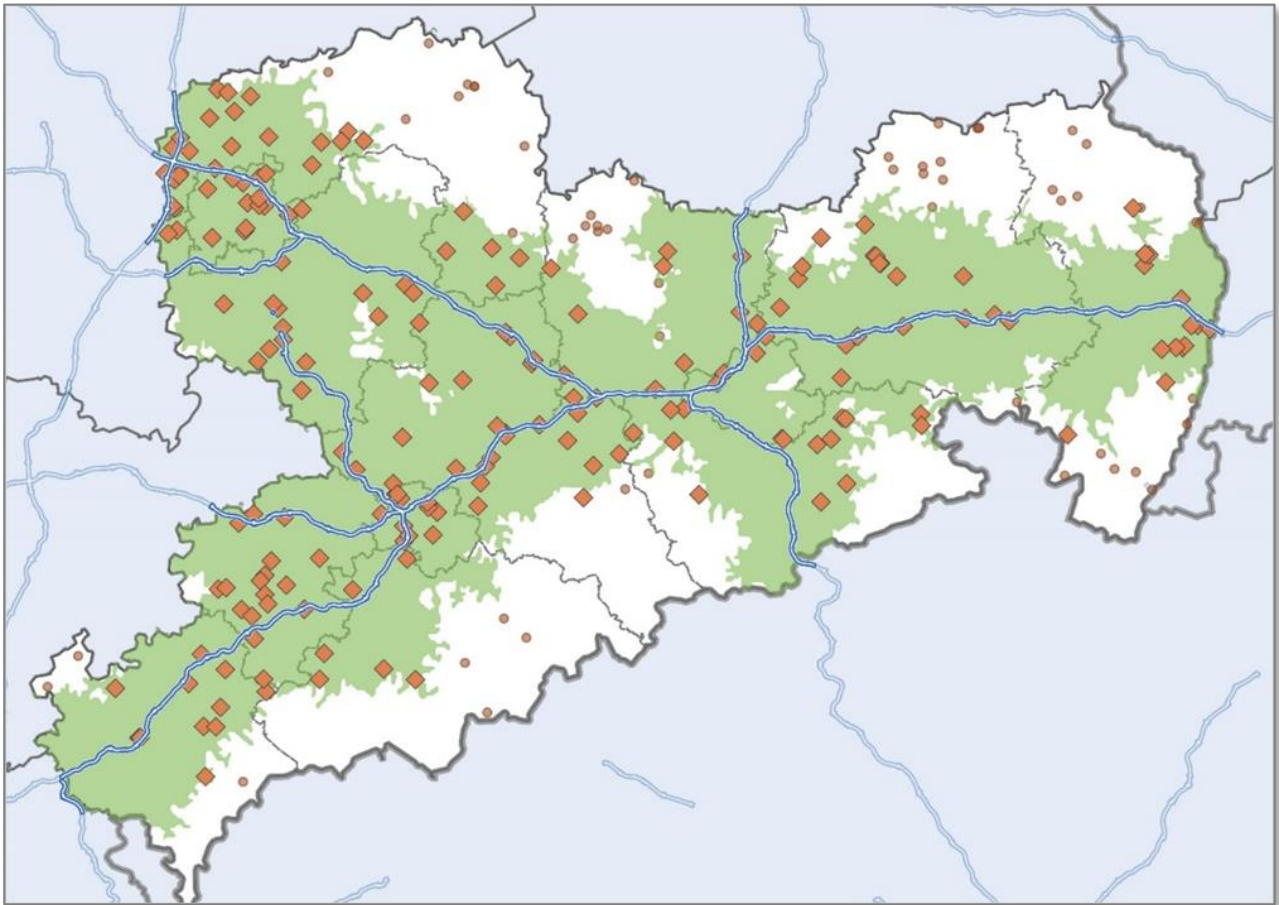


Figure 7: Accessibility of industrial estates via the motorway network within 30 min driving time

The accessibility of existing and planned combined transport (CT) transshipment terminals in freight villages (GVZ) and inland ports in terms of truck driving time is shown in Figure 8. In the areas marked in green, the travel time to the nearest transshipment point is a maximum of 30 minutes. In the areas marked orange, the average journey time is approx. 60 minutes. Accordingly, it can be stated that with the inclusion of planned transshipment facilities in the Vogtland region (Herlasgrün) as well as in the Schwarze Pumpe industrial park, there will be good accessibility to the multimodal nodes almost everywhere in the future. Exceptions are parts of the Erzgebirgskreis, the Sächsische Schweiz-Osterzgebirge district and the area south of Löbau.

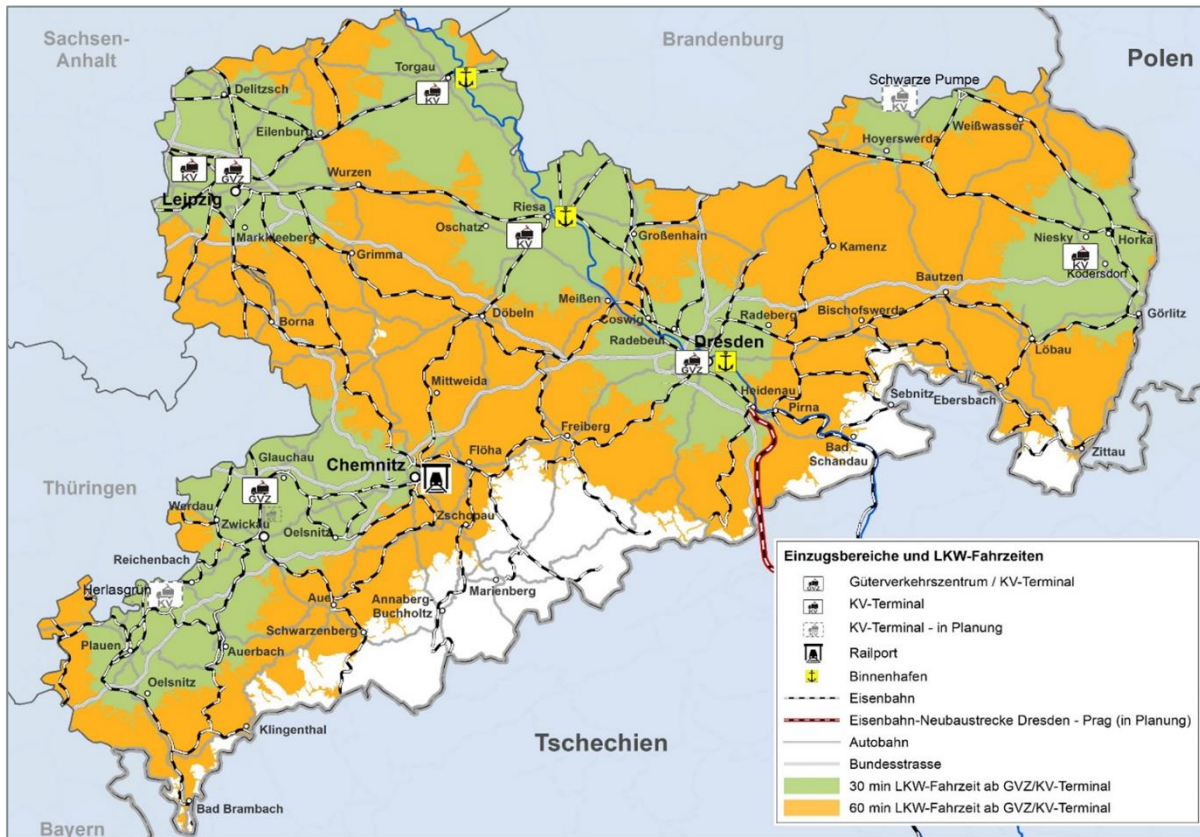


Figure 8: Accessibility of inland ports and CT transshipment facilities in the Free State of Saxony

Saxony's motorways have seen a steady increase in traffic volume over the last 15 years. This applies to both passenger car traffic and heavy goods vehicles. However, the increase for heavy goods traffic is significantly higher, which can be observed in particular on the eastern section of the A4 for traffic with Poland and on the A17 for traffic with the Czech Republic.

The following Figure 9 shows the increase in volume for the automatic counting stations at Burkau (A4), Ludwigsdorf (A4) and at the DE-CZ border crossing at the Bad Gottleuba counting station (A17). This shows that heavy goods traffic on the A17 has increased by 49 % between 2010 and 2019, and by as much as 154 % in the area near the border on the A4. The fields with a blue background show the traffic volumes forecast in the 2030 state traffic forecast for motor vehicle traffic (top line) and heavy goods traffic (bottom line). Here, too, it can be seen for the BAB 4 that the figures for heavy goods traffic originally forecast for 2030 have already been reached or exceeded. This leads to the conclusion that in the future, further efforts for modal shift will be required beyond the previous conventional approaches to the development of transport mode interfaces. A technical challenge is posed by the fact that the HGV transports considered are predominantly articulated lorries whose semi-trailers cannot be craned and thus cannot be transferred between road and rail without additional technical precautions.

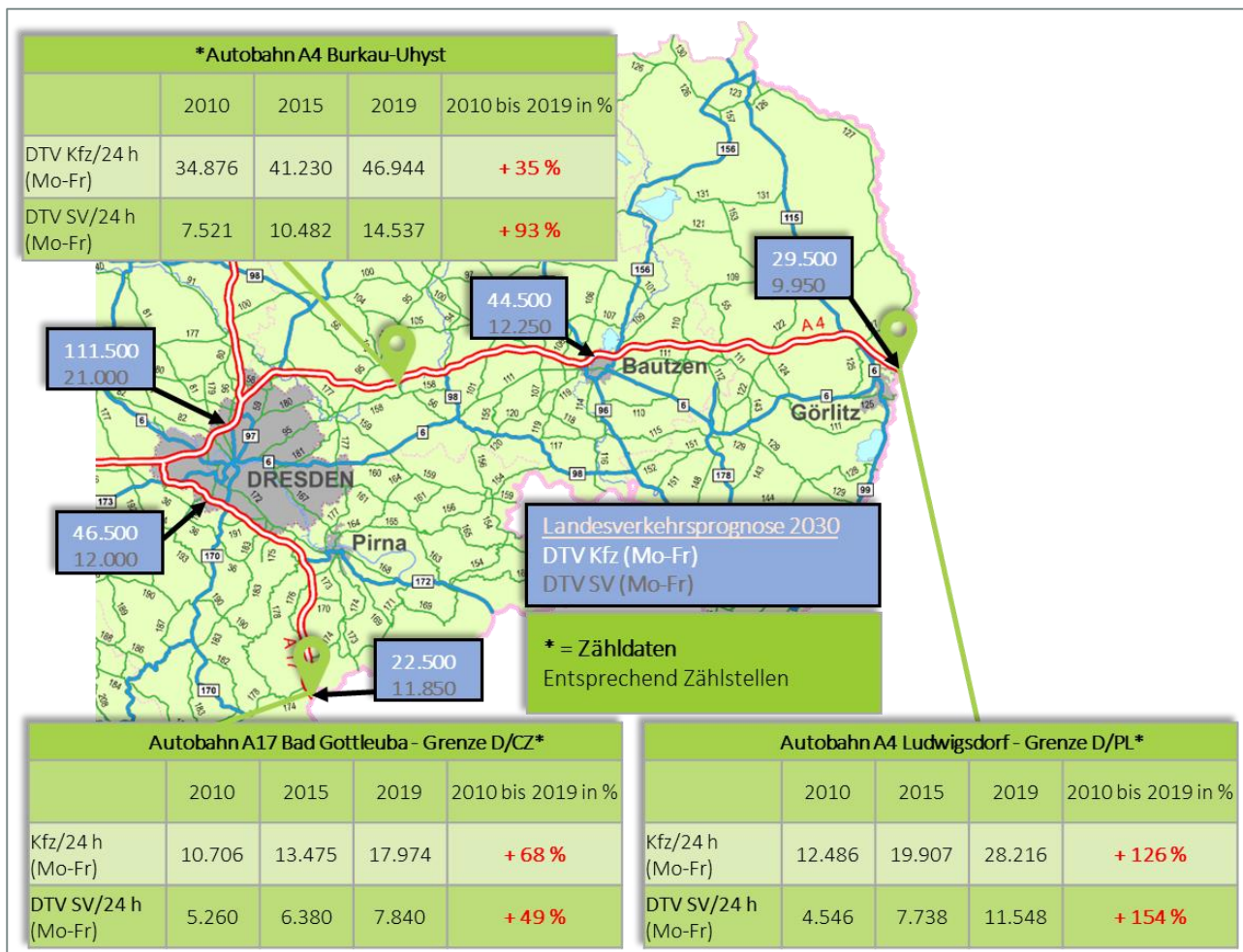


Figure 9: Development of traffic volume on Saxon motorways until 2019 (Source: LIST)

2.5. Incentives for modal shift

2.5.1. Basics

Climate protection is playing an increasingly important role in today's society. Many governments have recognised and promoted this in recent years. Governments have been pushing ahead with their climate protection efforts not only since the Paris Agreement. For example, in the Saxon coalition agreement 2019 to 2024, it was specifically agreed in the section "freight transport and logistics":

- "We want to ensure that more goods are transported by rail in the future. To this end, we will strengthen instruments such as the Rolling Road, Railports and the function of freight transport centres. To achieve the goal of modal shift more quickly, we will also use the possibilities of digitalisation."
- "We will promote railports, smaller logistics terminals that provide companies with access to rail freight even with lower transport volumes."
- "By setting up a 'Rolling Highway' and with the support of the haulage industry, we want to relieve Saxony's motorways and shift freight traffic onto the railways."



The Federal Republic of Germany has also set itself ambitious climate protection goals and has attempted to achieve them with a wide range of measures in the next years. One focus is on the transport sector and in particular on the freight transport sector, which has been identified as a major source of climate-damaging CO₂ emissions. Reducing these emissions is the task for the coming years and is seen, among other things, in the shift from road transport to the environmentally friendly transport mode of rail. To this end, the federal government has launched the Rail Freight Master Plan in recent years and confirmed, improved and extended funding programmes for combined transport and conventional rail freight - not least through the new follow-up funding and the planned further development of the directive on the funding of transshipment facilities for combined transport. The funding options mentioned are described in the following section.

2.5.2. Rail Freight Master Plan

The Rail Freight Master Plan was developed on the initiative of the Federal Ministry of Transport and Digital Infrastructure in cooperation with a forum of experts and aims to strengthen rail freight transport in the long term. Some measures are to be implemented in the short term, others will only be tackled in the medium term under a new government. The main topics of the master plan are:

1. Providing efficient infrastructure for rail freight transport
2. Advancing the digitalisation of rail freight transport
3. More automate railway operations
4. Promoting technical innovations for rail vehicles which take into account the economic efficiency and environmental performance of rail vehicles
5. Strengthening multimodality; securing and expand rail access
6. Expanding electromobility on and with the railways
7. Significantly reducing train path and system prices
8. Limiting the tax and duty burden
9. Ensuring comparable standards of labour and social regulations as well as safety requirements in all modes of transport
10. Pushing education and further training

Point 5 gives rise to the funding opportunities for rail freight transport described below, which the Federal Government has already initiated.

Guideline for the promotion of the new construction and expansion, reactivation and replacement of sidings and other rail freight transport facilities (Connection Promotion Guideline)

This guideline supports companies in private legal form in the construction, reactivation, expansion and replacement of sidings and multifunctional facilities as well as feeder and industrial sidings. The aim is to safeguard existing rail transport and to shift additional freight transport from road to the more environmentally friendly rail mode. The funding rate for sidings and feeder and industrial sidings is 50% and for multifunctional facilities up to 80% of the eligible investment costs. The funding is a non-repayable grant and if the funding exceeds 50 %, the operation of the facility must be tendered separately. The current guideline came into force in 2021 and is valid until 31.12.2025.

Guideline for the promotion of combined transport transshipment facilities of non-federally owned companies

This directive supports companies in private legal form in the construction of combined transport transshipment facilities with up to 80 % of the investment costs. The aim is to shift freight transport from road to the more environmentally friendly transport modes of rail and waterway. The facility must be operated in a non-discriminatory manner and the subsidy must not be repaid. If the subsidy exceeds 50 %, the



the operation of the facility must be put out to tender separately. Funding is currently available for the construction and expansion of combined transport facilities. The current guideline officially ended on 31.12.2021. A new funding guideline is already being drafted, in which it is conceivable that reinvestments in existing facilities will also be funded in the future. Until the new guideline comes into force, applications for funding will be accepted on a transitional basis according to the old regulation.

2.5.3. Structural Strengthening Act Coal Regions

The Structural Strengthening of Coal Regions Act includes several infrastructure projects that favour the competitiveness of the logistics industry in the Free State of Saxony through improved accessibility.

For example, a memorandum of understanding was signed in September 2021 between the Free State and the Federal Ministry of Transport for the electrification of the Dresden - Bautzen - Görlitz railway line, which provides for shared financing. The Dresden - Bischofswerda section will be financed through the Municipal Transport Financing Act (GVFG). Construction is expected to start in 2028. The costs for the reconstruction of Görlitz station and the introduction of Polish traction current from the border to Görlitz will be covered by the transport project ICE route Berlin - Görlitz. The remaining route is to be re-evaluated in the Federal Transport Infrastructure Plan (BVWP) from 2024 onwards.

With the Leipzig - Bad Lausick - Geithain line, electrification has now been secured for the northern section of the Leipzig - Chemnitz line. For the southern section Geithain - Chemnitz, the Free State has concluded an agreement with the federal government to continue the planning.

In addition, municipalities, districts and other local self-government bodies as well as their companies can receive funding for business-related infrastructure, e.g. development of industrial estates. Among other things, this is also relevant for the railway connection of existing or new locations in the coal regions.



3. NEED FOR ACTION AND POSSIBLE SOLUTIONS

3.1. Need for action

In view of the continuing growth of heavy goods traffic on Saxony's motorway network, the establishment of additional transport services to shift long-distance road freight traffic to rail is necessary. Additional necessity arises from the goals to significantly reduce CO₂ emissions in all economic sectors and thus especially in the transport sector.

Transport by rail is considered an important instrument for intensifying climate protection due to its significantly higher energy efficiency and mass performance. This trend will continue in the coming years. Especially from the perspective of sustainable transport and the reduction of emissions, a shift is to be expected. Not all trends have a positive effect on rail freight transport (e.g. alternative drive systems for road vehicles), but the favourable influencing factors will predominate and increase the competitiveness of rail. To achieve this, the necessary infrastructural prerequisites must be created both in Saxony and in neighbouring regions, in particular through additional track capacity and efficient access points to the railways.

In view of the high proportion of heavy goods traffic in transit through Saxony, there is an approach here for a focused modal shift. A look at the magnitudes of the traffic volumes shows that significantly greater efforts are required in the expansion of the infrastructure for an actual traffic turnaround in freight transport.

One approach to a solution is the expansion of existing transshipment facilities. The basis for this is to determine the need for expansion in terms of space as well as the technical availability of space, taking into account environmental conflicts. It must also be examined to what extent public loading points without stationary transshipment technology can be upgraded to multifunctional transshipment facilities, e.g. for wet-protected transshipment. The same applies to the investigation of the possibilities for integrating or functionally linking conventional wagonload traffic in CT terminals with the aim of forming mixed trains.

Furthermore, additional access points to rail freight transport should be created in the future that also have an efficient road connection. To this end, the technical requirements of the rail connection should be examined. In addition to the designation of new areas with sidings, brownfields should also be increasingly evaluated with regard to the reactivation of sidings.

For the transshipment of unaccompanied semi-trailers (without tractor unit and driver), the technical challenge arises that the semi-trailers used in road transport cannot be craned and thus cannot be loaded onto rail wagons in conventional CT transshipment facilities. To overcome this technical hurdle, in recent years several companies have brought additional equipment to market in the form of wagon inserts in which the semi-trailers can be lifted into conventional CT pocket wagons. An alternative to this is offered by innovative wagon designs for transporting non-cranable semi-trailers in combination with special horizontal handling techniques (e.g. CargoBeamer systems, Lohr).

The structural change in Saxony's coal regions offers new opportunities for transport shift concepts and for the development of value creation and settlement potential, among other things in the context of the associated infrastructure measures and funding opportunities. But beyond this, the Free State of Saxony should also examine whether specific state funding for rail freight transport is possible. Even assuming that more favourable framework conditions for rail transport in competition with road haulage will emerge in the longer term (e.g. through CO₂ taxation), the operators of the trains will continue to face the economic utilisation risk in the start-up phase until the cost recovery limit is reached. For faster implementation and partial compensation of capacity utilisation-related start-up losses, the introduction of a funding option for the start-up financing of new CT transport services is therefore recommended. Investment support for



additional equipment for the handling of non-cranable semi-trailers and the creation of additional parking areas for trailers at terminal locations also has a supporting effect.

The expansion and new construction of access points for intermodal freight transport should be coordinated as far as possible and should largely avoid competition with regard to transshipment capacities and transport services. It is therefore considered sensible to support the establishment of offers for modal shift and logistical value creation in the vicinity of the transshipment facilities through a coordinator function. The FrankfurtRhineMain region, for example, is pursuing a comparable approach as a component of its mobility strategy under the title "Regional Rail Coach". Similarly, such a coach in Saxony could support companies in switching to rail, provide technical support for terminal expansion and attract new providers of intermodal logistics solutions to the region.

3.2. Solution Corridor train

Within the CORCAP project, logistics concepts for new intermodal transport and logistics services along the OEM corridor were developed and tested. The focus was on the line from the Rostock seaport via Saxony to the Ústí Region in the Czech Republic. This was based on analyses of the flow of goods and market potential for selected goods and types of goods, destinations and intermodal hubs. Potential customers and transport service providers were identified. Immediately after the start of the project, a working group of rail operators and logistics centres was formed. Members of this working group were:

- Rostock Port GmbH
- Stena Line GmbH & Co KG Rostock
- Sächsische Binnenhäfen Oberelbe GmbH (SBO)
- Česko-saské přístavy s.r.o. (ČSP)
- RETRACK Germany GmbH / VTG Rail Logistics Deutschland GmbH
- LINEAS Germany GmbH

Through the partners Rostock Port and Stena Line, the CT operators LKW WALTER and Rail Cargo Group Germany GmbH were also involved as further rail transport companies. This meant that the existing combined transport (CT) and wagonload transport services relevant to the project could be included.

The working group jointly observed and assessed the market, analysed the potential volumes, approached potential customers and made contact with other transport service providers.

The main objective of the train concept is to combine a wide variety of customers, goods and transport concepts in order to have a competitive offer for shipping by rail, which on the one hand contributes to the shift of freight transport to rail and on the other hand avoids or compensates for weak points in the rail freight transport system.

The basic idea pursued with this train concept essentially consists of the combination of and with existing services of wagonload transport as well as intermodal transport, based on the development of new potentials for rail freight transport on the Rostock-Berlin-Dresden-Ústí nad Labem section of the Orient/East-Med (OEM) corridor. In addition, new opportunities are to be found to better anchor the inland ports of the SBO Group as well as other logistics centres in the region in the corridor.

The main objective was to create a train concept that is competitive with road freight transport in transit. This means that not only the costs for the transport chain are decisive, but that - depending on the type of rail service - additional advantages and incentives for modal shift should be created. These could be shorter or at least equal transit times or additional payload compared to road freight. In terms of transit time, cost and frequency, the most favourable concept will be the block train as a shuttle service between origin and destination terminals with daily departures in each direction. However, this requires significant volume



flows. Especially in combined transport for semi-trailers, swap bodies and containers, this consolidation can be achieved by pre-carriage by road to a conveniently located intermodal terminal. A similar concept applies to conventional wagonload trains if loading facilities in railway ports or inland ports are to be used as consolidation points.

In order to achieve higher frequencies, mixed conventional/intermodal trains are also considered. However, this usually leads to longer transit times and higher operating costs, e.g. due to additional train handling or intermediate stops. Finally, for conventional wagonload traffic, the integration of wagon groups or even single wagons into existing networks linked to the port of Rostock can also be used as a first step for the implementation of a new service, but usually with higher transit times (only feasible for less time-sensitive goods).

On the one hand, the train concept is aimed at customers in wagonload traffic with or without their own siding. In the case of their own siding, service in the local area must be guaranteed by rail to the next access or bundling point. For shippers without their own siding, the public loading routes of the German or Czech railway infrastructure companies DB Netze and Správa železnic are available. As these facilities generally do not have stationary transshipment equipment, this must be provided on an order-by-order basis. On the other hand, the inland ports in the study area have both stationary transshipment technology for bulk and general cargo and the technical possibilities for wet-protected transshipment and covered storage.

As expected, the semi-trailer is the dominant loading unit in road transport along the corridor axis in the direction of Rostock. Combined transport (CT) transshipment terminals serve as access points for the rail transport of these loading units. When the working group started its activities, the following three routes were operated on behalf of the CT operator LKW WALTER, which have a direct transport-geographical connection to the study area and were therefore to be taken into account for the planning of services:

- Rostock-Lovosice (3 round trips per week)
- Rostock-Brno (3 round trips per week)
- Rostock-Curtici (1 round trip per week)

At the turn of the year 2020/21, a further destination with two weekly round trips has been added with the connection between Rostock and Bratislava.

In order to relieve the terminal in Lovosice, which is reaching its capacity limits, and at the same time to develop transport potential in Saxony, a new CT relation for cranable semi-trailers between the Alberthafen Dresden and the seaport of Rostock was initiated for the operator LKW WALTER as part of the CORCAP project. After intensive preparations in the 3rd and 4th quarters of 2020, trial operations with five round trips per week could be started in January 2021. Transshipment and parking of the trailers will temporarily take place on an area on the north shore of the port. In a next step, a trailer port is to be built on the opposite shore, which will meet the current and future traffic requirements for both the existing and further CT routes (cf. 3.3).

The rail operators involved in the working group, VTG and LINEAS, already operate corridor trains in wagonload traffic on other transport axes. In combined transport (usually maritime container transport) there are similar systems with the exchange of wagon groups usually at a maximum of one en-route station. In both types of transport, each intermediate stop extends the total transport time between the starting point and the end point of the connection and thus influences the competitiveness compared to road transport in transit.

The basic principle is a national or international connection between two major industrial centres with en-route drop-off stops. These en-route stops can be planned both regularly and as on-demand stops. In both cases, appropriate shunting capacities (e.g. subcontracted) must be provided. Should the set-down stops be



located close to the main line, the mainline locomotive (e.g. in dual-mode design) can also be used for the "last mile".

In the context of corridor trains, the question of mixed trains of combined and wagonload traffic is also frequently discussed. According to the current state of knowledge, this is generally only successful if the usual and thus stricter time requirements in CT can be met and there are no significant time losses due to the provision of conventional wagons. This can be achieved if, as is the case at the Dresden-Friedrichstadt site, the railway station with train formation tracks, the CT facilities (freight village, port) and the wagonload traffic facilities (railport, loading road railway station) are located in the immediate vicinity of each other.

Up to now, the organisation of a corridor train has usually been carried out by one rail operator (e.g. rail forwarder), which provides the services with its own or external traction and with its own wagon pool or the wagon fleet of its customers. In view of the partial geographical overlapping of several corridor train services, there are also approaches for cooperation between providers. In addition to the organisation of shunting capacities at the en-route stops, connection possibilities to connecting services or local distribution must be organised at the end points of corridor trains. Particularly in the case of international connections, where the rail operator offering the service has only limited shunting and local service capacities of its own in the destination or dispatch area, partnerships are used for this purpose.

As a result of the research carried out and the exchange of experience within the working group, a modular concept for the OEM corridor train is proposed. It is composed of the following modules:

- Expansion of existing offers
- Block trains in corridor sections
- Additional liner

In general, a start should be made on supplementing the existing services. This applies in particular to the direct Vienna-Rostock-Scandinavia corridor train operated by Stena Line/RCA. Here, it should be examined how many more stops are possible in the corridor in order to be able to maintain the total journey time.

In the medium term, after further intensive market observation, customers are to be acquired in order to be able to realise a block train in the OEM corridor. Further train projects of the partners involved as well as the market study for corridor transports to and from Hungary/Turkey can be used here.

In addition to the expansion of existing services, the establishment of an additional liner train is considered to be expedient in the medium term. The offer of an additional liner train should concentrate on wagonload traffic, as the market segment of combined transport is sufficiently covered.

The basic modalities for this have been agreed between the partners of the working group and the willingness to activate the corridor train concept under the condition of a sufficient initial capacity utilisation has been signalled. This is to be seen as an important result of the working group's activities and as a success factor for the implementation. While the operational integration of the identified access points is technically and economically feasible (among other things, due to the existing capacities of the partners with regard to shunting or close-range service), the challenge of a regular basic capacity utilisation of the liner train in both directions remains. If the train service is concentrated on wagonload traffic, a train frequency of one weekly round trip is considered sufficient. The following overview shows the capacities and competences of the partners for a corridor train service based on a division of labour. The partners have declared their willingness to continue the work of the working group at least until the end of the project period or possibly beyond with the aim of implementing the train concept.



3.3. Solution approach using the example of TrailerPort Dresden

Before the start of the CORCAP project, the focus of the business activities of Sächsische Binnenhäfen Oberelbe GmbH (SBO) was on combined transport in the port of Riesa, where the company operates a trimodal container terminal with regular rail and ship connections to the Port of Hamburg. In 2019, a total of around 44,000 TEU were handled here with both modes of transport. This figure is slightly above the level of the two previous years. Although there was a decline in handling to around 32,000 TEU in 2021 due to the pandemic, the terminal has reached its capacity limit and is to be replaced by a much more efficient facility.

Although the Alberthafen Dresden on the north bank also has the basic technical prerequisites with two double-arm luffing cranes and adjacent rail facilities as well as transshipment areas, CT transshipment in Dresden has concentrated in recent years on the rail-road transshipment facility in the core area of the neighbouring freight village. Following the successful establishment of this terminal in maritime CT (seaport-hinterland traffic), there is also an increasing demand for continental traffic. In addition to a regular connection to Osnabrück, a CT bundling concept for cross-border logistics chains has been established here since 2018: Smart Rail Logistics GmbH, a joint venture between L.I.T. Spedition GmbH and the rail transport company Captrain Deutschland GmbH, has been operating a CT train connection between the Dresden freight village and the Volkswagen plant in Emden since 2018. For this purpose, truck transports exclusively from VW suppliers in the north of the Czech Republic, southern Poland, Saxony and Thuringia are bundled in Dresden. Loading onto the train, which commutes to Emden three times a week, takes place in so-called jumbo swap bodies, which enable the volume transports common in the automotive industry.

Other CT operators are also increasingly orienting themselves towards Dresden as a geographically favourable bundling point for shifting cross-border HGV transport from/to the Czech Republic or Poland to rail. However, demand in this area is almost exclusively concentrated on cranable semi-trailers as the common loading vessel in international transport with Eastern Europe. For example, the operator HUPAC carried out test transports to Geleen (NL) in 2019, but has since discontinued them due to a lack of space in the terminal for temporary storage of the trailers, among other reasons.

Within the framework of the project working group on the corridor train (cf. 3.2), discussions were held with the CT operator LKW WALTER regarding CT relations to Rostock. After a detailed examination of the variants described, the establishment of a trailer port in the Alberthafen specially designed for the handling of cranable semi-trailers was favoured. In addition to the comparable traffic development with the CT terminal, the availability of a sufficiently large area for handling and interim storage of the trailers as well as the usability of existing tracks in the quay area speak in favour of this location.

Since January 2021, trains for the Dresden-Rostock-Scandinavia route have been loaded daily in the Alberthafen Dresden, which means that the southern regions of Sweden and Denmark are directly connected to Saxony and the Czech Republic. In September, the service was expanded to include the Dresden-Curtici (Romania) route, so that south-eastern Europe also has a direct train connection to the Baltic region via Saxony.



Figure 10: First arrival of the CT train from Curtici (Romania) on the north shore of Dresden's Alberthafen.

Currently, 12 trains a week are handled at the Alberthafen Dresden trailer port from Monday to Sunday in a 3-shift system. In 2022, two additional routes, one domestic and one international, are to be added. In order to be able to cope with the increasing demand for rail transport and traffic shifts, SBO is planning to build a new trailer port on the south side of the Port of Dresden. This will be able to handle up to 50,000 trailers per year in the future.



Figure 11: Aerial view of Alberthafen Dresden with transshipment areas on the north bank (right) and south bank (left).

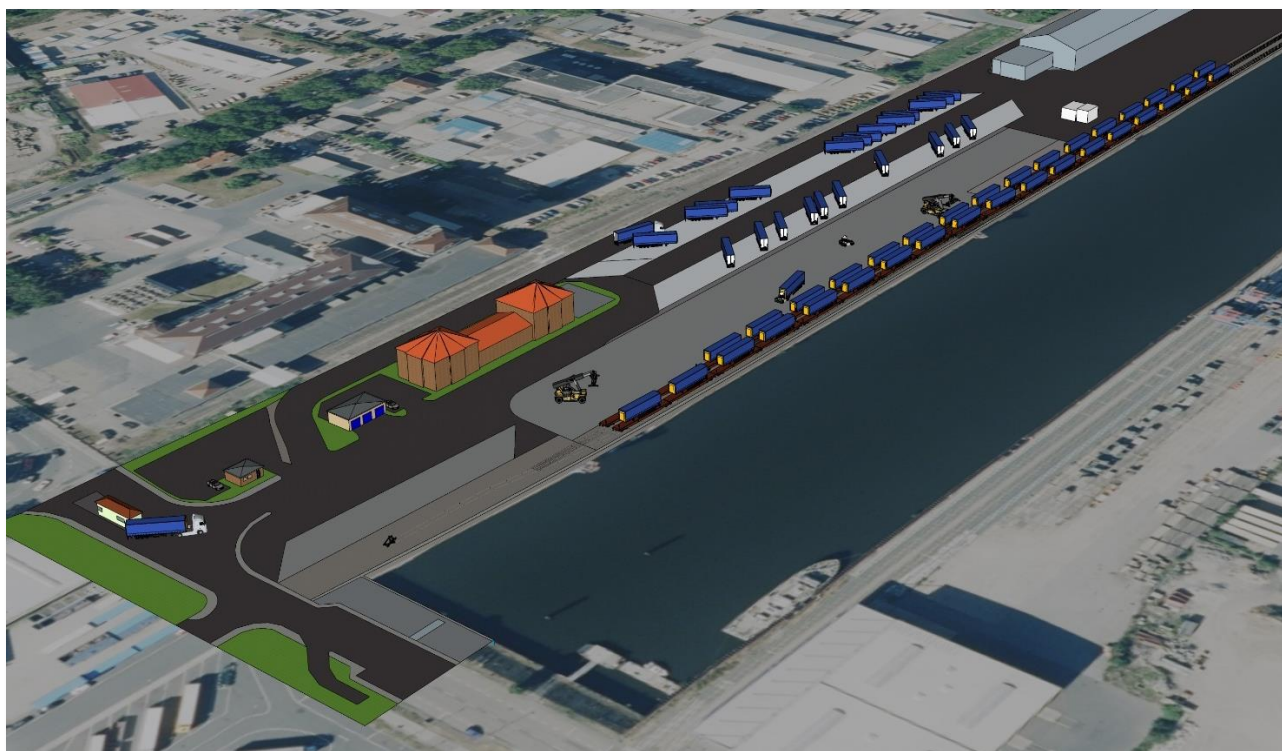


Figure 12: Visualisation of the planned trailer port on the south bank of Dresden's Alberthafen



4. LAST MILE MANAGEMENT IN THE REGIONS

4.1. Introduction and objectives

This part of the Corridor Capitalisation Plan deals with the designation of major industrial and commercial locations at the level of state and regional planning. Specifically, it examines the contribution that state and regional planning in the Free State of Saxony can make to improving the rail accessibility of these locations. It is intended to serve as an informal guide and as a strategic decision-making aid for the designation of (future) industrial and commercial sites.

The Rail Transport Masterplan formulates the objective that large-scale industrial areas, logistics centres and commercial areas must be given access to rail freight transport under conditions that are in line with market requirements.³ To this end, it is recommended, among other things, that a mandatory consideration of rail sidings in planning/environmental law should be examined in the approval and construction of larger industrial and commercial areas.

Based on the demands of the Rail Transport Masterplan, the Track Access Charter also recommends that the necessary rail sidings should be considered in the preliminary planning of such areas. The Charter further states that *“rail freight transport often does not play a significant role in regional transport planning. [...] As a result of the general development, rail access is less and less considered in the designation of commercial areas and the establishment of new companies.”*⁴

The Track Access Charter states that municipalities could promote rail transport in the long term if they reserved industrial and commercial areas with sidings only for companies that have a serious interest in them. The priority of the use of certain areas should be stipulated in the land use plans. The designation of industrial and commercial areas should take the rail connections into account. The possibility of reactivating former connecting lines could also be considered.

Furthermore, it is considered indispensable to give greater attention to rail transport in the designation of industrial and commercial areas in the land use plans of the municipalities as well as in state and regional planning.

Spatial planning has a particular responsibility in determining land use. It plays an important role in regulating the development of municipal industrial and commercial locations. In Saxony, state planning is authorised to determine land use for industrial and commercial locations of state-wide importance. In this way, suitable industrial and commercial locations of state-wide significance can be protected from competing uses.

³ cf. BMVI (ed.): Masterplan Schienenverkehr, Berlin 2020, p. 70

⁴ VDV (ed.): Gleisanschluss Charta. Gleisanschlüsse bringen Güter auf die Schiene, Köln 2021, p. 27

4.2. Survey of larger industrial and commercial sites

4.2.1. Inventory of existing industrial and commercial sites

The starting point of the analysis was the inventory of larger existing industrial and commercial sites with an area of 25 ha or more in the Free State of Saxony. The real estate database of the Saxony Economic Development Corporation (WFS) provides a suitable foundation for a comprehensive inventory.

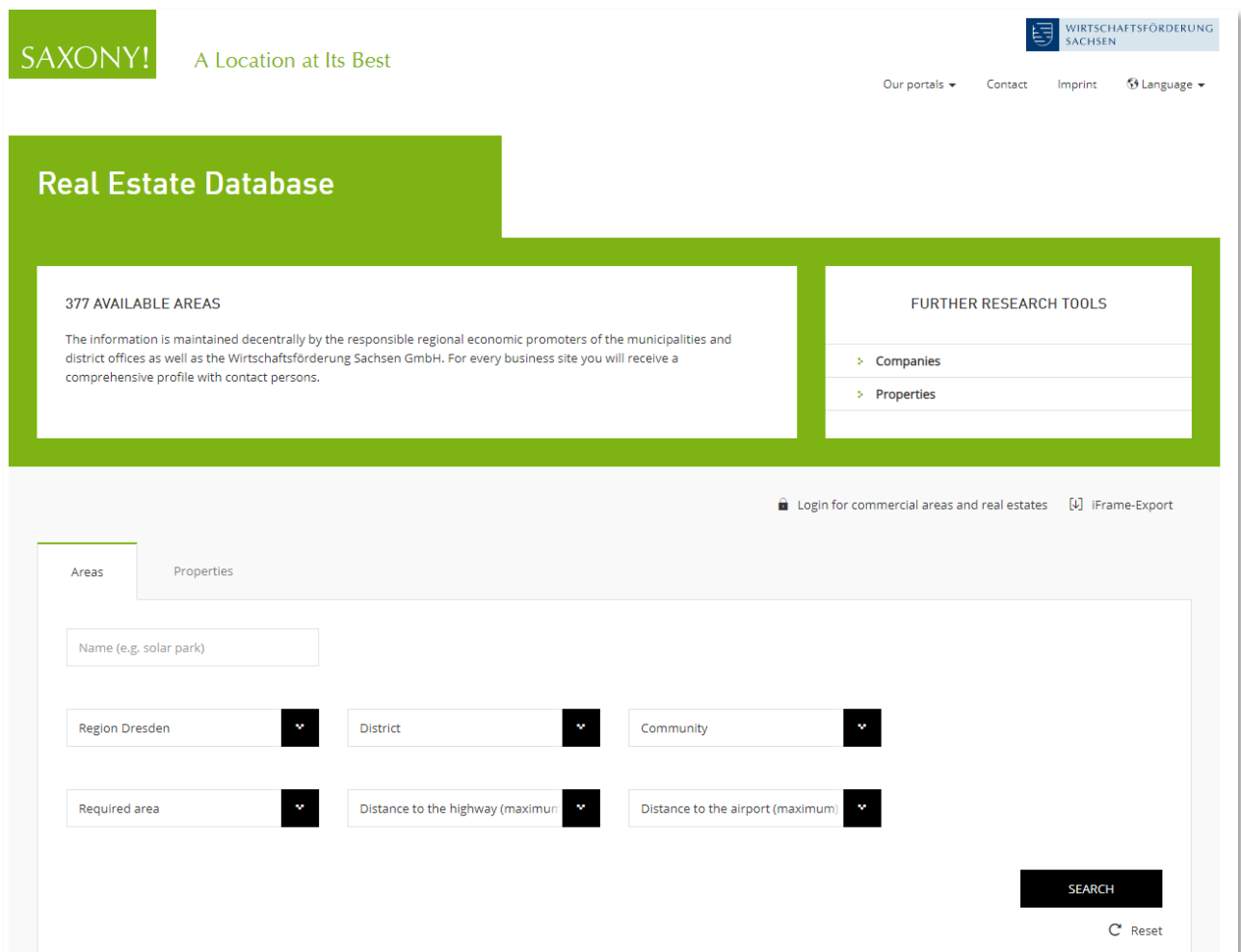


Figure 13: Search filters of the WFS real estate database⁵

This database contains 377 datasets with detailed information on such sites in the Free State of Saxony as well as contact details for potential investors. The information is maintained in a decentralised manner by the responsible regional economic development agencies of the municipalities and district offices as well as the WFS.

Datasets of existing larger industrial and commercial areas of 25 ha or more were extracted from the WFS database and geo-referenced using QGIS. Building on the WFS data, further sites were identified through

⁵ WFS (ed.): Gewerbeflächendatenbank, <https://immobilien.standort-sachsen.de/area/de> (accessed on 12 January 2022)



individual research. Thus, additional sites were obtained from data inventories of municipal real estate platforms and publicly accessible directories of the chambers of industry and commerce, among others. As a result, a total of **113 existing industrial and commercial sites with an area of at least 25 ha** were identified in the Free State of Saxony as part of this analysis.⁶

During the research, it was found that many of the publicly accessible real estate databases offer the option of filtering the traffic favourability of industrial and commercial sites according to road and airport connections, but not according to rail connections. An area-wide assessment of the rail connections of these sites in Saxony through the WFS database and other portals was therefore not possible within the scope of this analysis.

4.2.2. Inventory of precautionary industrial and commercial locations

Regarding precautionary locations for industrial and commercial uses, an assessment was conducted at the spatial planning levels of state planning and regional planning.

The State Development Plan for the Free State of Saxony contains principles and objectives for spatial organisation and development and is intended to represent a flexible, sustainable and long-term planning security-oriented overall concept of spatial planning for the Free State of Saxony. In conjunction with the regional plans, it is intended to regulate and harmonise land use claims at an early stage, create planning security and accelerate planning.

Objective 2.3.1.3 of the State Development Plan stipulates that the regional planning authorities should ensure long-term site provision for large-scale, supra-regionally significant industrial and commercial enterprises. According to **objective 2.3.1.4**, the designation of precautionary locations for industry and commerce should be based on conceptually justified, anticipated demand. The permissibility of using the precautionary locations is to be specified in the regional plans.

One planning instrument for safeguarding land are the so-called priority areas for settlement development. These include regionally and supra-regionally significant priority locations for industry and commerce. Regional planning authorities must provide appropriate justification if they do not make use of this instrument (e.g. due to regional requirements such as natural conditions or the lack of large-scale land reserves for industrial and commercial enterprises) and how the objective of securing industrial and commercial locations can nevertheless be implemented.

According to the State Development Plan, the designation of precautionary locations for industry and commerce is to be based on a regional inventory analysis of a possible need for larger contiguous areas. The locations designated for industrial and commercial use must be at least 25 ha in size. They are to be specified in the regional plans on an area basis and designed in the urban land use planning according to the specific need.

Further necessary regulations in dealing with the precautionary locations, in particular within the framework of urban land-use planning and for the inter-municipal development of the locations, are to be determined independently in the respective regional plans. In doing so, the location requirements of the economy, including transport advantages, land suitability, spatial proximity to central areas and supra-regionally significant connection and development axes, have to be considered as well.

In accordance with objectives 2.3.1.3 and 2.3.1.4 of the State Development Plan for the Free State of Saxony, precautionary locations for industry and commerce are designated in the regional plans of the regions of Chemnitz, Leipzig-West Saxony and Upper Lusatia/Lower Silesia. The designated locations have

⁶ cf. Annex 1

a minimum size of 25 ha. Regional location requirements of the economy, such as traffic-favourability, site suitability, spatial proximity to central places (in particular high-order and middle-order centres) and supra-regionally significant connection and development axes, are taken into account, as are the concerns of nature conservation and environmental protection, flood protection and agriculture. Existing regional and municipal commercial land concepts and brownfield sites close to settlements are also considered.

Since the designations are based on the anticipated demands, the quantity and size of precautionary areas vary within the planning regions. The regional precautionary locations are to be included in the land-use plans for information purposes and are only to be developed in concrete terms in the context of binding urban land use planning if there is a specific need.

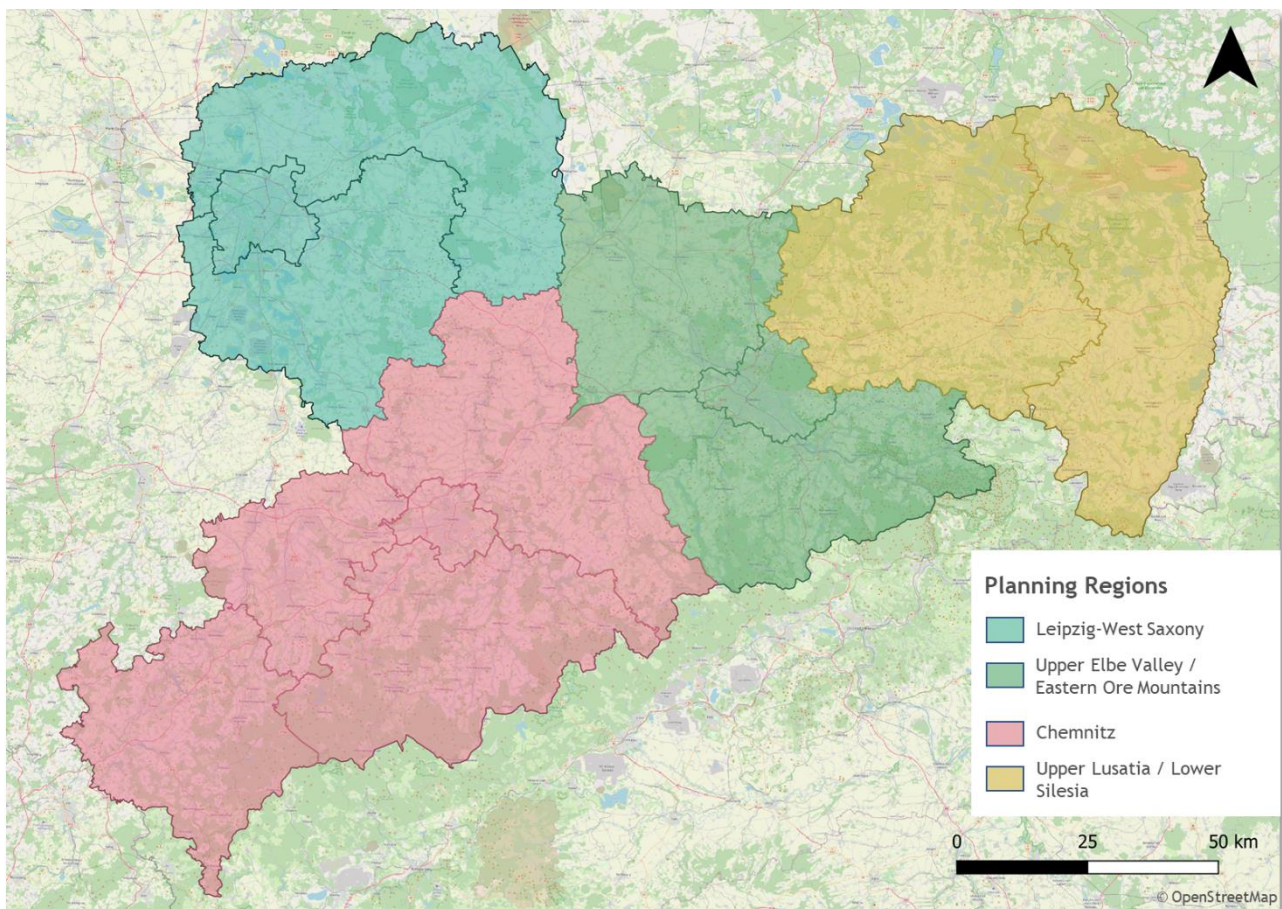


Figure 14: Planning regions of the Free State of Saxony

In the **Regional Plan of the Chemnitz Region**, the designation of precautionary locations is conducted in accordance with objectives 1.4.1-1.4.4. As a result, a total of 24 precautionary locations (an area of approx. 1,930 ha in total) are designated in the regional plan.⁷

⁷ cf. RPV Region Chemnitz (ed.): Regionalplan Region Chemnitz. Entwurf für die öffentliche Auslegung und Beteiligung gemäß § 9 (3) ROG in Verbindung mit § 6 SächsLPlG, Zwickau 2021, p. 50ff.



The **Regional Plan of the Leipzig West Saxony Region** designates eight provisional locations for industry and commerce in accordance with the objectives 2.3.1.4-2.3.1.9 (total area approx. 777 ha).⁸ The **Regional Plan of the Upper Elbe Valley/Eastern Ore Mountains Region** identifies nine locations (total area approx. 328 ha) in accordance with objective 2.3.1.1.⁹

The **Upper Lusatia-Lower Silesia Regional Planning Association** has decided not to designate precautionary locations for large-scale, supra-regionally significant industrial and commercial enterprises in the regional plan. It is argued that in the planning region as well as in the Free State of Saxony there have been rather few large-scale investments with a high demand for space and jobs in recent years. As a rule, it can be observed that large investors cannot be controlled by planning specifications, but that other, soft location factors are increasingly playing an important role.

The diversity and differentiation of the location requirements of the various sectors make it difficult to determine supply locations on the basis of foreseeable demand. A query in the commercial real estate database of the WFS carried out for the purpose of assessing demand has shown that several commercial sites with an available area of more than 25 ha are currently available for investment in various parts of the planning region. From this point of view, there is no need for regional planning to determine precautionary locations for industry and commerce.

Further reasons for the non-identification of precautionary locations for industry and commerce in the Upper Lusatia-Lower Silesia planning region are content-related and planning aspects. For example, the determination of precautionary locations is subject to planning uncertainties in the assessment and handling of such locations. This concerns in particular possible land speculation, which can lead to a blockade of suitable locations or a possible fragmentation and utilisation of the large-scale locations for local needs.

Although, according to the State Development Plan, the Regional Plan should also include stipulations on the permissibility of utilising precautionary locations, the problems mentioned cannot be resolved by means of regional planning alone. The state planning objective of securing land for supra-regionally significant industrial and commercial investments, pursued with the action mandate, can also be achieved through commercial real estate management or commercial real estate concepts of the counties or responsible regional economic development agencies. In the Upper Lusatia-Lower Silesia planning region, the designation of municipalities with the special municipal function of “industry” also provides an instrument for large-scale location control by directing commercial land development to specific municipalities.¹⁰

Notwithstanding the lack of designation of precautionary locations in the Upper Lusatia-Lower Silesia Regional Plan, potentially suitable locations for the establishment of large-scale industrial and commercial enterprises of supra-regional importance can be identified. The former brownfield sites of the lignite industry offer the advantage of large contiguous and infrastructurally developed areas, so that the demands of enterprises with large area requirements can also be fulfilled.

The Regional Plan identifies two suitable precautionary locations of the former lignite industry for industrial and commercial use (in total approx. 256 ha).¹¹

In addition, further precautionary areas of (supra-)regional importance have been identified in the context of this analysis, which are not designated in the regional plans. Thus, a total of **52 larger**

⁸ cf. RPV Leipzig-West Saxony (ed.): Regionalplan Leipzig-West Sachsen, Leipzig 2021, p 66ff.

⁹ cf. RPV Oberes Elbtal/Osterzgebirge (ed.): Regionalplan 2. Gesamtfortschreibung 2020, Radebeul 2020, p. 53ff.

¹⁰ cf. RPV Oberlausitz/Niederschlesien: Zweite Gesamtfortschreibung des Regionalplans Oberlausitz-Niederschlesien, Bautzen 2020, p. 37f.

¹¹ *ibid.*, p. 25

precautionary locations for industry and commerce (area ≥ 25 ha) has been identified in the Free State of Saxony.¹²

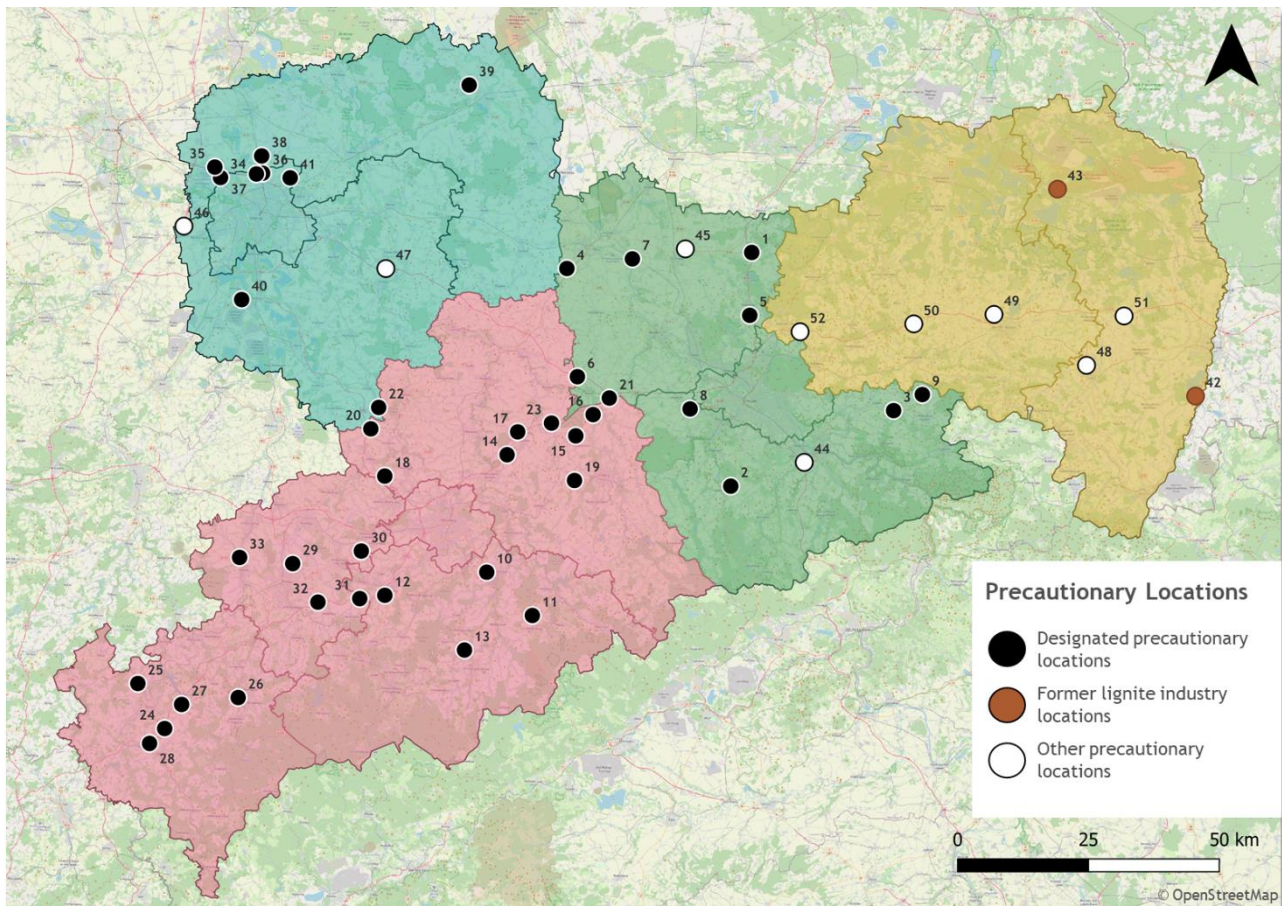


Figure 15: Precautionary locations for industry and commerce (area ≥ 25 ha)

4.3. The significance of rail access for larger industrial and commercial locations on the state and regional planning levels

4.3.1. State planning level

Rail access in conjunction with (larger) industrial and commercial locations is usually only addressed at the level of state planning. Even more, the 2013 State Development Plan for the Free State of Saxony (LEP 2013) mainly refers to the preservation of access points and thus only partially considers the current discussions about a growing need for environmentally friendly handling of certain freight transport relations.

In this regard, Principle G.3.7.4 of the LEP 2013 states that “Existing access points for rail freight transport shall be maintained.”¹³ To this extent, the State Development Plan adheres to the argument that the Free State of Saxony has a relatively high number of access points (operating points, sidings and public loading

¹² cf. Annexes 2-4

¹³ cf. RPV Leipzig-West Saxony (ed.), p. 99



points) for rail freight transport. These also provide access to the European freight corridors and contribute to the shift of freight transport to rail. The aim should therefore only be to preserve access points for rail freight transport that cannot be handled via CT terminals.

In contrast, the State Development Plan does not contain any concrete statements on the development of access points in relation to future industrial and commercial demands. In this respect, the LEP 2013 is also less conclusive with regards to railway access in the designation and development of industrial and commercial areas than, for example, the Hesse State Development Plan or the Berlin-Brandenburg State Development Plan. In the latter, for instance, Principle G 6.7 states: *“In addition to the development of concentrated logistics locations, the securing, creation and use of suitable railway sidings is of considerable importance for the environmentally compatible handling of specific freight transport relations and should therefore be taken into account in corresponding planning and measures in connection with the commercial development and (re)use of railway areas.”*¹⁴

4.3.2. Regional planning level

For the designation of precautionary locations for industry and commerce in the regional plans of the regions of Chemnitz, Leipzig-West Saxony, and Upper Elbe Valley/Eastern Ore Mountains, transport accessibility is mentioned as a selection criterion. Nevertheless, transport accessibility - and in particular railway accessibility - are differentiated to varying degrees in the respective regional plans.

In general, it can be stated that rail access is currently not a decisive location parameter for the designation of precautionary locations in the regional plans.

In the **Regional Plan of the Chemnitz Region**, the connection to the supra-regional and regional transport infrastructure is used to determine the spatial favourability of the designated regional precautionary locations. However, as a rule only the federal motorway and federal and state roads are considered.

In the **Regional Plan of the Upper Elbe Valley / Eastern Ore Mountains Region**, precautionary locations were designated with regard to the following transport-relevant criteria:

- 2-km corridor around motorway junctions,
- 1-km corridor around federal and state roads in the course of supra-regional and regional axes,
- 2-km radius around Dresden Airport, airfields and ports,
- favourable integration of the settlement structure (central places and networks, pre-dominance of industry),
- expansion possibilities in connection with existing industrial and commercial locations,
- a road and, if applicable, a rail connection is already available or possible.

In contrast, the **Regional Plan of the Leipzig-West Saxony Region** clearly emphasises rail connections in the designation of precautionary locations and undertakes a more structured categorisation approach to traffic favourability:

¹⁴ Senate Department for Urban Development Berlin / Ministry for Infrastructure and Spatial Planning Brandenburg: (ed.): Landesentwicklungsplan Berlin-Brandenburg, 1. Auflage, Potsdam 2009, p. 54



Suitability category	Position					
	Accessibility					Connection
	High-order centre (min)	Middle-order centre (min)	Airfield (min)	Rail network (m)	Motorway network (min)	Road network
A	0-10	0-5	0-10	0-500	0-5 (without local road)	Direct access to F(ederal)/S(tate) road
B	10-20	5-10	10-20	500-1,000	0-10 (with local road)	Direct access to C(ounty) road
C	20-30	10-15	20-30	1,000-2,000	10-15 (in the future max. 10)	Connection to F/S/C road areas 25-50 ha: up to 100 m areas > 50-99 ha: up to 200 m areas > 100 ha: up to 500 m
D	> 30	> 15	> 30	> 2,000	> 10	Connection to F/S/C road areas 25-50 ha: > 100 m areas > 50-99 ha: > 200 m areas > 100 ha: > 500 m

Table 1: Classification of the traffic favourability of precautionary areas in the Regional Plan of the Leipzig-West Saxony Region

4.4. Rail access for larger industrial and commercial locations

4.4.1. Survey of access to the railway network

As a result of the inventory, a total of 113 existing sites and 52 precautionary locations were compiled as part of this study. In a next step, the access of these locations to the railway network was surveyed using GIS analysis. The locations were georeferenced in the GIS and classified according to their distance from the DB rail network. For this purpose, the rail network data of the open-data portal of the Deutsche Bahn AG was used, among others. The classification was based on the designation criteria for the precautionary locations defined in the Regional Plan of the Leipzig-Western Saxony Region. Terrain profiles and possible spatial resistances (e.g. crossing of landscape protection areas, etc.) between the locations and the DB railway network were not considered during the initial survey.

As result of the GIS baseline survey, it is determined that the majority (68 %) of existing industrial and commercial sites have access to the railway network within a radius of 2,000 metres. 42 sites (37 %) have direct access within 0 - 500 m of the DB railway network. 19 sites (17 %) are 501 - 1,000 m (14 %) and 16 sites are 1,001 - 2,000 m from the DB railway network. However, this contrasts with 36 sites (32 %) that are more than 2,000 m from the DB railway network.

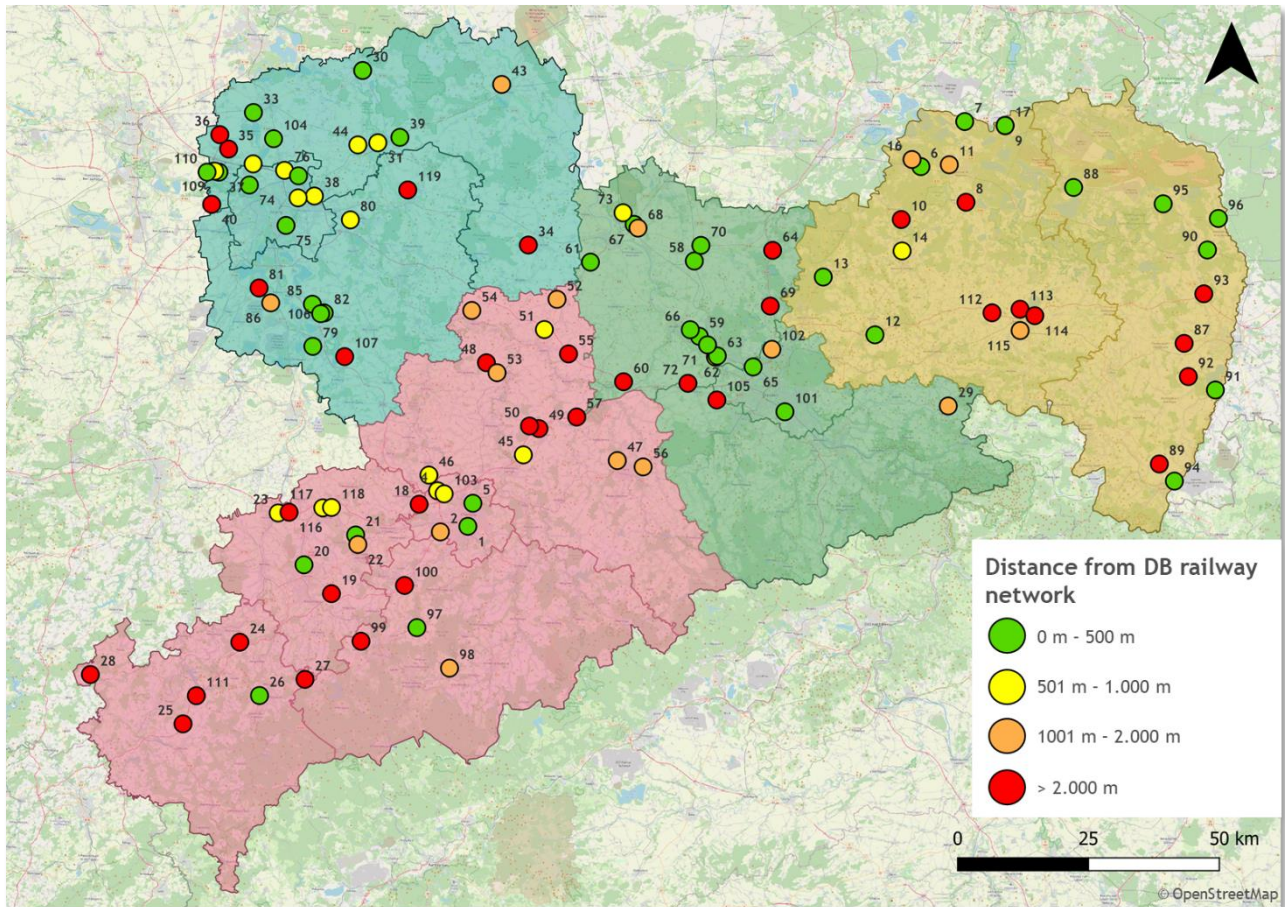


Figure 16: Distance of existing industrial and commercial sites to the railway network (area $\geq 25\text{ha}$)¹⁵

The results of the GIS baseline survey also show that just over half (56 %) of the precautionary locations for industry and commerce are 2,000 m or closer to the DB railway network. 12 locations (23 %) are in close proximity at 0 - 500 m. 5 locations (10 %) are 501 - 1,000 m, 12 locations (23 %) are 1,001 - 2,000 m away.

In contrast, 23 locations (44 %) are further than 2,000 m from the DB railway network.

¹⁵ cf. Annex 1

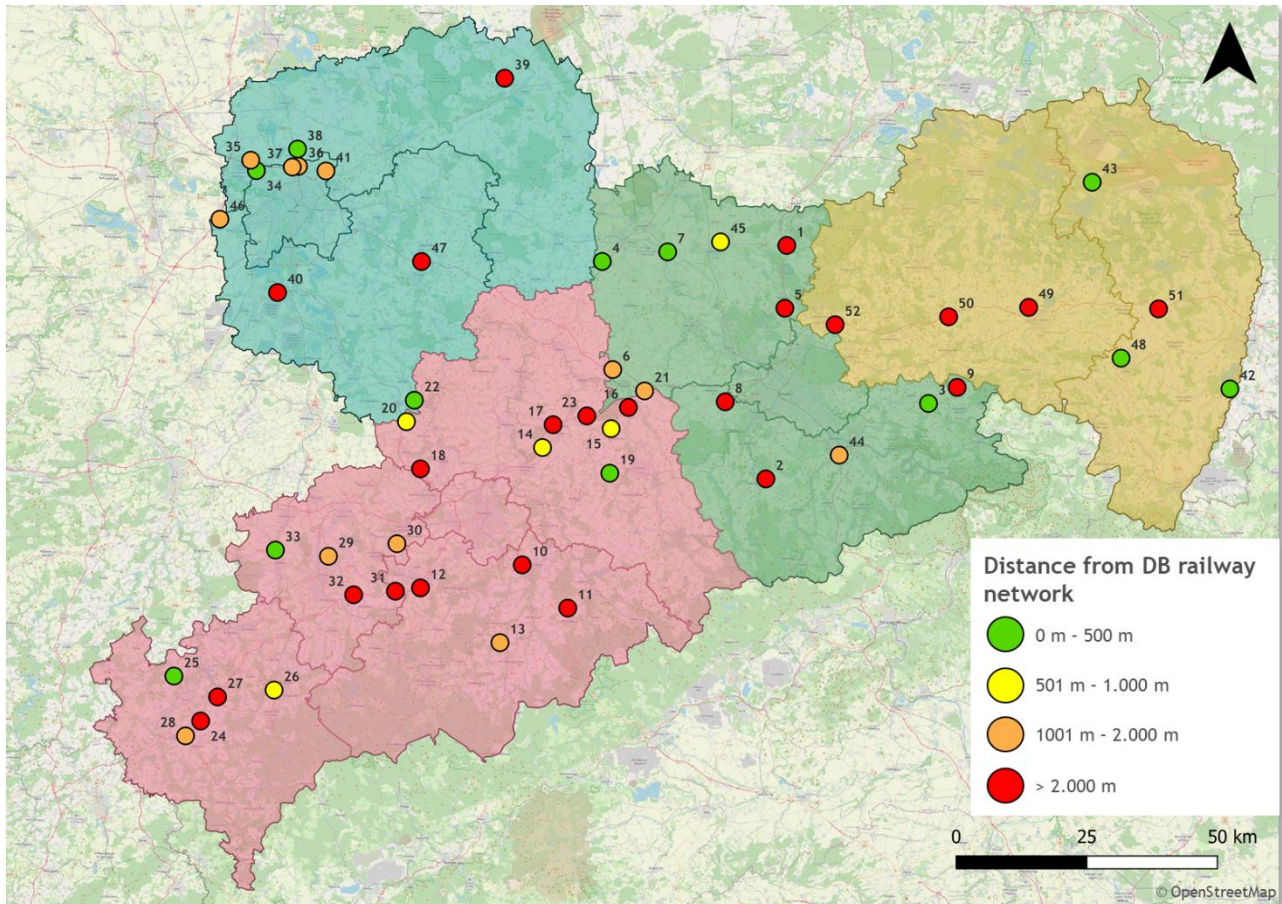


Figure 17: Distance of precautionary locations for industry and commerce to the railway network (area ≥ 25 ha)¹⁶

4.4.2. Analysis of the prospects of realising rail access to precautionary locations

As part of an in-depth analysis, the 43 precautionary locations designated in the regional plans (including former lignite industry sites) were categorised according to the prospects of realising a railway access. The following classification was chosen for this purpose:

- High potential:** The chances of developing the accessibility of a precautionary location by rail are classified as "high" if tracks connected to the rail network lead directly to it or are tangential to it or run in the immediate vicinity (usually up to 500 m) and there are no significant obstacles between these tracks and the site. These insignificant obstacles may be, for example, a path or road of minor importance, a row of trees or thicket, or an artificial ditch. In the case of only close but not immediate proximity to corresponding tracks (500 - 2,000 m) and/or the presence of obstacles, the existence of a former railway line between the site and the railway network, which is not built over and not explicitly occupied by other types of use, is also suitable for the assessment of a high chance of realisation of a railway connection of the affected site. The same applies if there are binding plans that indicate a location in spatial proximity to the rail network in the near future.

¹⁶ cf. Annexes 2-4



- **Medium potential:** The chances of developing the accessibility of a precautionary location by rail are classified as “medium” if there is no immediate proximity between the site and the currently existing rail network or tracks leading to it, but the distance in between is manageable (usually 500 - 2,000 m) and the establishment of a connection appears to be a considerable challenge (e.g. overcoming intervening state or federal roads or motorways), which should, however, be manageable with calculable effort.
- **Low potential:** The chances of developing the accessibility of a precautionary location by rail are classified as “low” if the distance between the site and the currently existing rail network or tracks leading to it is considerable (usually over 2,000 m) and overcoming this distance appears to be achievable only with a disproportionate effort. This classification also applies to smaller distances (less than 2,000 m) if the spatial resistance between the site and the current rail network appears to be very high, e.g. due to existing buildings (traffic routes, residential, commercial or industrial buildings), valuable landscape areas (in particular river floodplains or valleys, large municipal green spaces, large wooded areas, etc.) or difficult topographical conditions (mountain slopes, terrain cuts, etc.) and if, at the same time, there are no spatial structures that can be expected to facilitate overcoming these resistances (e.g. former railway lines that have not been built over, low-structure landscape areas with monocultural agricultural use, etc.).

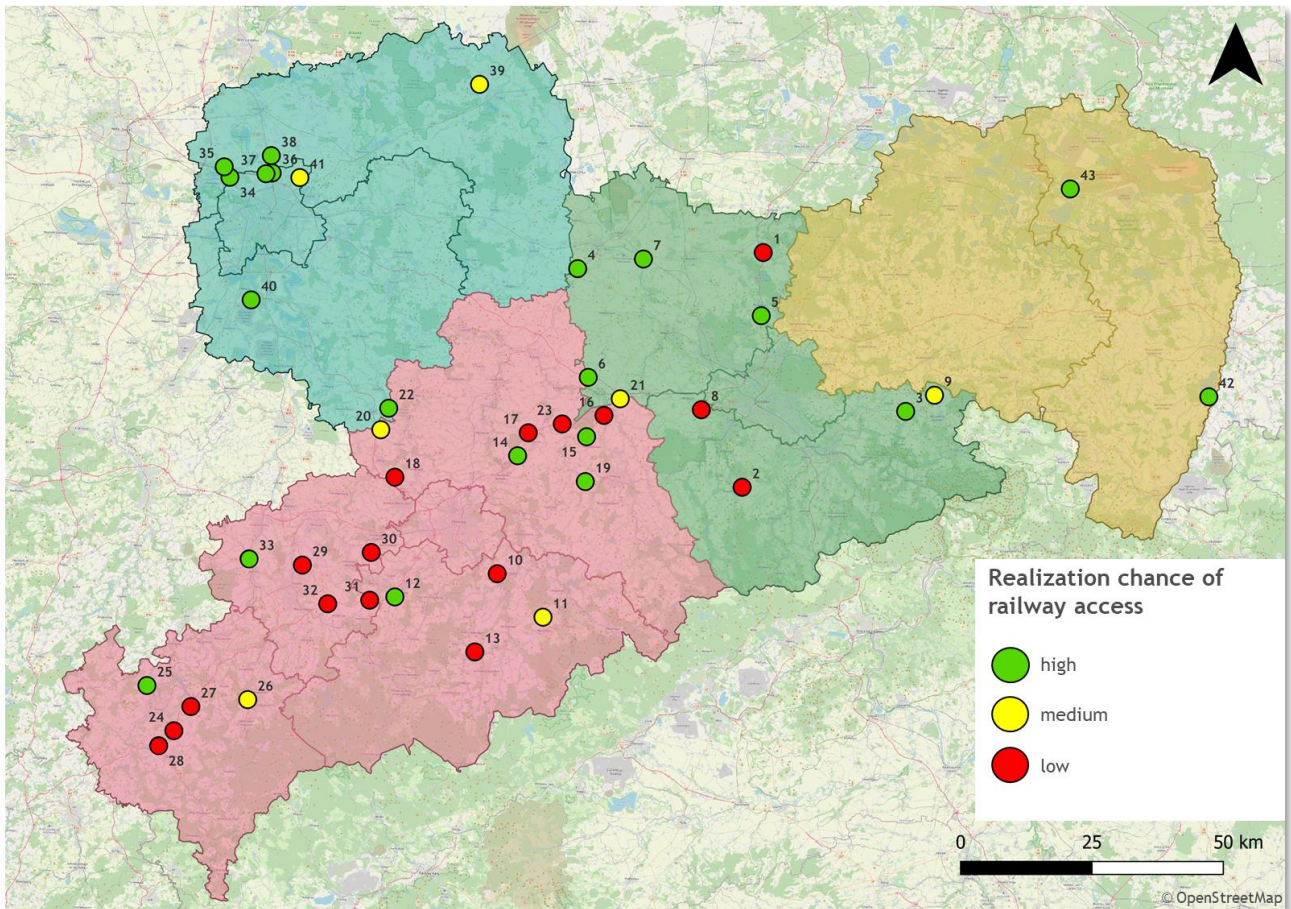


Figure 18: Assessment of realisation chances of railway access for precautionary locations for industry and commerce

As a result of the classification process, 20 locations (47 %) with high chances of realisation were identified. 7 locations (16 %) have medium chances of realisation. For 16 locations (37 %), the overall chances of realisation are considered low.

Among others, locations such as “Südlich Nünchritz” (id 7), “Radefelder Allee” (id 35) or “Seehausen II & III” (id 36 & 37) are considered to have the best chances of realisation due to their direct connection to the main DB rail freight network. However, there are also other sites that are classified as “high” but whose realisation potential depends on a variety of overall spatial development parameters and infrastructure policy decision-making processes.

One such example is the precautionary location “Südlich Starbach” (id 6).

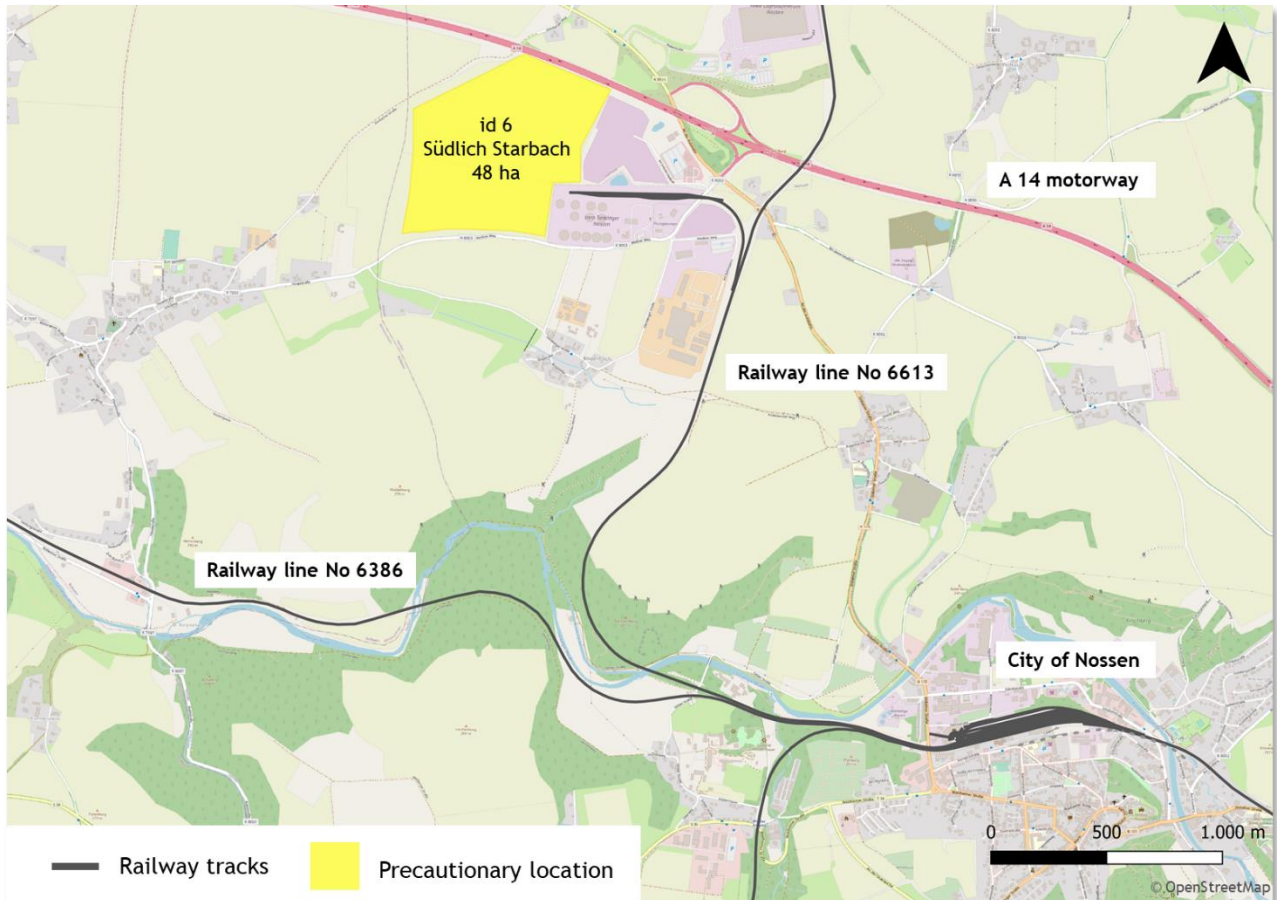


Figure 19: Precautionary location example “Südlich Starbach”

The location is approx. 48 ha in size and is situated on the territory of the town of Nossen in the county of Meißen. It is directly connected to the A14 motorway via the Nossen junction. There is also a possible direct connection to railway line 6613 via the railway siding of the adjoining Nossen fuel depot to the east. However, this line was abandoned by DB for reasons of economic efficiency and is currently leased and operated to a limited extent by the Nossen-Riesa Railway Company GmbH (NRE) for rail freight transport. Transport times along this line are currently very high, as the NRE dispatcher has to drive alongside the train in his car in order to operate the signals and the railway crossing gates at the intermediate stations. In addition, there is currently no direct connection for freight transport to Riesa (the construction of the Riesa bypass of the B 169 interrupted the railway line at Riesa).

The NRE intends to reactivate the entire Riesa - Nossen line for freight and passenger traffic in the future. Extensive maintenance work has already been carried out on the line for this purpose. However, in order to ensure regular operation for freight traffic on the entire line, further investments are required.

Another example is the precautionary location “Südlich Mautitz” (id 4).

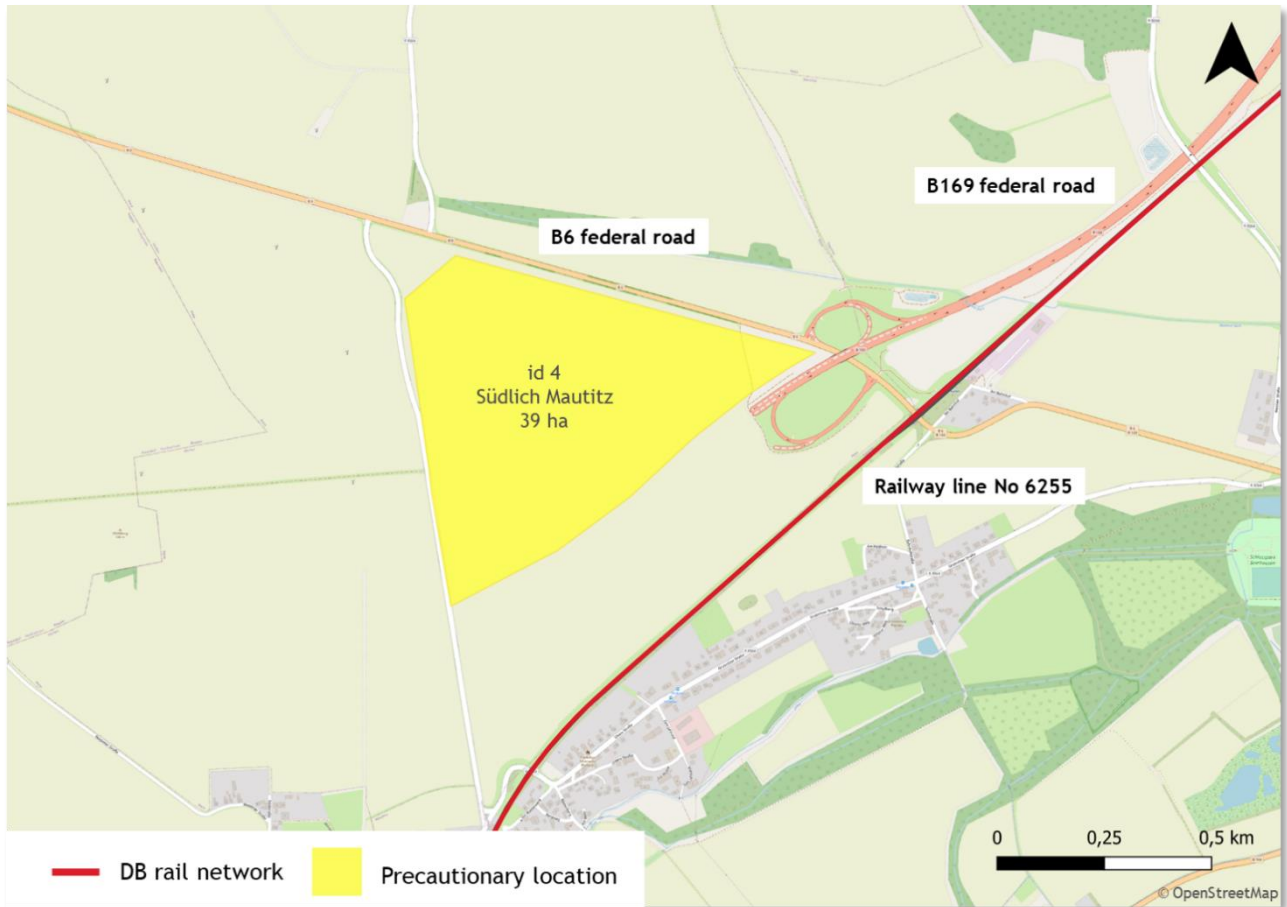


Figure 20: Precautionary location example “Südlich Mautitz”

The location covers a total area of 39 ha and is situated in the boundaries of the town of Riesa in the county of Meißen. The site has direct road access via the B 6/B169 Seerhausen junction. 300 m to the east, there is the possibility of rail access via railway line 6255 Riesa-Chemnitz.

However, the question arises to what degree a possible further extension of the B 169 (construction phase 3) could lead to an impairment of the potential railway access. The further expansion of the federal road is to be carried out southwards to the A 14 Döbeln Nord motorway junction. The project serves in particular to create an efficient road connection between the town of Riesa and the A 14 federal motorway north of Döbeln. In this area, it will relieve congestion in the towns of Salbitz and Seerhausen. It is not yet clear exactly when a further extension will take place. However, its route would most likely run parallel to the precautionary location. Additional planning and construction measures would therefore be required to enable the site to be connected to the railway network and to avoid possible transport development conflicts in the future.

The analysis results of all 43 locations were shared and discussed with the regional planning associations as part of the stakeholder involvement process for the elaboration of the Corridor Capitalisation Plan for the Free State of Saxony.



4.5. Stakeholder involvement - summary of results

Extensive stakeholder involvement took place as part of this study. Within the framework of stakeholder workshops, all four regional planning associations, the Metropolitan Region of Central Germany, the Saxony Economic Development Corporation and the Saxon Chambers of Industry and Commerce contributed to the joint discussion on content. In these workshops, interim results of the study were presented and challenges and potentials for improving rail connections to larger precautionary locations for industry and commerce were explored. The following results of the stakeholder workshops are highlighted in this context:

- On the part of freight transport policy, it has been recognised that the climate protection goals of the federal government cannot be achieved without targeted promotion of rail-bound freight transport. New instruments must be found to get rail-bound freight transport onto the tracks.
- There is a tendency for companies to increase their demand for rail access in the Free State of Saxony, also against the background of the taxation of CO₂ emissions. In addition, investors are increasingly asking about the availability of renewable energies, also due to the requirements and specifications formulated on the customer side (CO₂-neutral supply chains). However, this is not yet reflected in practice; price is still a decisive factor in determining transport routes.
- Rail-based services must be economically viable and there must be competitive conditions for them to be attractive to commercial businesses. Rail transport is less flexible than truck transport, so sidings are more relevant for larger locations. At the same time, investors want to build quickly, so a railway connection should ideally already be available.
- From the shippers' point of view, rail freight transport is currently very costly - many factors have to come together so that the infrastructures provided at great expense can be used efficiently. - If the volume of freight transport by rail is to be increased significantly, then the question arises as to whether certain sub-segments of rail freight transport should not be provided by the public sector - similar to local rail passenger transport as part of public services of general interest. Alternatively, start-up financing of transports could also be considered.
- Sufficient capacities for rail freight transport must be provided on the main lines to ensure reliable and cost-efficient transport. Secondary railway lines are more important for access to wide areas (especially for the transport of bulk goods), but are not very efficient due to limited capacity (single-track) and mostly lack electrification. Nevertheless, reactivation for rail freight transport should be considered.
- At the federal level, the funds for rail access improvement have been considerably expanded and replacement measures can now also be financed (better consideration of the concerns of business enterprises).
- Basically, after decades of line closures and thinning out of the railway infrastructure in the Free State of Saxony, a paradigm shift in rail transport is necessary. So far, road-oriented planning has been pursued, resulting in the dismantling of railway lines (trend "away from rail"). There is a lack of "strategic" connections, especially in regions severely affected by structural change. Today, the rail transport network is highly fragmented and needs to be rebuilt.
- Rail freight transport does not yet have a particularly high priority in the spatial planning of the Free State of Saxony. Statements e.g. on relevant access points to rail and inland waterways appear inconsistent and should be more systematised. In contrast, rail passenger transport - as part of the provision of public services of general interest - enjoys a significantly higher status. The question arises whether access to rail freight transport should not also be understood as part of public



services of general interest - with the consequence of corresponding mandates for action and planning for state and regional planning.

- Due to the minor importance of rail freight transport, access to rail transport infrastructure is not considered as a significant factor in the designation of precautionary locations by regional planning.
- There are no concrete specifications for rail access to commercial and industrial locations at the spatial levels of state planning and regional planning. Currently, in spatial planning there is also no systematic inventory of rail access of industrial and commercial locations.
- There is a lack of land in the Free State of Saxony for the designation of larger locations for industry and commerce. The Land Development Plan mandates regional planning to designate large-scale precautionary locations for industry and commerce (> 25 ha). The designation is carried out in close cooperation with the municipalities; the corresponding foundations and preliminary work date back in part to the 1990s. Initiatives for inter-municipal industrial and commercial locations can only come from municipalities, and even otherwise very good reasons must be given when municipal planning sovereignty is restricted. In this context, even designated locations are not always in demand by business enterprises as expected. Precautionary locations have a long history and a long lead time - possible shortcomings in the choice of a location are also transferred accordingly. In some cases, the municipalities have submitted further proposals that can be examined from the point of view of development for railway access.
- It must be examined which supporting specifications and planning mandates can be issued by the state planning department. A balance must be found between the supply-oriented designation of land and the resource-conserving use of existing land. With regard to securing well-developed precautionary locations for industry and commerce, the interaction of state and regional planning is important. The revision of the regional plans is almost complete, but ultimately only framework conditions can be set at this level - economic activities and the use of certain infrastructures cannot be decreed.
- Regional planning has only limited steering options - the provision of railway sidings is expensive and their use must be ensured. However, it is an interesting proposal to also provide for corresponding sidings for logistical uses when designating commercial and industrial locations.



4.6. Recommended measures

Based on the rail access survey and the stakeholder involvement, this study proposes the following measures for the improvement of rail accessibility of industrial and commercial locations in the Free State of Saxony:

General

- **Consideration of rail accessibility as a feature of location information in commercial property databases:** Currently, there is no option in the publicly accessible commercial real estate database of the WFS and others to systematically check commercial sites in the Free State of Saxony for their rail freight access. It is proposed to include this option as a search filter and to provide potential site applicants with an overview of the rail accessibility.

State planning and regional planning

- **Consideration of rail access as an important element of traffic favourability for precautionary locations for industry and commerce:** When designating precautionary locations for industry and commerce in regional plans, traffic favourability is generally an important selection criterion. Nevertheless, rail freight transport is not usually given equal consideration with road transport. It is therefore suggested that regional planning give greater consideration to rail as a mode of transportation when selecting locations, in order to enable multi-modal accessibility.
- **Examination of the reactivation potential of disused railway lines for rail freight transport, including the identification of possible pilot projects:** In recent decades, the railway network in the Free State of Saxony has been gradually dismantled and is now fragmented, especially in rural areas. According to the Federal Railway Authority, 60 lines with a total length of about 510 km were decommissioned between 1994 and 2018 alone.¹⁷ The reactivation of railway lines implies that freight traffic is resumed on previously unused lines. Depending on the individual case, the railway infrastructure might still in operation. In this case, the reactivation of rail transport can be realised relatively quickly and with reasonable effort. If the rail infrastructure has already been shut down or even dismantled, the effort would be greater. With regard to the development of precautionary locations for industry and commerce, spatial planning should systematically examine the extent to which line reactivations would be economically justifiable and could contribute to improving rail access. Pilot projects could be conducted to examine and evaluate the access potentials.
- **Graphical specification and safeguarding of disused railway lines in the regional plans, if necessary designation for interim use:** In the State Development Plan of the Free State of Saxony, the clearance of disused lines of the regional and supra-regional railway network for potential subsequent use for passenger rail transport is already considered in principle G 3.4.2. This principle is applied in the regional plans of the Saxon planning associations. It is proposed to also work towards safeguarding disused rail freight lines at the level of state and regional planning by means of a corresponding graphic specification.
- **Expansion of suitable priority locations for industry and commerce to include corridors of land for the anticipatory safeguarding of possible railway sidings, if necessary also supplemented by considerations of local/regional transshipment facilities (Railports):** The designation of precautionary locations for industry and commerce in the regional plans is preceded by specific definition criteria. The addition of rail siding corridors within precautionary locations could make a significant contribution to securing rail freight accessibility in a forward-looking manner. However,

¹⁷ Eisenbahn-Bundesamt (ed.): Listen und Statistiken zu Streckenstilllegungen. Liste der seit 1994 stillgelegten bundeseigenen Strecken im Land Sachsen, https://www.eba.bund.de/DE/Themen/Stilllegung/ListenStatistiken/listenstatistiken_node.html (accessed on 20 February 2022)



it should be noted that this would reduce the amount of industrial and commercial space that can actually be used. There is also a risk of overlapping areas. Moreover, when precautionary locations are designated by regional planning, it is not known which industrial and commercial enterprises will actually locate there and whether they have any need for rail access at all.

- **Improved access for workers to precautionary industrial and commercial locations, e.g. through additional stops:** A key issue is not only how goods get from industrial and commercial areas to rail, but also how workers get to industrial and commercial locations. Rail access should therefore be ensured not only for freight transport but also for passenger transport. The inclusion of precautionary locations for industry and commerce in the Chemnitz Model and other innovative transport concepts could make a significant contribution in this regard.



ANNEXES