

# Trial on Longer Trucks in Germany

01.01.2012 to 31.12.2016

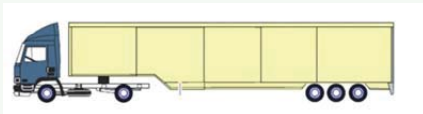


Dr.-Ing. Marco Irzik  
Bundesanstalt für Straßenwesen

## Permitted Longer Trucks

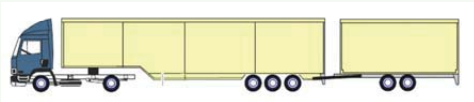
Type

1



17.80 m

2



3



up to 25.25 m

4



5



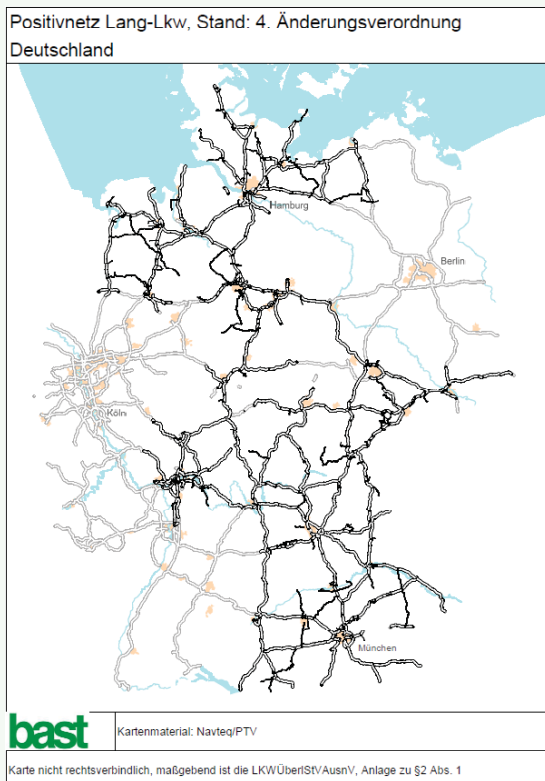
up to 24,00 m

**Max 40 t (44t) GVW**

Note: Number of axles may be lower in reality than shown in the pictures.

## Legal Basis: Exception-Regulation

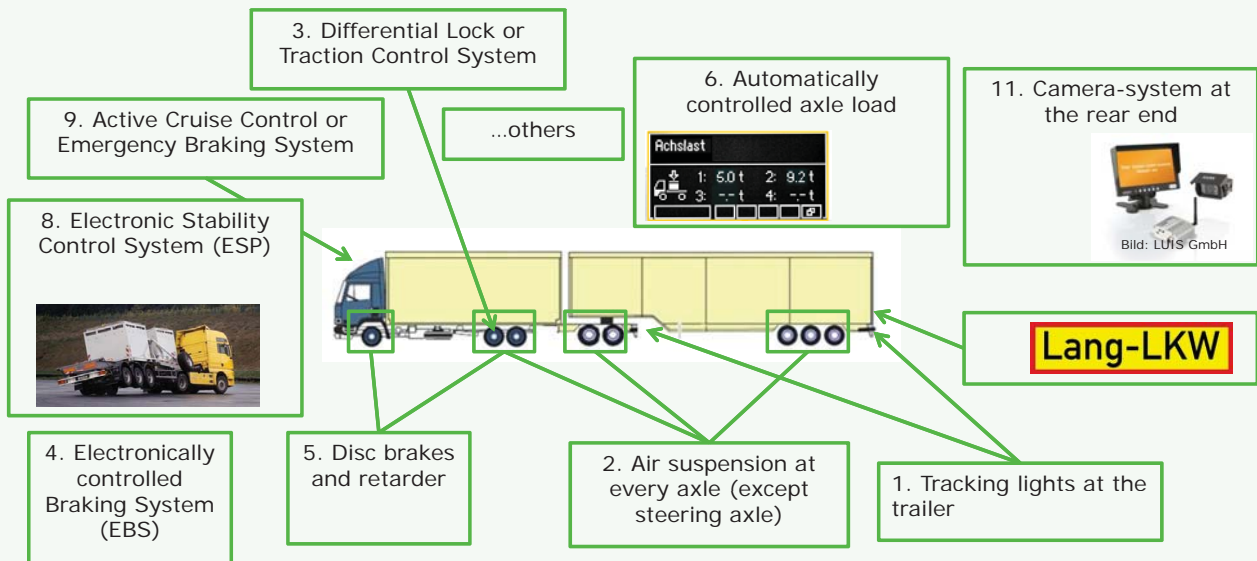
- Regulation of exceptions from road traffic legislation for Longer Trucks (LKWÜberStVAusnV)
- Duration: 5 years = 01.01.2012 – 31.12.2016
- Including exceptions, terms and conditions regarding
  - trucks,
  - drivers and
  - permitted roads.
- Prohibited, e.g.
  - Prohibited is the transport of (labelled) dangerous goods, fluids in big tanks, living animals or swinging loads from the box ceilings.
  - Overtaking is forbidden for the drivers of the Longer Trucks, except vehicles with less than 25 km/h.
- Obligatory: participation at the scientific evaluation



## LKWÜberStVAusnV § 2 – Permitted road network

- All permitted roads which were provided by the participating Federal States are listed as a 'positive network'.
- Exception: extended semi-trailer (Type 1, L=17.80 m)
  - All public roads in some Federal States; only on 'positive network' in other Federal States
- 7. Exception-Regulation from 27.12.2016
  - about 11,600 km permitted roads
  - thereof nearly 70% motorways

## LKWÜberStVAusnV § 5 – Technical requirements

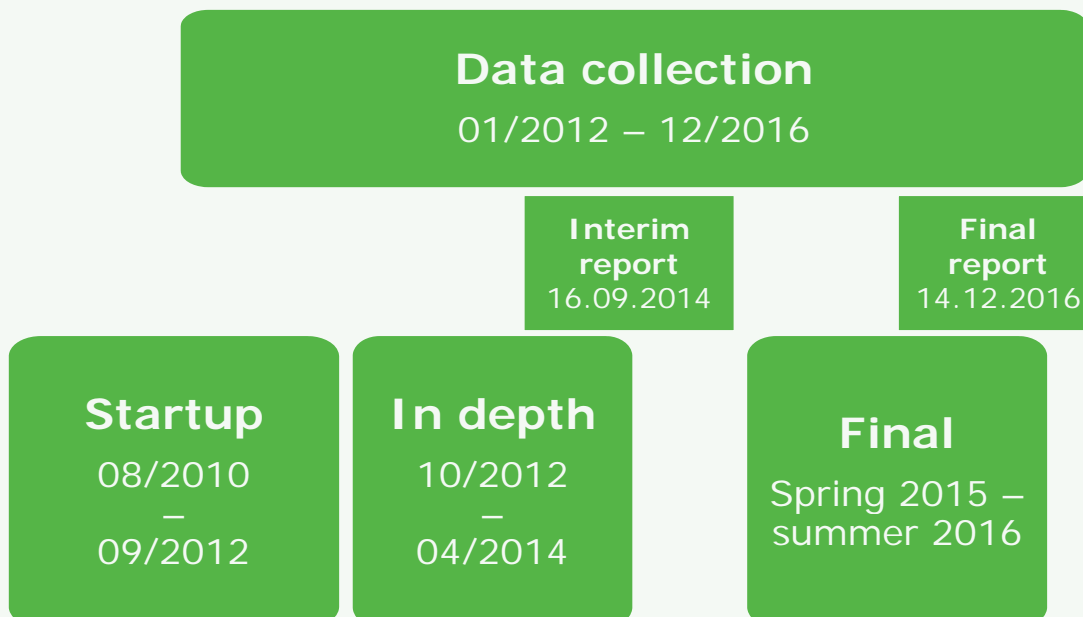


Lots of technical requirements. Partly with implementation alternatives.

Süßmann et al., 2013



## Different evaluation phases





## Research projects (n=22)

(vgl. [www.bast.de](http://www.bast.de) - Feldversuch Lang-Lkw - Wissenschaftliches Untersuchungsprogramm)

- Effects of Transport Demand (2: Basic Evaluation & Forecast)
- Impact on Vehicle Safety and Environment (3: vehicle safety e.g. braking or driving dynamics; noise emission)
- Impact on Loading of Road Construction (2)
- Effects on Safety Equipment & Fire Protection Design of Road Tunnels
- Impact on Vehicle Restraint Systems (3: concrete / steel; impact on bridges & operating conditions)
- Influence on Traffic Flow on Motorways
- Effects on Traffic Safety at Entrances on Motorways
- Trafficability (4: on motorways / especially on rest areas; at single level rural / urban junctions)
- Effects on Traffic Safety and Traffic Flow at Work Sites
- Effects of Overtaking and Clearing on Traffic Safety and Traffic Flow (2)
- Longer Trucks: Accompanying Scientific Research of Psychological Aspects (2)



## Documentation

- All findings of the scientific evaluation are published under  
<http://www.bast.de/DE/Verkehrstechnik/Fachthemen/v1-lang-lkw/v1-lang-lkw.html>
  - Especially the final report (just in German language),
  - a short report (also in English)
  - but also all single reports about the different research projects
  - and many other information.



## Accident statistics

- During the 5-year field trial period the police reported about 13 accidents involving Longer Trucks.
- There was just 1 personal injury accident (U,P) and 4 serious damage-only accidents (U, SS). All other were just slightly damage-only accidents (U,LS).
- Looking at the official accident statistics (just U,P & U,SS): At every second accident involving conventional trucks the truck was the main cause. With respect to the 5 U,PSS with Longer Trucks this was never the case.
- Although the data basis is small, the analysis of the accident situation in the field trial does not suggest that the deployment of Longer Trucks could have any adverse impact on road safety.



## Some other statistics

- The average trip length per Longer Truck trip was around 240 km, with the values ranging from just over 10 km to almost 800 km per trip.
- More than 91 % of the trips were between warehouses and/or production sites as shuttle services or as the main leg.
- The spectrum of the goods carried by the Longer Trucks ranges from parts for the automotive industry through domestic appliances (white goods), air cargo, clothing and food to packaging material.
  - In general, just very light goods with high volume.



## Findings

- **Positive effects** (\*)

Within the scope of the field trial, it was determined that,

- if Type 2 to 4 longer trucks are deployed, 2 trips by Longer Trucks replace on average somewhat more than 3 trips by conventional trucks.
  - Transport efficiency (tons & volume): + 15-25 %
  - Environmental impact (fuel consumption): - 15-25 %
- if a Type 1 longer truck is deployed, 1 trip by the extended semi-trailer replaces on average 1.07 trips by standard articulated vehicles.

(\* under the certain conditions of the field trial & as a vital prerequisite: high or optimal usage of load capacity)



## Findings (just Type 2-5)

- **Market potential & Impact on transport demand**

- Observed,
- estimated from empirical surveys and
- calculated on the basis of the empirical findings (for 2030).

- **Estimated market potential**

- With regard to the whole German road network (in theory):
  - **max. 2-9 % of all 383 million truck trips** respectively
  - **max. 3-7 % of all 29 billion veh-km** in 2012could be substituted by Longer Trucks of Type 2-5



## Findings (just Type 2-5)

- **Model-based transport demand for 2014 respectively 2030 (calculated on the basis of the empirical findings)**
  - However, as a result of the established regulatory framework (for instance operation on an approved network) and under the consideration of the specific costs of different transport modes, only a small proportion of the ‘estimated potential’ will be exploited.
  - This means that, in the modelled maximum scenario for **2030**, there would be a forecast annual mileage of around **100 million vehicle kilometers** for Type 2 to 5 Longer Trucks.



## Findings (just Type 2-5)

- **Modal Shift**
  - Not observed in the field trial.
  - Due to kind of goods and structure of logistics very unlikely.
  - Also, just marginal intermodal shifts from the railways and inland waterways (0.1 and 0.3 permille respectively) due to the results of the transport modelling.



## Findings (just Type 2-5)

- **Impact on transport demand**
  - Thus, on the whole, there is a positive impact on transport demand with regard to a reduction in the number vehicle kilometres actually driven and accordingly also in levels of climate change gases and air pollutants.
  - However, it should be noted that possible rebound effects cannot be derived empirically and thus could not be seriously taken into account in case such effects did occur.



## Findings (just Type 2-5)

- **Impact on infrastructure**
  - No consequences for most of the investigated issues
  - Any difficulties that perhaps could occur under certain circumstances
    - Could be more or less solved by adopting the infrastructure
    - Due to number of Longer Trucks expected: Difficulties seem to be acceptable or at least manageable
- **All in all:** It can be stated, that significant problems did not emerge in the field trial. Measured against the multiplicity of issues that were considered, the number of potential risks identified is low.





## What's going on?

- Since 01.01.2017 regular operation of Longer Trucks of Type 3, 4 and 5 on the permitted road network.
- 'Overtime' of 1 year for Type 2 respectively 7 years for Type 1.
  - Some additional tests with Type 2 regarding EVSC until summer 2017.
  - Reporting of accidents or difficulties in manoeuvrability of Type 1 Longer Trucks to BAST by the operators and police.
  - Probably, investigations about the market potential and possible impact on transport demand of Type 1.



## Thank you for your attention!

For more details see [www.bast.de](http://www.bast.de).

For any further question:

Bundesanstalt für Straßenwesen

Dr.-Ing. Marco Irzik

Tel: +49 (0)2204 / 43 – 575

mailto: [langlkw@bast.de](mailto:langlkw@bast.de)