



D.T1.3.3

IDENTIFICATION OF BOTTLENECKS IN INFRASTRUCTURE AND SERVICE IN THURINGIA

Work paper

Version 1.0

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1. FORM FOR DETAILED BOTTLENECK INVESTIGATION

BOTTLENECK NO. 1

Missing terminals for shipment

BOTTLENECK ALLOCATION

transport infrastructure	X
rolling stock / machinery	
services / operations	
legislation / administration	

PROBLEM DESCRIPTION

Due to the fact that destinations of shipments are not always accessible by rail, transshipment from rail to road, or vice versa, offers a suitable alternative. Alongside intermodal terminals (for combined transport), loading points are of particular significance in this regard. DB Netz AG therefore offers its customers a Germany-wide network of loading points. It currently operates around 400 loading points of which 14 are in Thuringia (figure 1). These are only 3% of all loading points in Germany. The loading points operated by DB Netz AG enable access costumers to tranship their goods from road to rail and vice versa. The configuration of the loading point can consist of various components depending on the local circumstances.

Loading points are variously configured:

- End-loading platform (goods transhipped at the same level),
- Side-loading platform (goods transhipped at the same level),
- Loading lane/loading track

Loading points are extended, where necessary, by additional facilities (e.g. power connection), lighting or access roads.

The loading points (track, road, ramp) in Thuringia are the following:

- **Altenburg** (One loading track, single sided, 325 m)
- **Arnstadt Hbf** (Two loading tracks, single sided, 2 x 230 m)
- **Bad Salzungen** (One loading track, single sided, 650 m)
- **Ebersdorf-Friesau** (One loading track, double sided, 240 m)
- **Eisenach** (One loading track, single sided, 250 m)
- **Erfurt Gbf** (One loading track, single sided, 300 m)
- **Gera Hbf** (Three loading tracks, single sides, 170 m, 308 m, 130 m)
- **Immelborn** (One loading track, double sided, 189 m)
- **Leinefelde** (One loading track, single sided, 465 m)
- **Lobenstein** (One loading track, single sided, 191 m)
- **Nordhausen** (Three loading tracks, single sided, 58 m, 52 m, 45 m)
- **Saalfeld/Saale** (Two loading tracks, single sided, 350 m, 300 m)
- **Themar** (Two loading tracks, single sided, 285 m, 200 m)
- **Walldorf (Werra)** (One loading track, single sided, 351 m)

Loading points should have suitable minimum equipment to reach all potential customers in the catchment area.

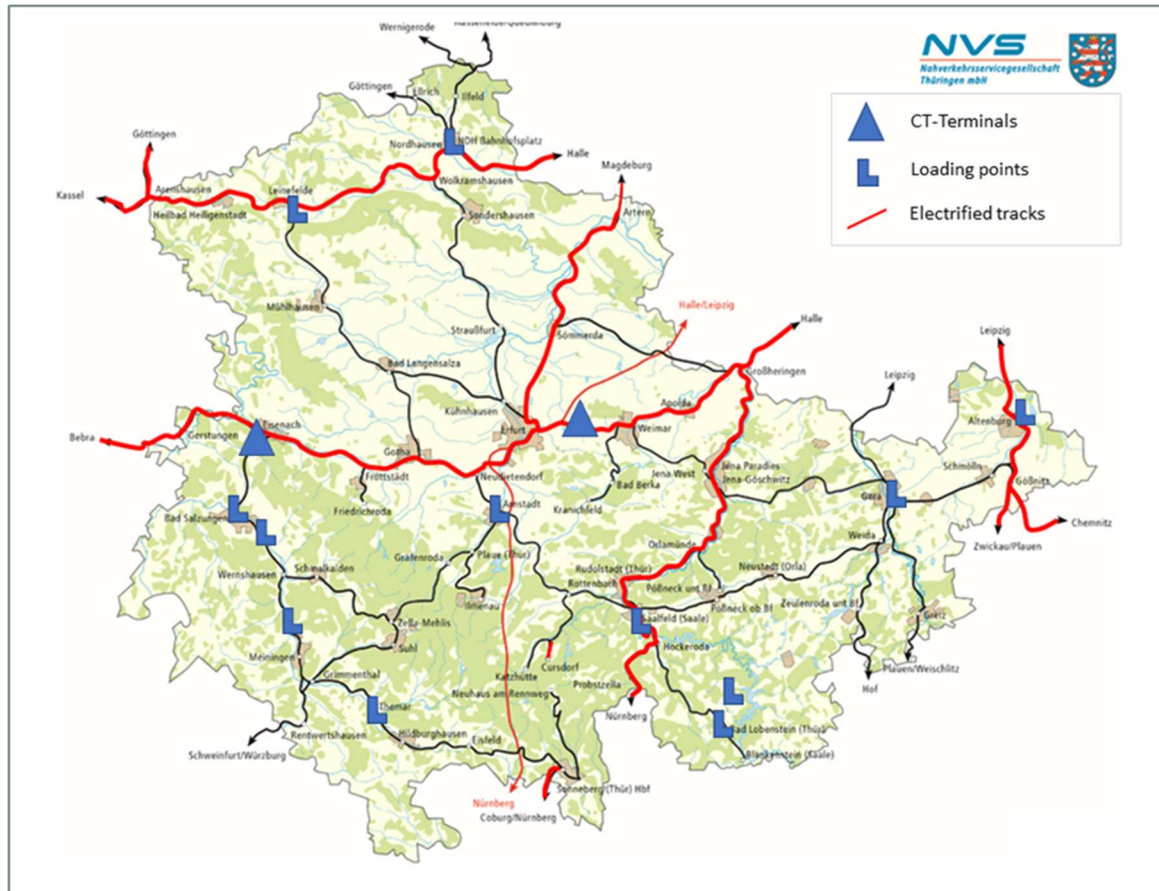


Figure 1: Loading points of DB Netz AG and Container Terminals in Thuringia, Source: own representation, adapted from Nahverkehrsservicegesellschaft mbH Thüringen 2011 and railway.tools, DB Netze

Terminals for Combined Transport (CT) are very important for modern goods' transport.

Combined transport is a form of intermodal transport, which is the movement of goods in one and the same loading unit or road vehicle, using successively two or more modes of transport without handling the goods themselves in changing modes. (Wikipedia)

Two container terminals for combined transport (intermodal transport) are available in the region:

- **DUSS Terminal Erfurt-Vieselbach (EV)**
- **Captrain-Terminal Eisenach**

Both terminals work at workload limit. The streets for the entry and exit are busy

Access to rail freight transport in the Thuringia region is limited by the existing loading points. Without additional loading points, CT terminals and railports, the share of rail freight transport in the total volume of freight transport cannot be increased.



BOTTLENECK CONSEQUENCES

(Select the level of consequences with X)

low	
medium	
high	X

PROBLEM-SOLVING APPROACH

First of all, there has to be an agreement between

- infrastructure companies
- regional shippers
- regional planning authorities
- logistics company
- special interest groups
- municipalities

about suitable locations.

Important points for implementation are:

- approval processes
- track systems
- buildings
- handling facilities
- storage capacities
- technical equipment and vehicles
- refuel systems and e-charging stations
- water supply and disposal
- storage space for dangerous goods
- sound insulation and environmental protection

Possible approach from the project:

Development of tools to support decision making regarding

- Location
- Sizing
- Technical Equipment
- Transport infrastructure
- Financing / funding
- Organization of operations

RESPONSIBILITY

- Local government units
- Private investors



TIME FRAME

Immediately	
Short-term	
Mid-term	
Long-term	X

EXPECTED BENEFIT

Low	
Medium	
High	X
Vast	

AN EXAMPLE OF BEST PRACTICE

- Railport Chemnitz South
<http://railport-chemnitz.de/home/>

2. FORM FOR DETAILED BOTTLENECK INVESTIGATION

BOTTLENECK NO. 2

Rail freight transport is only profitable on routes with rail passenger transport.

BOTTLENECK ALLOCATION

transport infrastructure	
rolling stock / machinery	
services / operations	X
legislation / administration	X

PROBLEM DESCRIPTION

Rail freight transport is in direct competition with freight transport by road. It is therefore always faced with the challenge of making its operation cost-effective.

This always works if the fixed costs for a railway line can be divided among as many users as possible. It is therefore important that there is also passenger transport on a line that is used for rail freight transport.

Unfortunately, passenger transport has been stopped on some branch lines in recent years because the number of passengers was considered too low. As a result, the operation of these routes became less and less profitable. Today, these routes are threatened with decommissioning or have already been decommissioned (figure 2).

In Thuringia, this affects the following railway lines *:

- Gotha - Graefenroda (Ohratalbahn)
- Grossheringen - Straußfurt (Pfefferminzbahn)
- Gerstungen - Vacha (Werrabahn)
- Eisfeld - Coburg (Werrabahn)
- Ilmenau - Themar (Rennsteigbahn)
- Probstzella - Neuhaus am Rennweg (Max-und-Moritz-Bahn)
- Blankenstein - Marxgruen (Hoellental)
- Triptis - Unterlemnitz (Oberlandbahn)
- Bretleben - Bad Frankenhausen - Sondershausen (Kyffhaeuserbahn)

* The listing does not correspond to a prioritization.

Without these lines, a significant improvement in the share of rail freight transport in total traffic in the Thuringia region would not be possible.

It is therefore important to maintain or revive passenger transport on branch lines of the rail network in order to promote freight transport.

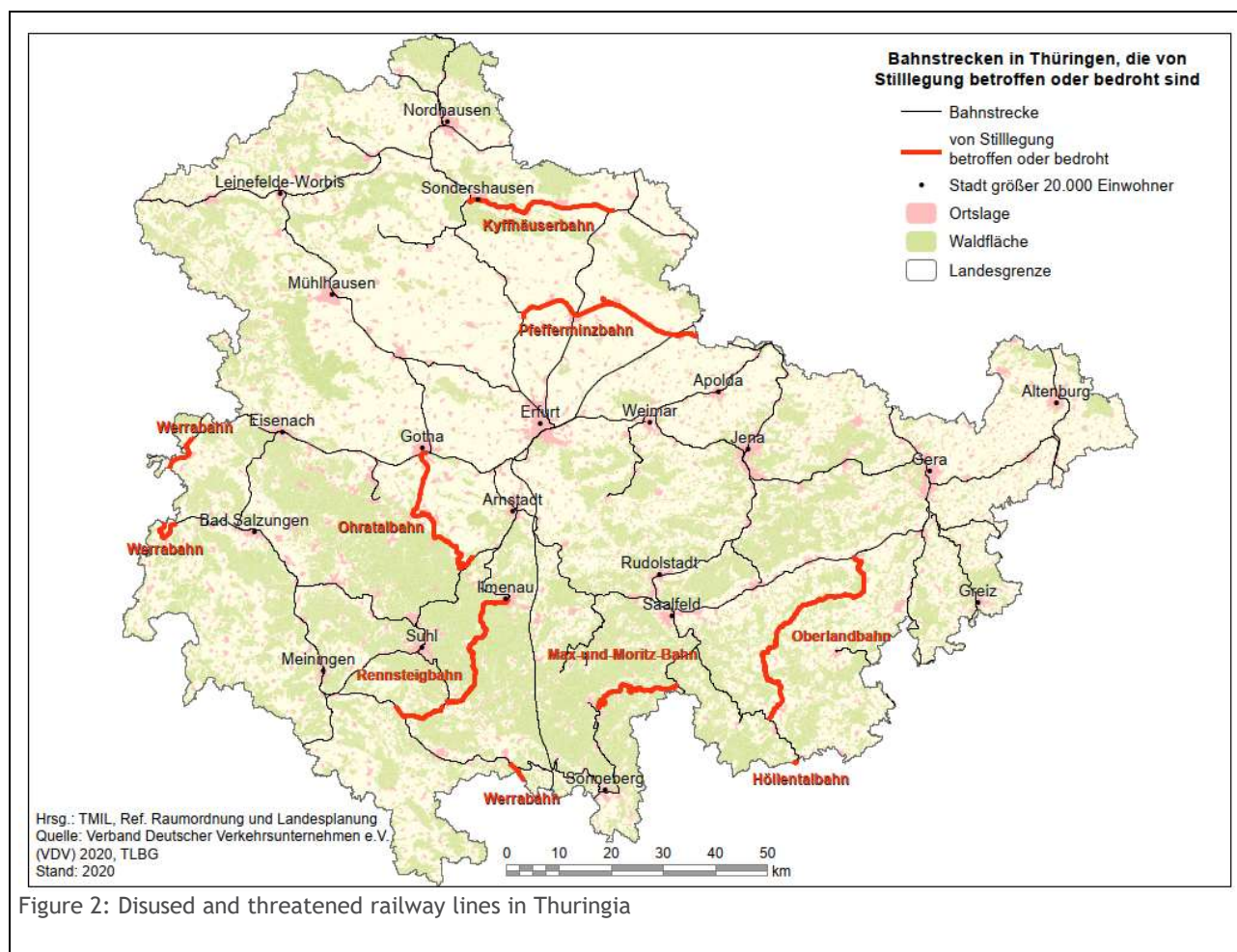


Figure 2: Disused and threatened railway lines in Thuringia

BOTTLENECK CONSEQUENCES

low	
medium	
high	X

PROBLEM-SOLVING APPROACH

Promotion of rail passenger transport also on branch lines as a contribution to climate protection and strengthening rail freight transport

Possible approach from the project:

Study on interactions between rail freight transport and rail passenger transport using the example of a selected railway line.

RESPONSIBILITY

Regional authorities



TIME FRAME

Immediately	
Short-term	
Mid-term	X
Long-term	

EXPECTED BENEFIT

Low	
Medium	
High	X
Vast	

AN EXAMPLE OF BEST PRACTICE

- <https://www.hna.de/lokales/frankenberg/kreis-waldeck-frankenberg-ort306259/besser-erwartet-reisende-neuer-bahnstrecke-5938671.html>

3. FORM FOR DETAILED BOTTLENECK INVESTIGATION

BOTTLENECK NO. 3

Infrastructural deficits

BOTTLENECK ALLOCATION

transport infrastructure	X
rolling stock / machinery	
services / operations	
legislation / administration	

PROBLEM DESCRIPTION

In order to improve the competitiveness of rail freight transport, some deficits in the infrastructure of the rail network in Thuringia have to be remedied:

The development of the railway infrastructure in Thuringia nearly stagnated in the last 15 years (figure 3). From an overall length of 1598 kilometres in 2005 it decreased until 2017 to 1558 kilometres. Since 1994 even 41 lines have been closed with an overall length of 467 kilometres.

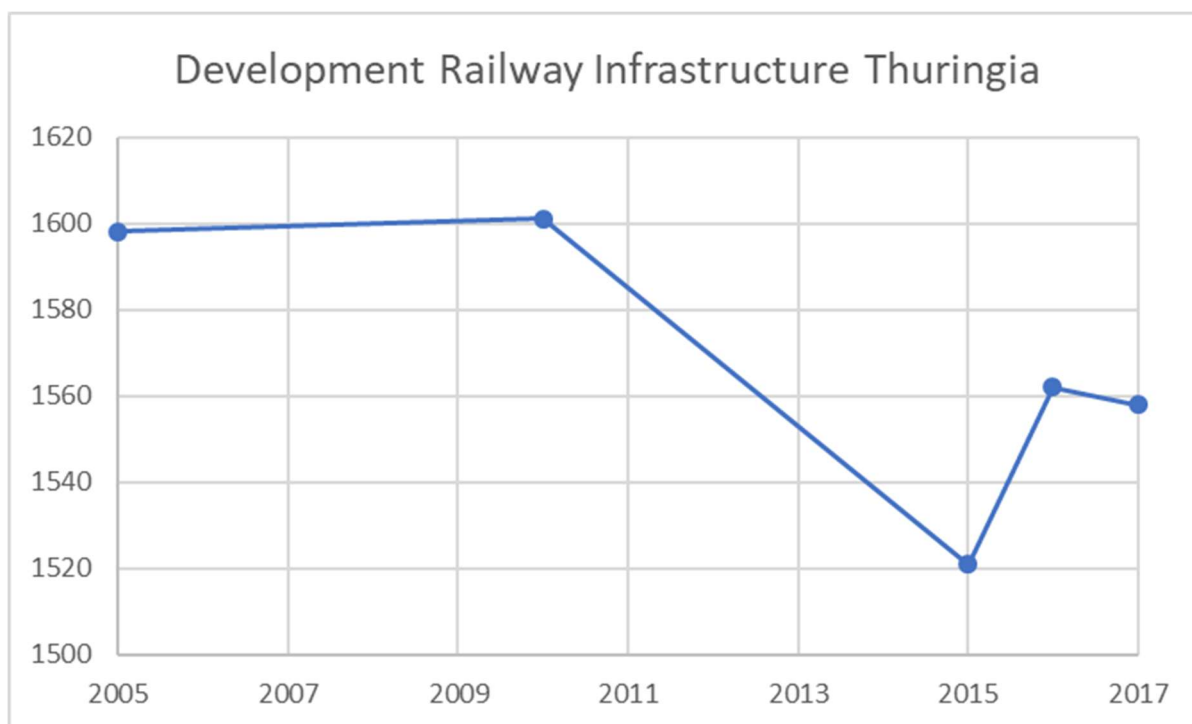


Figure 3: Development of railway infrastructure in Thuringia 2005-2017 (in km),
Source: Statistisches Bundesamt 2009

Another deficit is the electrification of the existing routes.

The regional railway network of Thuringia currently comprises 1.521 km of lines, of which 452 km are electrified and 1.069 km are non-electrified (figure 4). Hence, only 30 % of all tracks in Thuringia are electrified, which is below the average of Germany as a whole (54 %). In Germany the railway electrification system using alternating current (AC) at 15 kilovolts (kV) and 16.7 Hertz (Hz) is applied.

The need to change locomotives for traffic on electrified and non-electrified sections of the line increases costs and extends the journey times for rail freight transport.

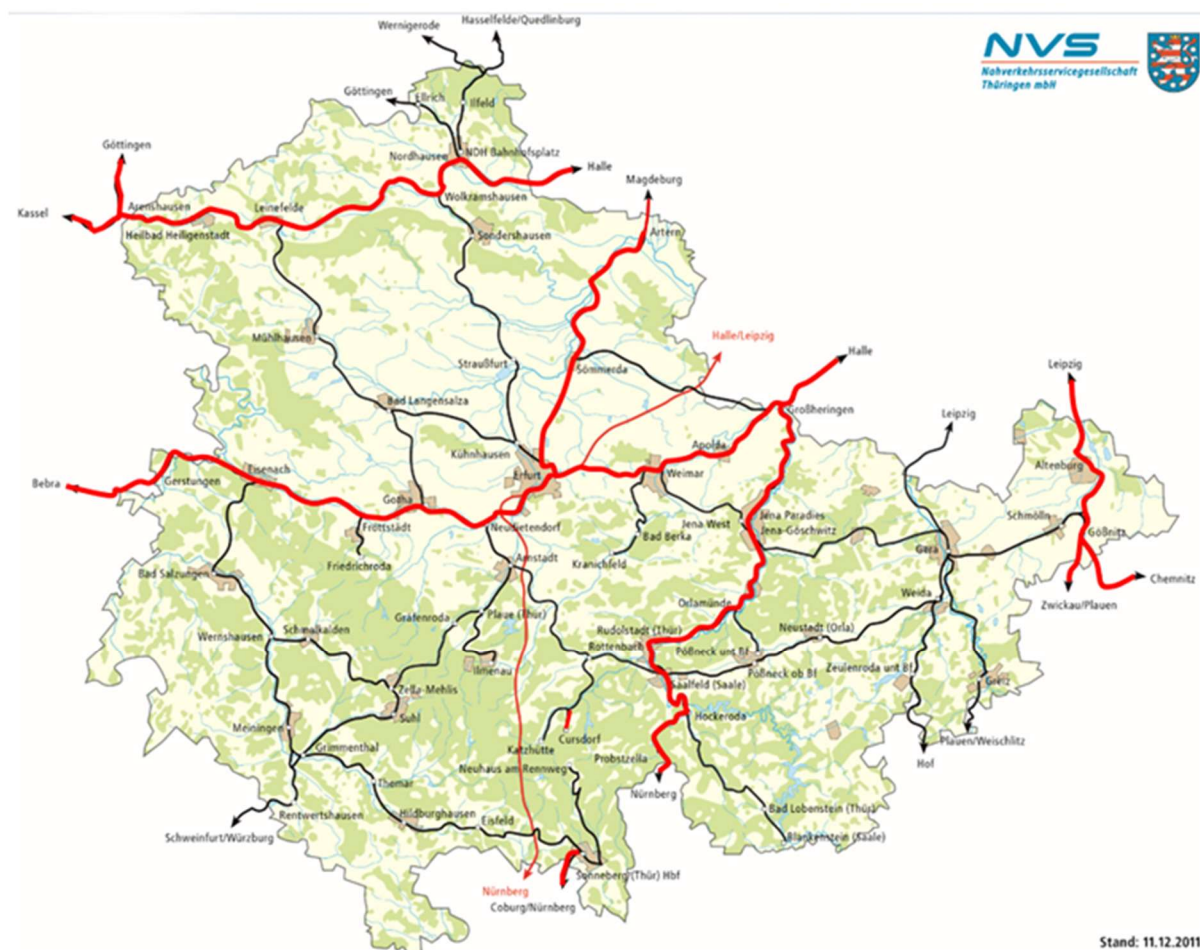


Figure 4: Rail network in Thuringia (red: electrified tracks),

Source: own representation, adapted from Nahverkehrsservicegesellschaft Thüringen mbH 2011

The regional railway network in Thuringia (figure 5) has an overall length of tracks of 2.352 km, of which 1.339 km are single tracks (including sidings; blue in the map) and 1.013 km are multi-tracks (red in the map).

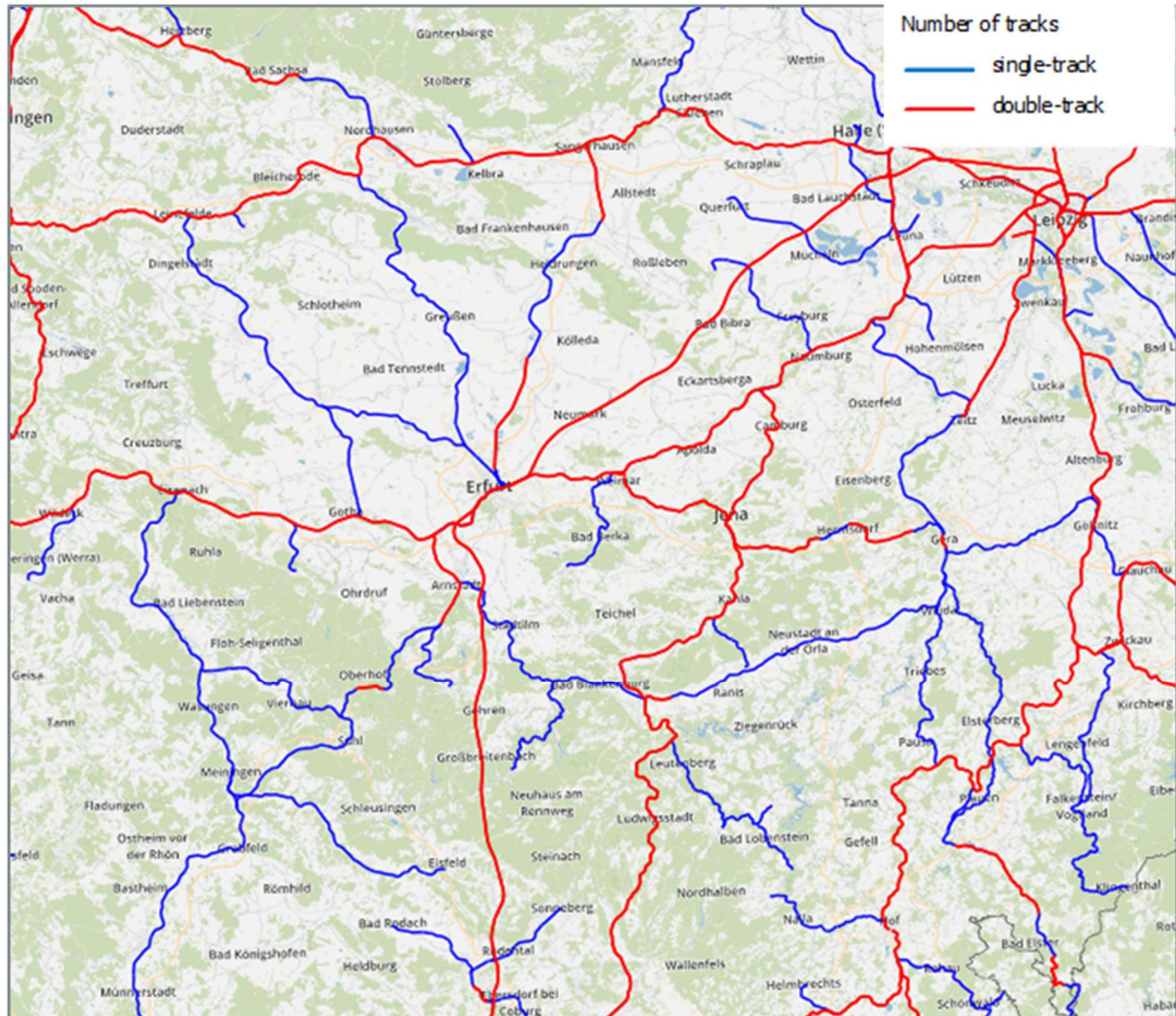


Figure 5: Number of tracks in Thuringia, Source: GeoViewer/Infrastrukturregister, DB Netze

Most loading points (figure 1) are located at single-track lines. Single-track lines have a particularly high need for sidings with sufficient length (min. 740m) to enable efficient traffic management.

BOTTLENECK CONSEQUENCES

low	
medium	X
high	



PROBLEM-SOLVING APPROACH

Possible approach from the project:

Development of tools to support decision making regarding

- Needs
- Sizing
- Technical Realization
- Costs
- Financing / funding

RESPONSIBILITY

Infrastructure companies

Federal and regional Ministries of Infrastructure

TIME FRAME

Immediately	
Short-term	
Mid-term	
Long-term	X

EXPECTED BENEFIT

Low	
Medium	
High	X
Vast	

AN EXAMPLE OF BEST PRACTICE

https://www.vde8.de/The-new-line-from-Erfurt-to-Leipzig-Halle-----_site.site..ls_dir._siteid.351_function.set_lang_lang.en_likecms.html

4. FORM FOR DETAILED BOTTLENECK INVESTIGATION

BOTTLENECK NO. 4

Missing links in railway-network

BOTTLENECK ALLOCATION

transport infrastructure	X
rolling stock / machinery	
services / operations	
legislation / administration	

PROBLEM DESCRIPTION

In Thuringia there are a number of disused railway lines or sections (figure 2).

In detail, they are:

- Gotha - Graefenroda (Ohratalbahn)
- Gerstungen - Vacha (Werrabahn)
- Eisfeld - Coburg (Werrabahn)
- Ilmenau - Themar (Rennsteigbahn)
- Probstzella - Neuhaus am Rennweg (Max-und-Moritz-Bahn)
- Blankenstein - Marxgrün (Hoellental)
- Bretleben - Bad Frankenhausen - Sondershausen (Kyffhaeuserbahn)

* The listing does not correspond to a prioritization.

These missing connections mean that railway trains in the areas of these gaps have to take long detours to reach their destination. This makes freight transport by rail uneconomical. So it loses parts of transport share to road transport.

BOTTLENECK CONSEQUENCES

(Select the level of consequences with X)

low	
medium	
high	X

PROBLEM-SOLVING APPROACH

Possible approach from the project:

Roadmap for the revitalization of disused railway lines for rail freight transport using the example of a selected line.

RESPONSIBILITY

- Federal and regional authorities

TIME FRAME

Immediately	
Short-term	
Mid-term	X
Long-term	

EXPECTED BENEFIT

Low	
Medium	
High	X
Vast	

AN EXAMPLE OF BEST PRACTICE

<https://www.hna.de/lokales/frankenberg/kreis-waldeck-frankenberg-ort306259/besser-erwartet-reisende-neuer-bahnstrecke-5938671.html>