Nepal

Name: Nepal Tunnelling Association

Type of structure: Non profitable organization

Number of members: 88 members, 5 corporate members

The 5.2m diameter Double shield TBM ready for excavation on the Bheri Babai Multipurpose Project

ASSOCIATION ACTIVITIES DURING 2017 AND TO DATE

In 2017 the Nepal Tunnelling Association continued working to share knowledge and experiences by organizing a Conference.

The one day Nepal Tunnelling Conference 2017 was conducted to share knowledge and experiences.

CURRENT TUNNELLING ACTIVITIES

So far 218km of tunnel mainly for hydro, water supply, irrigation, mining, road and sewerage has been excavated in Nepal.

The following current tunnelling activities are on-going:

- More than 25 hydropower tunnels and caverns size ranging from 2.5m to 15m

NEPAL TUNNELLING ASSOCIATION

List of Tunnel Completed

S.N.	Project's name	Headrace Tunnel		Penstock pipe		Surge shaft		powerhouse/desander			Tailrace Tunnel		Adit/Access tunnels		Total
		Length (m)	Span (m)	Length (m)	Span (m)	Length (m)	Span (m)	Width (m)	Height (m)	Length (m)	Length (m)	Span (m)	Length (m)	Span (m)	
1	Tinau Hydropower Project	1,266	2	75				120			752		279		2,492
2	Kulekhani I Hydroelectric Project	6,223	1.8	200		87		19	30	51	978.28		3761.38		11,269
3	Seti Hydroelectric Project	1,555	1.5												1,555
4	Middle Marsyangdi Hydroelectric Project	5,310	6			40	20	15	20	375			1093		6,458
5	Andhikhola Hydropower Project	1,280	2.2	250	3			6.6	10.9	37	1300				2,837
6	Jhimruk Hydropower Project	1,100		280											1,380
7	Marsyangdi Hydro 59 MW	7,130	6	100		60	21								7,290
8	Khimti I Hydropower Project	7,900	4	1014	2.6	59	6	11	11	70	1370	5	2038.5	4 to 5	12,393
9	Modi Khola Hydroelectric Project	1,503	3.15	473	4	40	9						300		2,316
10	Puwakhola Hydropower Project	3,240	2.5	1001											4,241
11	Indrawati Hyroelectric Project	3,000	2.5												3,000
12	Kali Gandaki Hyroelectric Project	5,905	8.4	97		72	28						695		6,769
13	Bhotekoshi Upper Panda	3,301	4	60	3	45	8								3,406
14	Chilime Hyroelectric Project	2,827	3.5	635.5	2.5	33	6.5	16	16.5	115	243	3	500		4,254
15	Kulekhani II Hydroelectric Project	5,848	3	843		47							766		7,504
16	Sipring hydro project Dolakha	1,513	2.5												1,513
17	Mai Majuwa Hydro tunnel	700	3												700
18	Tatopani hydro tunnel 2 MW	760	2												760
19	Bhairabkunda hydro tunnel	695	2.5			12	6								707
20	Doti hydro tunnel	116	2												116
21	Chameliya (30 MW)	4,200	5.2	456	3.9-5	48	8								4,704
22	Kulekhani III (14 MW)	5,900	3.5												5,900
23	Sanima Mai (22MW)	2,200	4			32	12								2,232
24	Upper Mai (9.98MW)	2,000	2												2,000
25	Hewa Khola (14 MW)	4,000	3.5			45	6								4,045
26	Thapa Khola HEP, HRT	1,800	2												1,800
27	Upper Marsyandi HEP (50 MW) Adits, tunnel	5,200	8												5,200
28	Sanjen Upper HEP	1	3.75	287	3	39	7								327

are under construction using the drill and blast method
- A 26km long water supply tunnel excavated by drill and blast and mechanized tunnelling will breakthrough soon.
- A 12km long multipurpose tunnel of 5.2m diameter is being excavating using a double shield Robbins TBM with a segmental lining. So far, 1.5km has been excavated without a problem.

FUTURE TUNNELLING ACTIVITIES

Mainly hydro tunnels and a few road tunnels have been planned and studied by the Government and private sectors. The following projects are under study:

1. Hydro tunnel projects:
- More than 24 hydro power tunnels sizes ranging from 2.5m to 11m

2. Multipurpose projects (Hydroelectric and irrigation):
- Kaligandaki-Tinau Diversion Multipurpose Project: Tunnel = 30km
- Sunkoshi-Kamala Diversion Multipurpose Project: Tunnel = 16.6km
- Sunkoshi-Marin Diversion Multipurpose Project: Tunnel = 1km

3. Road tunnel projects:
- Nagdhunga to Naubesi = 2.7km
- Hetauda to Bhimphedi = 3km
- Fast track Kathmandu to Nijgad = 7km (total 3 tunnels)
- Khurkot to Sindhuli = 6.4km
- Thansing to Toka (Kathmandu)= 4.2km
- Sanga pass crossing = 1.5km
- Yamdi (Pokhara) to Nayapul = 6km
- Dahune crossing (Butwal) = 6km

4. Rail tunnel projects:
- Kathmandu metro = 66.1km
- East West Electrified Railway Projects with 10 tunnels of total length 26.7km
- Rasuwagadi (China boarder) to Kathmandu to Lumbeni with some tunnels

STATISTICS

1. Length or volume excavated - % mechanized / % conventional during 2017:
   1.5km by TBM and 19.68km by Drill & Blast

2. Amount (USD or EUR) of tunnelling / underground space facilities awarded in 2017:
   More than US$100M

3. List of tunnels completed:
   Shown

4. List of tunnels under construction:
   Shown

Nepal Tunnelling Association

Tunnel under construction

SN	Projects	Type	Tunnel length, km	Size, m	Excavation method
1	Upper Tamakoshi (456 MW)	Hydro	16	6	
2	Upper Trisuli 3 'A' (60 MW)	Hydro	8.6	5.8	
3	Lower Hewa Khola (14 MW)	Hydro	5	3.5	
4	Melamchi Diversion Scheme (Water supply tunnel)	Hydro	26	4	
5	Upper Chakhu (22 MW)	Hydro	2.4	2	
6	Lower Modi Hydroelectric Project(20MW)	Hydro	4.029	4	
7	Rasuwagadi HEP,access tunnel, Adit, HRT	Hydro	8	6	
8	Khani Khola HEP (40MW)	Hydro	2.28	2	
9	Khani Khola Sasha HEP (30MW)	Hydro	2.28	2	DBM
10	Middle Bhotekoshi HEP (adit, HRT & diversion)	Hydro	7.124	5.7	DBM
11	Sanjen HEP	Hydro	3.635	3.75	DBM
12	Rahughat HEP (30MW) Adits, tunnel	Hydro	6.15	3.5	DBM
13	Super Dordi HEP (49.6MW)	Hydro	4.864	2.6	DBM
14	Dordi Khola Hydropower (27MW)	Hydro	2.7	3.8	DBM
15	Super Dordi HEP (49.6MW)	Hydro	4.864	2.8	DBM
16	Dordi 'A' Hydroelectric Project (12 MW)	Hydro	2.6	3.2	DBM
17	Mristi HEP (42 MW)	Hydro	2.4	4	DBM
18	Upper Balephi	Hydro	3	3	DBM
19	Middle Modi, HH	Hydro	2.69	4	DBM
20	Mandu Bagmati	Hydro	0.779	2.8	DBM
21	Nyadi HEP	Hydro	3.94	3.8	DBM
22	Kabeli HEP	Hydro	4	4	DBM
23	Upper Kalanga Gad Hydroelectric Project (38 MW)	Hydro	8.7	3.2	DBM
24	Kalanga Gad Hydroelectric Project (15 MW)	Hydro	3.48	3.5	DBM
25	Bheri Babai Multi purpose Project (48MW with irrigation)	Hydro	12	5.2	TBM
			147.52		

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Future Projects

SN	Project	Type	Total Length (km)	Diameter (m)
1	Arun III HEP (900 MW)	Hydro	11.74	9.5
2	Upper Karnali HEP (900 MW)	Hydro	2.4	9.5
3	Khare Khola HEP (14 MW)	Hydro	4.8	3
4	Upper Trishuli-1 HEP (216 MW)	Hydro	9.82	6.5
5	Kaligandaki Koban HEP (150MW)	Hydro	6.2	5
6	Tamakoshi 3 (650 MW)	Hydro	17	9
7	Upper Marsyangdi HEP (600 MW)	Hydro	9.2	6
8	Lower Solu (82 MW)	Hydro	4.26	3.6
9	Nalsyagugad storage (390MW)	Hydro	9.2	6.5
10	Upper Modi-A (42MW)	Hydro	4.8	4
11	Nagdhunga Road tunnel	Road	4.3	12
12	Budhi Gandaki Storage (600 MW)	Hydro	2	12
13	West Seti Multipurpose (750MW)	Hydro	6.7	10
14	Upper Marsyandi-2 (570MW)	Hydro	10	6
15	Lower Arun (400 MW)	Hydro	15	10
16	Upper Tamor (415MW)	Hydro	8.7	7.8
17	Kali Gandaki Gorge (275 MW)	Hydro	6.1	4.5
18	Solu Khola Small (40 MW)	Hydro	4.1	3.45
19	Madi I (26.5 MW)	Hydro	4.44	4
20	Upper Marsyangdi (14 MW)	Hydro	5.15	3.5
21	Upper Arun (335MW)	Hydro	7.1	5.4
22	Dudh Koshi storage (300MW)	Hydro	5.6	5.2
23	Tamor Storage (530MW)	Hydro	2.5	7.2
24	Budhigandaki Ka HEP (130 MW)	Hydro	3.447	7.3
25	Budhigandaki Kha HEP (260 MW)	Hydro	6.925	7.2
26	Super Madi HEP (44 MW)	Hydro	5.905	4.4
27	Nagdhunga Road tunnel	Road	2.3	12
28	8 Road tunnels	Road	35	7 to 12
29	Kathmandu Metro	Rail	66.1	8 to 12
30	East West Electrified Railway Project	Rail	26.7	9 to 12
31	Kaligandaki Tinau Diversion Multipurpose Project (104Mw)	Hydro	30	9
32	Sunkoshi Kamala Diversion Multipurpose Project (61.4Mw)	Hydro	16.6	9
33	Sunkoshi Marin Diversion Multipurpose Project (36Mw)	Hydro	1	9