

# Norway



**Name:** The Norwegian Tunnelling Society

**Type of Structure:** Non-profit, open society with members from the whole value chain, both corporate and personal

**Number of Members:** 1000 personal members, 100 corporate members (incl. research institutes, academia, and public clients)

## ASSOCIATION ACTIVITIES DURING 2019 AND TO DATE

The Norwegian Tunnelling Society has a set of yearly events such as conferences, courses and evening meetings. Among these, the largest one is Fjellsprengningsdagen, which gathers more than 700 rock blasting and TBM enthusiasts to share knowledge and news.

2019 is the first year NFF participated at Arendalsuka – the most extensive political event for Norway. *(Image 1)*

Norway was among the finalist in two categories in the ITA Tunnelling Awards. The Follo Line in the “Major project of the year” category, and the Ulriken Tunnel in the “Project of the year between €50M and €500M” category. Neither won among strong finalists from other countries.

The Society publishes handbooks and technical reports in Norwegian and one English publication every year. In 2019, a Norwegian technical report regarding Electronic Detonators in Tunnel, in addition to the English Publication nr 28 “Digitalisation in Norwegian Tunnelling” was published.

## CURRENT TUNNELLING ACTIVITIES

Tunnelling activity in Norway has declined both in 2018 and in 2019. In 2019 we excavated 3.9Mm<sup>3</sup> of rock. The amount of excavated rock had been steadily growing, but 2018 was the first year with a decrease in volume since 2009 due to large projects being in their final phase of excavation, and new ones yet to start. Major activities are still concentrated around road and rail tunnels, with hydropower tunnels another significant contributor.

In 2019, the longest and deepest subsea road tunnel in the world, The Ryfylke tunnel, was opened to traffic. Of the two other tunnels on the same project, the Ryfast will be open for traffic, but the even deeper Rogfast is delayed, although some excavation to prepare the main project has started. *(Image 2)*

The project that excavated the most in 2019 is the E39 Kristiansand Vest- Mandal

Øst. This is a road tunnel project for Nye Veier, where AF-gruppen has excavated more than 500,000m<sup>3</sup> of rock. Digital solutions are developing in Norway, and here web-based access should contain and display all of the project’s BIM models.

*(Image 3)*

Skanska has excavated almost 400,000m<sup>3</sup> at the hydro powerplant in Tolga, and more than 300,000m<sup>3</sup> on Nordøyveien, a road tunnel for The Norwegian Public Road Administration just outside Ålesund. In addition to



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digitalisation, zero emission construction is a main focus for many contractors in Norway, at Nordøyveien they have started using a brand-new electrical loader. *(Image 4)*

The largest infrastructure project in Norway so far, The Follo Line has started the installation of tracks and so on. The planned opening of the tunnel is now in December 2022. We recommend reading this year’s publication from NFF, which covers many aspects of this project.



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### FUTURE TUNNELLING ACTIVITIES

The high activity within infrastructure development will continue in the years to come. And we believe that we will see an increase in the activity again, at least from 2021.

Work has already started on a new railroad between Drammen and Kobbervikdalen. This project will complete the double track railroad from Oslo to Tønsberg and opens in 2024. The project will include 6km of hard rock tunnelling, almost 300m of soft ground tunnelling and about 700m of cut-and-cover.

The next large infrastructure project will be the joint rail and road project, the Ringerike Line and E16 Highway, it will include a 40km long tunnel for the railway and some shorter tunnels both for rail and

a new highway between Sandvika and Hønefoss.

Nye veier will continue the road building along the E18 from Porsgrunn to Stavanger. These projects will include both tunnels and rock blasting above ground. The same goes for new E6 between Hamar and Lillehammer, and the new E6, both south and north of Trondheim.

The Norwegian Public Road Administration has started the first contract for Rogfast. This project will include the longest and deepest subsea tunnel to date.

A new big project is under planning - a new water supply to Oslo. The water will go through a long tunnel from Holsfjord, west of the city into the existing water

### EDUCATION ON TUNNELLING IN THE COUNTRY

Norway has several universities offering both bachelor and master degrees with several aspects of tunnelling included; the major ones being NTNU in Trondheim and the University of Oslo. Norway also offers a set of schools preparing students via a four-year program for the certification for rock blasters.

pipe system. In addition, the Fornebu Line will be starting soon. This will be a metro tunnel that will connect Fornebu with the rest of the metro system in Oslo. Furthermore, both a new metro and railroad tunnel are under planning through the central part of Oslo City.

### STATISTICS

#### 1. Length or volume excavated

- 74 598m in total, (included 4387m by TBM)
- 3.9Mm<sup>3</sup> in total

#### 2. Amount (USD or EUR) of tunnelling/ underground space facilities awarded in 2019

Do not have a number

#### 2. List of tunnels completed – an example form a long list

- The excavation at the E39 Svegatjørn – Rådal, and the E6 Soknedal tunnel is completed
- The Ryfylke tunnel is opened for traffic.

#### 3. List of tunnels under construction

- There are more than 50 tunnels under construction at any time in Norway.