

Germany



Name: Deutscher Ausschuss für unterirdisches Bauen e. V. (DAUB, German Tunnelling Committee)

Type of Structure: Registered non-profit and restricted association (limited to 30 individual members)

Number of Members: 30 members

ASSOCIATION ACTIVITIES DURING 2021 AND TO DATE

Activities

- STUVA Conference '21, Separate Segments on "Tunnelling" and "Tunnel Operation", attended by more than 1500 participants and approx. 190 exhibitors, 24th – 26th November 2021, Karlsruhe
- DACH-meeting (German, Austrian, Swiss Tunnelling Committees) in Germany (technical seminar and site visit)
- Meetings of the European Underground and Tunnel Forum (EUTF, consisting of Austria, Belgium, France, Germany, Italy, Netherlands, Portugal, Spain and Switzerland)
- Regular Meetings of Tunnel Committee and Working Groups
- Several Meetings with workshops of Young Engineering Professionals "STUVA-YEP"
- Webinar on "BIM in Tunnelling" (in co-operation with EUTF)
- Due to the Covid-19-pandemics, the meetings were partly held via video conferences

Working Groups

- Life-cycle costs calculation
- Face support pressure calculations for shield tunnelling in soft ground
- Design, production and installation of segmental rings
- External communication of DAUB
- Digitization and Building Information Modelling (BIM) in tunnelling
- Selection of Tunnel Boring Machines (TBM)
- Planning and implementation of occupational health and safety concept on underground worksites
- Standardization needs for the design of underground structures
- Emergency management for accident, fire and special risks
- Measures to reduce hazardous substances in the air
- Working in compressed air
- Risk management in tunnelling
- Recycling/disposal of excavated material

Publications (recently finished)

- Recommendation BIM in Tunnelling (Spanish version)
- Recommendation for the Selection of Tunnel Boring Machines (TBM)
- Status report: Renewal of traffic tunnels under operation (only in German)

Publications of DAUB can be found in/on

- Journal "tunnel" (www.tunnel-online.info)
- German Handbook of Tunnelling ["Taschenbuch Tunnelbau", published annually]
- Recommendations are available for download from website (www.daub-ita.de, www.stuva.de); the majority is bilingual (German/English)

Future Activities

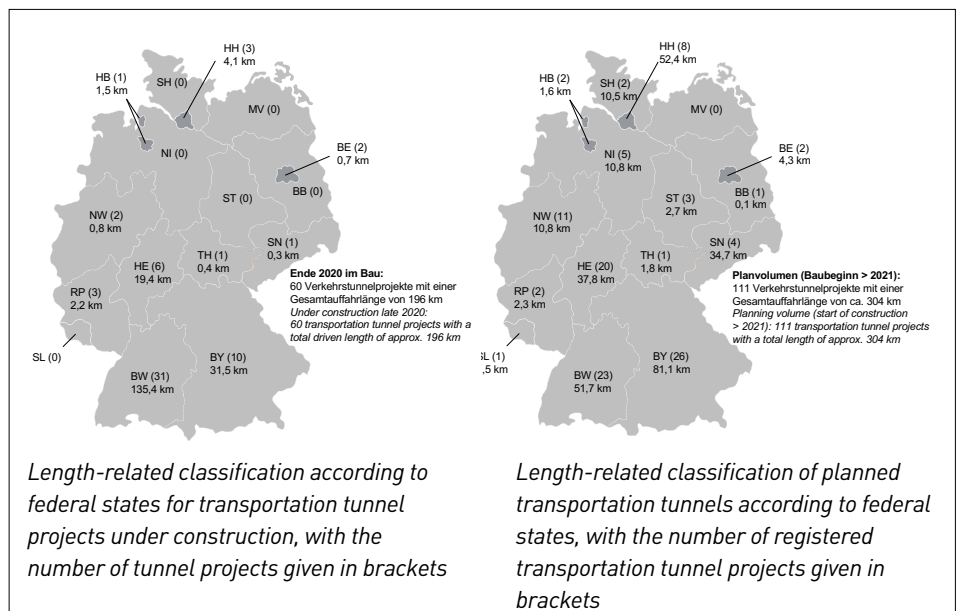
- Regular meetings with Austrian, Swiss and EUTF colleagues

- Munich Tunnel Symposium, 8th July 2022
- InnoTrans, Tunnel Forum, 20th – 23rd September 2022, Leading int. trade fair for transport technology
- Sealing of buildings by injections; Information on afterwards sealing of concrete structures, geotechnical sealing injections, 2nd – 3rd November 2022
- STUVA-Conference 2023, Separate Segments on "Tunnelling" and "Tunnel Operation", 8th – 10th November 2023, Munich

CURRENT TUNNELLING ACTIVITIES

About 196km of traffic tunnels are under construction in Germany in 2021.

This year, the main activities relating to inner-urban rail tunnelling once again are taking place in Munich, where some 15.3km of urban and underground tunnels are under construction at the turn of the year 2020/21. It should be noted that preparatory construction work is still in progress on Munich Second Trunk Light Rail Line and that the tunnelling work had yet to begin at the time of the survey. This is followed by Stuttgart (5.4km) and Karlsruhe (4.7km). Further tunnel projects, each less than 3km long, are under construction in Hamburg, Nuremberg, Frankfurt/Main and Düsseldorf. The length-related proportion of underground construction methods with regard to inner-urban rail tunnel construction amounted to 21.9km at the



Length-related classification according to federal states for transportation tunnel projects under construction, with the number of tunnel projects given in brackets

Length-related classification of planned transportation tunnels according to federal states, with the number of registered transportation tunnel projects given in brackets

end of 2020, accounting for about 67% of the total national construction volume for underground, urban and rapid transit rail systems (79% the previous year). Of this total, a good 19% was accounted for by shotcreting methods (20% the previous year) and roughly 48% by shield driving (60% the previous year).

The main-line rail tunnels largely relate to DB Netz AG (German Rail) tunnelling works in and around Stuttgart. Of the tunnelling projects currently being implemented (a total of 116km), almost 51km are accounted for by the major “Stuttgart 21 rail hub” project and some 57km by the new Wendlingen–Ulm rail route. A further 8km of main-line tunnels are being constructed in conjunction with the upgraded/new Karlsruhe–Basle section. Currently, 32% of main-line tunnels are built by the conventional method, whereas tunnel boring machines (TBMs) are applied for 63% of the driven volume.

The drive-up length in road tunnel construction in 2021 was approx. 47km throughout Germany. Almost 50% of the driven length was accounted for by the two southern federal states of Baden-Württemberg and Bavaria. About two thirds of all road tunnels are built by

underground methods. The shotcrete method predominates in the majority of those tunnelling projects.

FUTURE TUNNELLING ACTIVITIES

About 304km of traffic tunnels are projected but not yet started in 2021.

A slight increase of the already high-level planning volume can be observed for light rail and metro tunnels in Germany (104km). Among the listed projects, Hamburg takes the lead with a good 44km of planned tunnelling, ahead of Munich with 42km. Leipzig is engaged in pre-planning 7km and Frankfurt/Main is planning around 6km of tunnel for regional transport. Further tunnelling activities involving less than 3km are foreseen in the cities of Berlin, Dortmund and Stuttgart.

The planned volume of main-line rail tunnels (91km) has also increased compared to the previous year. Approx. 30% of the volume is accounted for by the newly included new/upgraded Leipzig–Prague rail line (approx. 27km). A further 23km is accounted for by tunnels already approved as part of the new/upgraded Karlsruhe–Basel rail line. Further tunnels are planned in the course of the new Rhine/Main–Rhine/Neckar line (18km), the Nuremberg–Fürth

rail line (8km), the new/upgraded line Nuremberg–Marktreditz (6km) and the railway line Siegen–Hagen.

The planned volume of projected road tunnels (110km) has decreased moderately again – on account of the German state’s revamped planning requirements, the scheduled volume had dipped considerably in previous years.

STATISTICS

For detailed analysis, figures and tunnel lists visit:

<https://www.stuva.de?statistik>

EDUCATION ON TUNNELLING IN THE COUNTRY

Many Universities and Universities of Applied Sciences offer numerous courses on tunnel related topics and provide extensive possibilities for interested people (see e.g. MSc “Geotechnics and Tunneling”, 4 Semester Mastercourse in German language at the Ruhr University Bochum, BSc Civil Engineering required)