

Estimation of the economic damage of the Rastatt interruption from a rail logistics perspective

Study from ERFA, NEE, UIRR

Consultant HTC

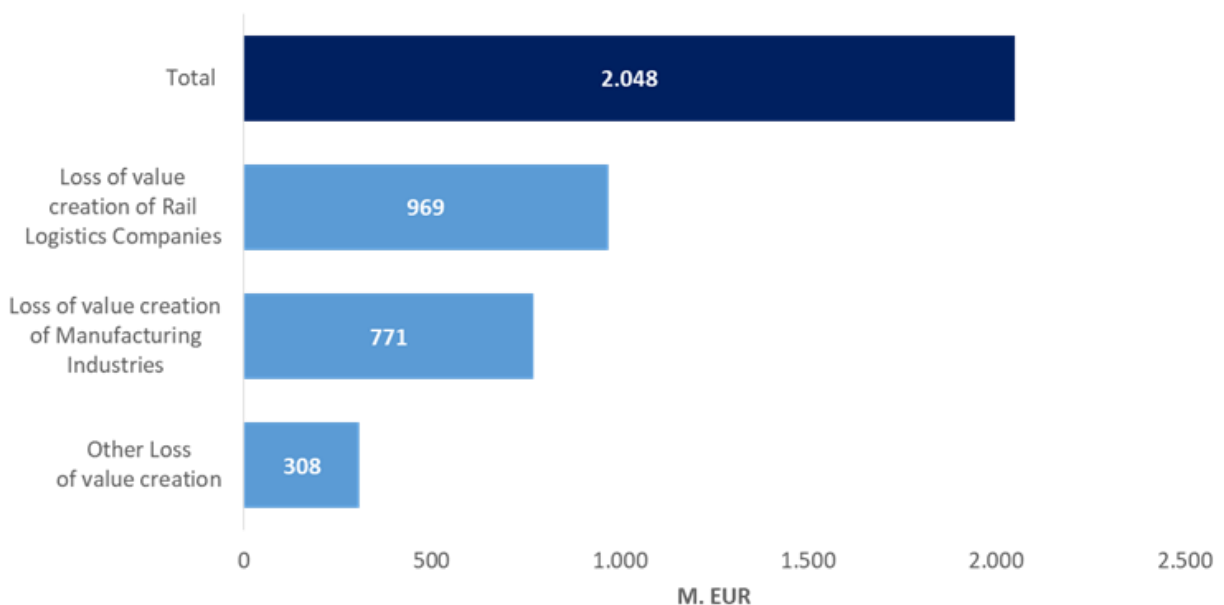
Management Summary

From 12 August until 2 October 2017 the double-track Railway line on the Rhine valley (European Rail Freight Corridor "Rhine-Alpine") was fully interrupted because of an incident during tunnel works in Rastatt-Niederbühl in Baden. On behalf of the associations ERFA (European Rail Freight Association), NEE (Netzwerk Europäischer Eisenbahnen) and UIRR (International Union for Road-Rail Combined Transport) the logistics aspects and the economic effects for the companies in the Railways logistics sector and their customers in the manufacturing and shipping industry have been analysed¹. Additionally, an estimation of the damages for the Infrastructure Manager has been made in order to capture the economic dimension of the disaster². DB Netze AG did not participate in this investigation with reference to legal concerns. Greatest appreciation is due to all supporters and contributors to this project for their written and oral inputs, e.g. in the context of the interviews conducted.

The following key findings³ should be emphasized:

- The assessment of the economic damage has been made by determining the losses of added value for the manufacturing sector (customer side) and the service sector of the railway-based supply chain. **The total losses of added value from the Rastatt interruption amount to approx. € 2 billion. Rail logistics companies and their customers together suffered losses of added value of more than € 1.7 billion. Other 300 million € losses of added value are expected (process risks, disturbed added value for the infrastructure managers such as railway tracks and terminals).**

Figure 1 Losses of added value along the rail-based supply chain



Source: Project.

¹ These include Railway Undertakings (RU), Forwarding Agents, Operators, Terminal Operators.

² Topics related to passenger traffic have been disregarded.

³ Regarding the data it has to be considered, that the consultants calculated on purpose defensively, the shown values contain buffers and are to be interpreted as minimum level.

- This amount takes into account changes related to losses of added value on the expense and on the income side, such as:
 - a. Additional expenses due to non-running trains as well as alternative logistics solutions along the rail-based supply chain, downtimes in terminals, extra services for freight forwarding;
 - b. Extra work for personnel, traction and rolling stock for traffic on deviation routes;
 - c. General penalty rules in the supply chain for delayed / non-running trains;
 - d. Additional work by infrastructure managers through additional planning and scheduling tasks;
 - e. Extra work for shippers and manufacturing companies connected with rail logistics.

- The damages resulting from diverted and more expensive transport reached that amount because neither contingency plans nor workable diversion routes were available. The Rastatt interruption shows the absolutely inadequate coordination of operations and construction projects. While many traffic flows are international, the infrastructure managers still behave primarily according to national “rules of play”. Most bypass offers rightly demanded after Rastatt were rejected as too expensive. In this way, comparable events and consequences analogous to Rastatt are being aggravated.

- The consequences of the interruption affected the whole of Europe. **It can be assumed that the extension and the development of normally multimodal transport chains through the Mediterranean ports have been promoted.**

- In the economies of Germany, Switzerland and Italy, the interruption had immediate impacts. Its results were not worse due to inventory keeping for incoming or outgoing materials by most economic players. Disturbances in the material flow are daily occurrences for transport operators, and their management is, unwillingly, part of “daily business”. The lack of clarity on how long enterprises would be affected by this interruption in the shipping and logistics industry was regarded as extremely disadvantageous in the interviews conducted.

- As regards Deutsche Bahn (DBAG), up to 200 freight trains are scheduled daily⁴, made up by approx. 65% intermodal and 35% conventional wagonload trains. For the duration of the interruption (12.8.-02.10.17), which is partly due to the holiday period, 162 freight trains were expected to leave on a daily basis⁵, meaning that 8,262 freight trains could have been operated under normal conditions. In fact, only 33% of “scheduled” freight trains operated during the interruption, but partly under unfavourable operational conditions⁶. Two-thirds of the freight trains were cancelled.⁷

- **At just under 40%, only part of the theoretical capacity of the diversion routes could actually be used.** Thus, all in all, during the interruption, a large part of the added value in the rail-based, often multimodal, supply chain was lost.

- **Due to the interruption, the Rail Logistics sector had to renounce to part of its growth in 2017.** The economies alongside the Rhine Alpine corridor boom since years and drive the logistics markets accordingly.

- **The interruption undermined the trust of the shippers in the rail logistics for a long time.** Today it is not foreseeable to what extent the market will count even more on “Road” instead of “Rail” in the future. Regarding the damages caused, it can be assumed that there will be claims towards the contractual partners.

- **The share of the transport of intermodal loading units in rail logistics is twice as high on the corridor than on the entire German market.** The losses of added value on the Rhine Alpine corridor are therefore significantly higher, as the contribution of the transport of intermodal loading units in the added value exceeds considerably the one of the typical type of cargo on railways (e.g. dry / liquid bulk goods, steel and similar goods - see table 5).

⁴ Cf. DBAG (Deutsche Bahn), Press release 15.08.2017. Link:

https://www.deutschebahn.com/de/presse/presse-start_zentrales_uebersicht/Sperrung_Rheintalbahn_Bahn_arbeitet_mit_Hochdruck-1203810 (01.02.2018).

⁵ See Footnote 4 as well as information on the train numbers on the Middle Rhine.

⁶ Cf. Information by the Board of Directors of DB Netze AG, Frank Sennhenn, at the Hupac-event “Rastatt: never again”, Düsseldorf 06.12.2017.

⁷ Including all trains requiring profile gauge P400 / UIC GC (e.g., ROLA trains or semi-trailer transport).

- As an example, it is possible to show how the actual distribution of capacities and the number of trains driven occurred on the various **diversion routes**. **The main load was carried along the Gäubahn bypass** with 48.6% of the diversionary freight trains driven.⁸ None of the diversion routes was fully utilised during the interruption, as the capacity figures of DB Netze were proven to be impossible to deliver in practice. **Criticism was expressed in the interviews because of the unsatisfactory international cooperation of the network managers.**
- It must be assumed that **during the interruption the freight trains ran on average less well utilized** (shorter train formation, lower utilization rate) than during normal planned operations. The available documents⁹ show that a container train with an average capacity of 727 Net tonnes (Combined Transport) was utilized comparatively poorly in 2016. For wagonload traffic (WLT) trains, it is similar; here, an average utilization of approx. 454 Nt-train / train can be assumed.¹⁰
- The interruption led temporarily to a **significant increase in heavy truck traffic** (for example for trailers that would have needed P400 profile gauge on the diversions) in the area from Karlsruhe to Basel.¹¹
- The **port of Basel** continued to live up to its role as gateway to Switzerland during the interruption. In September 2017, 14,645 TEU were handled there on the water side (+26.6% compared to the previous year).
- According to the Swiss Federal Office of Transport (FoT), during the interruption there was only a slight increase in lorry traffic with Switzerland, with around one thousand more lorry journeys per week. Over the course of 2017, Switzerland is expected to lose 1 percent of the rail market share.
- Based on a **model calculation** for the upper Rhine Valley, it is shown by way of example how the disruption led to a **change of mode of transport** and thus to significant additional burden on the climate and the health of the population in the region. **On the link between Karlsruhe and Basel, among others additional 39,000 tonnes of CO₂ were emitted. This alone resulted in further socially relevant costs due to environmental damage in the range of up to €8.4 million.**

⁸ Exemplary representation based on the period 01.09.-27.09.

⁹ Data for Rhine-Alpine Corridor, transalpine traffic.

¹⁰ All data from FOT (Federal Office of Transport).

¹¹ The traffic volume increases submitted for several counting points include double counting.