

India



Name: Tunnelling Association of India

Type of Structure: non-profit, open association

Number of Members: 600

ASSOCIATION ACTIVITIES DURING 2021 AND TO DATE

Main activities

- Organization of Conferences, Seminars, Workshops and Training Programmes;

TAI Awards Biennial

- Life Time Achievement Award; Tunnelling project of the year
- Technical innovation of the year; Environmental initiative of the year
- Young Tunneller of the year

TAI Young Member Group - Launched

CURRENT ASSOCIATION ACTIVITIES

TAI Publication

- Guidelines for Design of Steel Fibre Reinforced Concrete Precast Segments in Tunnels.
- Guidelines for Geo-physical investigation for tunnels
- Directory of Tunnels: Under Preparation.

TAI Journals

January 2021 Issue

July 2021 Issue

List of Virtual Training Session organised by TAI & TALym: Virtual training sessions in view of the COVID-19 pandemic, India organized Virtual Training Sessions on different aspects of tunnelling and underground space development to educate tunnel professionals and young engineers.

TAI Activities during 2021 and to date

Contract Models & Risk Assessment by Dr. Harald Wagner	April 22nd, 2021
Life Cycle Assessment by Dr. Harald Wagner	May 19th, 2021
Urban Space Use – Comparing Surface and Underground by Dr. Harald Wagner	July 21st, 2021
Expert Discussion Series by TAI & Informa on Tunnelling : A Prized Passage to Economic Upliftment	July 23rd, 2021
High Performance Steel & Composite Anchors in the Tunnelling Industry	July 27th, 2021
Expert Discussion Series by TAI & Informa on Modern Tunnelling Techniques	July 30th, 2021
Hydro Tunnel Specifics in Design and Construction by Dr. Harald Wagner	August 25th, 2021
“Automation in Tunnel Construction” by TAI	27th August, 2021
Norwegian tunnelling techniques by Dr Zeidler	28th August 2021
Hybrid Event World Tunnel Day organised by TAI& TALym	December 3rd, 2021
Transport Tunnel Specifics in Design and Construction by Dr. Harald Wagner	December 15th , 2021
One day Workshop on Innovation in Tunnelling Technology at Guwahati for NFR Officers	December 15th , 2021
Pune Metro-A Typical Underground Stations by Mr. J Kalyan Kumar, AECOM	December 21st , 2021
Design of NATM Tunnel Support System in Soft Ground Condition - A case study by Mr. Sharique Khan, Lead Specialist-Tunnels at COWI India	January 8th, 2022

STATISTICS

Tunnelling Association of India has analysed 1,641 tunnels spanning a length of over 3,445km. These tunnels are spread across three stages of development – awarded, under construction and completed.

Of the total no. of tunnels analysed, 77.76% have been completed, 19.44% are under construction and the remaining 2.80% have been recently awarded.

Of the analysed tunnel length, 60.02% has been completed, construction work is going on 33.45% tunnel length and the remaining 6.43% has been recently awarded.

According to the data drill and blast method (DBM) is the most commonly used method of tunnelling. DBM is closely followed by mechanised/ advanced tunnelling techniques such as TBMs which has a share of 31.58%. New Austrian Tunnelling Method (NATM) has also gained prominence over the years. A significant amount of tunnel length in the railways and roads sectors has deployed more advanced NATM technique, in sharp contrast to DBM.

Another advanced method of tunnelling which is deployed in the construction of sewerage tunnels is micro-tunnelling.

The top 10 states account for 82% and 85% share in the upcoming tunnel length and number of tunnels respectively. Maharashtra accounts for the highest share in the total upcoming length at 978km. This is followed by Arunachal Pradesh at 430km and J&K at 369km. In terms of number of tunnels, Arunachal Pradesh accounts for the highest share with 245 tunnels, followed by J&K at 204 tunnels and Himachal Pradesh at 159 tunnels.

EDUCATION ON TUNNELLING IN THE COUNTRY

1. M. Tech Tunnelling and Underground Space Technology in Indian Institute of Technology Indian School of Mines Dhanbad (Also known as: IIT DHANBAD)
2. M. Tech. in Tunnel Engineering at MIT WPU, Pune , Kothrud

FUTURE ASSOCIATION ACTIVITIES

Sl. No.	Topics	Scheduled Date
1	The UK Mega Infrastructure Project a Brief Introduction by Dr. Kurt Zeidler	25th March, 2022
2	Innovations in Mechanized Tunnelling by Dr. Harald Wagner	April 20th, 2022
3	Workshop on Concrete Technology	May 11th, 2022
4	Tunnel Shaft and Cross Passage Construction by Dr. Harald Wagner	May 20th, 2022
5	Workshop on Tunnel Design at New Delhi	June 29th & 30th, 2022
6	Session on TBM Partial Excavation Operation, Design and Burial challenges by Mr. Keivan Rafie	July 22nd, 2022
7	Conference on Tunnelling Asia 2022-Underground Space - the need of the day at Mumbai	June/July, 2022

Sl. No.	Topics	Scheduled Date
8	Best Practices in Cross Passages Construction	July 28th & 29th, 2022
9	Workshop on Modern approaches to Waterproofing	September, 2022
10	International Conference on Tunnelling for Infrastructure Projects for RVNL at Rishikesh	December, 2022
11	Conference on Tunnelling in North East Area: Challenges and Issues at Guwahati	February, 2023
12	Training Programme on Underground Works Contract Management by Dr. Harald Wagner	

TRANSPORT TUNNELS UNDER CONSTRUCTION

Project name	State	Total project length (km)	Tunnel length (km)	Promoter/Implementing agency	Actual/ Expected date of completion
Ahmedabad-Gandhinagar Metro Rail Project Phase I	Gujarat	18.87	-	Gujarat Metro Rail Corporation Limited (erstwhile Metro-Link Express for Gandhinagar and Ahmedabad Company Limited)	NA
Bhopal Metro Rail Project Phase I	Madhya Pradesh	14.99	1.79	Madhya Pradesh Metro Rail Corporation Limited	2023
Bhopal Metro Rail Project Phase I	Madhya Pradesh	12.88	-	Madhya Pradesh Metro Rail Corporation Limited	2023
Kanpur Metro Rail Project-Phase I	Uttar Pradesh	23.78	8.62	Uttar Pradesh Metro Rail Corporation (erstwhile Lucknow Metro Rail Corporation Limited)	2024
Indore Metro Rail Project (Phase I)	Madhya Pradesh	31.55	3.22	Madhya Pradesh Metro Rail Corporation Limited	August 2023
Bengaluru Metro Rail Project - Phase II	Karnataka	21.25	13.79	Bangalore Metro Rail Corporation Limited (BMRC)	June 2024
Kolkata East-West Metro Project	West Bengal	3.60	3.60	Kolkata Metro Rail Corporation (KMRC)	2021-22
Kolkata East-West Metro Project	West Bengal	7.20	7.20	Kolkata Metro Rail Corporation (KMRC)	2021-22
Kolkata Metro Expansion Project	West Bengal	17.02	NA	Indian Railways (IR)	2024
Mumbai Metro Rail Project	Maharashtra	12.81	-	Mumbai Metropolitan Region Development Authority (MMRDA)	2024
Mumbai Metro Rail Project	Maharashtra	14.47	-	Delhi Metro Rail Corporation (DMRC)	2022
Mumbai Metro Rail Project	Maharashtra	23.64	-	Mumbai Metropolitan Region Development Authority (MMRDA)	2022
Mumbai Metro Rail Project	Maharashtra	32.32	-	Mumbai Metropolitan Region Development Authority (MMRDA)	2022
Mumbai Metro Rail Project	Maharashtra	2.68	-	Mumbai Metropolitan Region Development Authority (MMRDA)	2022
Mumbai Metro Rail Project	Maharashtra	10.48	-	Mumbai Metropolitan Region Development Authority (MMRDA)	2024
Delhi Metro Rail Project - Phase IV	Delhi	28.92	7.74	Delhi Metro Rail Corporation (DMRC)	2024
Delhi-Ghaziabad-Meerut Regional Rapid Transit System	Delhi, Uttar Pradesh	82.15	14.12	National Capital Region Transport Corporation (NCRTC)	2023 (priority stretch); 2025 (entire corridor)