



DECEMBER  
**4**  
#WorldTunnelDay



# 2021

# Activity Report

APRIL 2020 - MARCH 2021



ASSOCIATION  
INTERNATIONALE DES TUNNELS  
ET DE L'ESPACE SOUTERRAIN

ITA  
INTERNATIONAL TUNNELLING  
AND UNDERGROUND SPACE  
ASSOCIATION



# TABLE OF CONTENT

**P4**  
**Forewords**



**P5**  
**Understanding**



**P6**  
**Working Groups & Committees**



**P12**  
**Governance**



**P14**  
**Member Nations**



**P16**  
**Strategy**



**P19**  
**Communication**



**P22**  
**Conferences & events**



# FOREWORDS



Jinxiu (Jenny) Yan

President

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Admittedly, the unprecedented pandemic has changed greatly our ways of work since early last year. Due to social distancing and immigration rules, we cannot physically get together as planned, but our goals of exchanging knowledge and experiences and acknowledging achievements remain unchanged.

Despite all the challenges, we have been continued our work and served our member nations and industry. We have dealt with challenges of hosting ITA activities, i.e., WTC, ITA awards and trainings etc.. By digital ways, our working groups and committees are moving their work forward. Currently, ITA ExCo has more frequent meetings than ever before, increasing from 5 meetings in a normal year in the past to monthly meetings now. Moreover, ITA-CET has organized more digital training courses this year, that is, the monthly lunchtime online lecture, which received positive feedback.

We will continue to try our best to serve our MNs and promote the better use of tunnelling and underground space worldwide.



Olivier Vion

Executive Director

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This year has been a very specific year for all of us. We all had to reinvent our way of working together, our way of transmitting knowledge, of sharing information and helping the worldwide tunnelling community.

Reading this Activity report brochure, which is intended to be used internally but also by all ITA stakeholders to present the numerous activities, it is clear that despite all the changes, everyone in ITA has continued to work and sometimes taking advantage of the new communication tools even more than before. Of course, we all suffer not to see each other, but at the opposite we had the possibilities to meet virtually more often. It has been the case of the ITA Executive Council with 15 official ExCo meetings and many more other meetings. The 2020 General Assembly took place virtually in September and an Extraordinary General Assembly was convened in February. The Awards conference and ceremony was also organized on a digital platform in December.

We had to postpone the WTC 2021 in Copenhagen to 2022 and this year again the General Assembly will take place virtually. In September a Tunnelling Week will be organized as well as the 7<sup>th</sup> edition of the Awards in December.

# UNDERSTANDING

« ITA, the leading international organization promoting the use of tunnels and underground space through knowledge sharing, technical advance and ethical business practice »

Founded in 1974 by the initiative of nineteen Nations, the International Tunnelling and Underground Space Association (ITA) which aims are:

- to encourage the use of the subsurface for the benefit of public, environment and sustainable development,
- to promote advances in planning, design, construction, maintenance and safety of tunnels and underground space, by bringing together information thereon and by studying questions related thereto.

Since then, ITA has considerably developed. Presently, ITA gathers 78 Member Nations and 266 Corporate or individual Affiliate Members.

Since 1987, ITA has got the Special Consultative Status with ECOSOC, the Economic and Social Council of the United Nations. ITA has been involved in Habitat II, studies for crossing of the Gibraltar Straits, reduction of poverty program . Moreover, ITA is strongly involved in World Urban Forum as a major player advocating for the use of underground space in the cities. At each session, ITA marks its presence with a booth.

ITA has contacted the **Department of Economic and Social Affairs of UN** on a side event “World Forum on Sustainable Urban Transport “for the 2nd UN sustainable transport conference, which was planned to be held from May 5 to 7 2020 in Beijing but has been postponed due to the outbreak of Covid-19. ITA is also working to prepare events during the next WUF in 2022.



# WORKING GROUPS & COMMITTEES

YM Group

WG11

ITAttech

WG3

WG11

WG22

WG15

WG23

WG21

WG17

ITA-CET

ITA-COSUF

WG14

WG19

WG6

WG5

WG12

ITACUS

WG2

WG20



A task Force has been set up to study how to improve communications between Working Groups/Committees and best serve the tunnelling community. The task force is also trying to identify gaps in the topics studied by the Working Groups/Committees and see how to mitigate.

## WORKING GROUPS

A meeting between the Executive committee and the Working Groups has been held online on October 13, 2020. The main objectives of this meeting were to address the following topics:

- Dialogue between ITA Exco and Animateurs and among Working Groups and Committees,
- How to lead the international tunnelling and underground space industry,
- Organization of meetings in this "new period",
- How can we better promote knowledge and awareness of the use of underground space, specifically during the coming year.

Despite the pandemic, most of the Working Groups have pursued their activities, notably through digital meetings. Hereafter is a description of the current activities of the different Working Groups:



WG 2

Research

The WG2 is currently working on various topics including:

- The updating of ITA guideline on Risk Management published in 2004,

- Face Support Pressure Calculations in Shield Tunnelling,
- Stress Measurement and Hydro Fracturing,
- Tunnelling-induced Damages on Utilities,
- Review of Settlement Recommendation published in 2007,
- Selection Criteria for Geophysical Exploration Methods,
- Damage of Segmental Lining,
- Longitudinal joints design for fibre reinforced segmental tunnel lining,



WG 3

Contractual practices in underground construction

As part of an ongoing work, Task Group 10 initiated by FIDIC and ITA, cooperates on a Contracts Guide.

The "ITA Contractual framework checklist for subsurface construction contracts (2nd Edition / 2020)" has been published.

A Report on procurement practices is currently in progress. Also WG3 continues to provide support and cooperate with the International Tunnelling Insurance Group - ITIG - on the revision of the code of practice for risk management of tunnel works. The drafting of the Emerald book Contract guide is under way. Finally, a survey on design contracts has been realized.



WG 5

Health and safety in works

Work is in progress to prepare a guidelines for "Human factors in tunnelling" and "Health and Safety in SCL work" with ITAttech.



WG 6

### Maintenance and repair of underground structure

The Working Group is going forward on additional information on its Pamphlet on Groundwater Control in Operating Tunnels. A respond was done to Member Nations in regard to the report on tunnel fire protection. The WG started working on a document identifying a specific method for re-statement of waterproof membrane on the positive side of the liner.



WG 9

### Seismic effects

The WG is collecting resources to enrich a seismic bibliography. International guidelines for seismic design are being collected and current knowledge gaps identified.



WG 11

### Immersed and floating tunnels

The 4<sup>th</sup> issue of the "Owners guide" will be published during the year 2021. A special edition TUST publication for Immersed Tunnel projects in the last 10 years is in preparation - 17 technical papers going through peer review.



WG 12

### Sprayed concrete use

The Report on "In-service condition of sprayed concrete in tunnel linings in operation" is on the track and planned for publication in 2023. The report on Permanent Sprayed Concrete Linings (PSCL) jointly prepared with ITAtech, has been published in 2020.



WG 14

### Mechanized Tunnelling

A Guideline for TBM Specifications in soft ground and hard rock is being drafted by the Task Group 2:

- Focus on developing nations and first-time project owner needs,
- Review of global trends and expectations for prescriptive and non-prescriptive measures,
- Reliance on publications and up-to-date knowledge of trends in the tunneling industry.

Task Group 3 is going to develop TBM technology

summaries. A detailed outline will be presented at WTC 2022 in Copenhagen.

Task group 4 is expanding on a prior completed major work document published in 2019 by WG 14 and 15 related to the handling, treatment and disposal options of tunnel spoil material.



WG 15

### Underground and the environment

A first draft document of the report «Environmental risk assessment of soil excavated by EPB TBM» is already worked out. The Member Nations must be request for their experience and recommendations.



WG 17

### Long tunnels at great depth

A report on « Logistics aspects for long & deep tunnels » is already well under way. It is scheduled for publication in 2022



WG 19

### Conventional tunnelling

Comprised of 30 members representing 18 countries spanning the globe, the WG19 has progressed at its own pace. 2 guidelines are on the way. First one for the design and construction of conventional tunnelling in urban settings and second one for the application of waterproofing system in conventional tunnelling. Both should be issued in 2022.



WG 20

### Urban problems - underground solutions

Next goal of this working group is to work on a report on « Role of Underground Space in urban Resilience ». In an ever-changing world the urban environment needs to become more sustainable, but also more resilient to changing circumstances. The role of this project is to investigate in which manner Underground Space can enable such resilience.



WG 21

### Life cycle asset management

A guideline for the life cycle asset management for owners and clients including checklists,

description of the method and necessary information from the different installations in a tunnel and their interaction is under preparation.

## WG 22 Information modelling in tunnelling

The Guideline for “Bored tunnels on an example of a rail tunnel” is under preparation. Recommendations for the application of ISO 19650-1 & 2 Information Management Process & Responsibility Matrix WG 22 continues to collaborate with BuildingSMART international.

## WG 23 Design & construction for shafts

Working Group 23 held several webinars on subjects relevant to design and construction shaft. Otherwise, the draft version of the guideline on “Method selection for shaft construction” is in progress. The report on “Shafts - Definition & Classification” will be published in the next few weeks.

## COMMITTEES

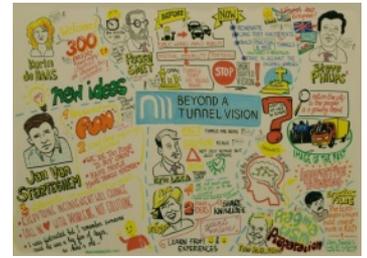


Due to current circumstances, the last year of activities was really unique in the history of ITA-COSUF. To get some orientation in this period of uncertainty, ITA-COSUF started with two Steering Board meetings in June and September 2020, the latter of which was about analyzing the current situation and finalizing the report to the ITA General Assembly in September 2021. Further, ITA COSUF used the time without opportunities for physical meetings to review internal strategy and organisational documents.

The ITA-COSUF General Assembly took place on November 18th 2020 as a virtual meeting. Even if it was not the preferred way of getting together it was good to keep contact to a large number of COSUF members with a really satisfying level of participation.

The next event was the ITA-COSUF participation in the Virtual Conference “Beyond a tunnel Vision” on November 27th 2020. It was an international

conference on tunnel renovation, focused on the joint challenges in the infrastructure network of Europe. The event started with a plenary broadcast where ITA COSUF together with PIARC had a short plenary statement on the theme “Tunnel Safety”. ITA-COSUF and the PIARC tunnel committee had worked together on future tunnel safety challenges like new energy carriers. In the frame of this virtual conference, the highlights of this cooperation and the result in form of a “Vision Paper” was presented and discussed with Ingo Kaundinya, chair of PIARC Technical Committee 4.4 ‘Tunnels’, and Max Wietek, chairman of ITA-COSUF. Claude Van Rooten, president of PIARC, has shared his view as well as Jürg Röthlisberger on behalf of CEDR. After the plenary session, ITA-COSUF hosted the Austria chapter of the conference on the topic “Tunnel Safety and Security”. The programme included presentations about “New operational road tunnel safety issues”, “Cyber security”, “Innovation and regulations”, and “Electric vehicles fire in underground facilities”. The conference was a big success with more than 400 participants.



In January 2021, another Steering Board meeting took place where ITA-COSUF Activity Group 4 (Tunnel Safety Officers) decided to organize a webinar instead of the TSO Forum, which unfortunately once more had to be postponed. However, the TSO webinar on April 29th 2021 was a great success with an overwhelming participation of more the 100 participants.



The Committee currently has 29 “academic” members and 14 “industry” members. It has acquired two new members over the last year.

- A new correspondent for the ITA Young members Group, with Eyðbjörg Amanda PETERSEN replacing Mr Nicolas ZIV,

- A new university network member : Daniela BOLDINI from Sapienza university, Rome.

The Committee's training activities in 2020 were considerably hampered by the coronavirus pandemic. Prior to the pandemic, the ITA-CET Committee had already noted a marked reduction in training requests from ITA Member nations, as stated in the previous activity report. Reasons identified included the unstable political context in some regions, the renewal of certain Member Nation representatives, with a lack of awareness of ITA-CET activities amongst newcomers, growing financial constraints, the increasing competencies of some Member Nations, who have now developed the necessary knowledge and skills amongst young engineers for their projects and the impression amongst some Member Nations that training provided by ITA should be cost-free.

As of spring 2020, the ITA-CET Committee and ITACET Foundation therefore had to considerably adapt their training portfolio and teaching methods to develop a digital offer. The WTC in Malaysia in September 2020 saw the first ever online ITA-CET training session and was made possible thanks to the considerable organisational efforts of the ITACET Foundation and the WTC host nation (IEM in particular). The topic chosen was "Innovations in Tunnelling – Geotechnical engineering and project management" and gathered 30 participants live, with many more streaming the event afterwards.

In October 2020, ITA-CET gave a lecture on "Innovations in Conventional Tunnelling" within the scope of the 10<sup>th</sup> Tunnelling and Underground Space Days, organised by AATES (Argentinian Tunnelling and Underground Space Association). This event gathered over 150 participants.

The latter half of 2020 saw the ITA-CET Committee and ITACET Foundation work in close collaboration with the ITA Working Groups and Committees to identify topics that could be presented in the form of "bite-size" online lectures. A schedule for this series of lunchtime lectures was drawn up by the end of 2020, with the aim providing information to a wide public on current highly specific issues within the underground space industry. Invited lecturers will be top professionals in the tunnelling, notably from the ITA's Working Groups

and Committees. Industry representatives and project owners will also be asked to intervene on a regular basis, in order to give different viewpoints.

The first lectures in this series took place on 9<sup>th</sup> February 2021. The topic chosen was "From rock mechanics to drill and blast" and gathered 196 participants from over 20 different countries. This event was followed by a second round of lectures delivered on 9<sup>th</sup> March on "Contractual practices and the FIDIC Emerald book (100 participants)". The third session on 13<sup>th</sup> April gathered more than 120 participants and focused on "Safety issues in compressed air use". Further sessions will take place in 2021, on the second Tuesday of each month, and will involve members of the ITA Working Groups and Committees.



The Committee has continued to nurture its university network and has begun to organise and advertise its second event for university professors and PhD students. This event will take place in December 2021 in Leoben, Austria (probably in hybrid format) and will be open to universities worldwide. The Committee has also exchanged with several universities of the ITA-CET network, notably concerning endorsement procedures for Master courses.

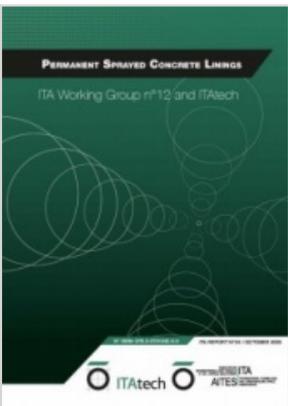
In terms of communication actions, ITA-CET news articles have regularly appeared in ITA newsletters.

The Committee published its own newsletter in December 2020. It also sent out a letter to ITA-Member Nations in March 2021, reminding them of the existence of the online lecture series and that they are free to contact ITA-CET to request other tailor-made training events.

During 2020-2021 the Steering Board has met more often and more effectively than previously due to the global adoption of video conference tools. It was suggested and agreed to install a Vice Chair to support the Chair and provide better balance and stability in the case of absence. Alberto Rey from Sika was proposed and unanimously voted in.



During the year we have 3 new supporters sign up: IDS Georadar, TLT Turbo and Strata Worldwide. Unfortunately, VMT and Terratec have resigned as prime sponsors but they remain as supporters.



The guideline on Permanent Sprayed Concrete linings was successfully completed and published on-line. This has already created some excellent industry dialogue and will also be the starting point for a document being developed by WG5 on Safety of Sprayed Concrete. This document was the first to be a proper joint effort between the ITA Working Groups and the ITAttech Activity Group.

The document on Mechanised Support is creating a healthy discussion between the machine suppliers and the designers within the Steering Board. On the one hand a simplified guideline is thought to be required based on the equipment suppliers experience in the field and on the other the argument that client should employ a competent designer so that these issues do not occur. Unfortunately, in the real world there are still clients who do not invest in expertise and prefer to allocate the risk to the contractor who then relies on his suppliers for technical support. Additional caveats will be added to the document and it should be ready for release in third quarter 2021.

The active members of ITAttech agree that a more dynamic approach to the sharing of knowledge and expertise would be for ITAttech to prepare specific chapters for the WGs. This information

would also be able to be published as white papers and communicated on social media in the same way as full AG documents.

The committee has already established connections to WG 22 and WG 14 is well represented with ITAttech members. ITACET has also involved ITAttech in preparing sessions relevant to our members for specific national training sessions and lunchtime webinars.

Finally, it is important to continue the marketing of ITAttech for the benefit of its members and the tunnelling industry as a whole. The following Activity Groups are still active and can be easily slotted into selected WG topics which will provide appropriate focus and value.

- AG Data Management
  1. Sub-AG Investigation
  2. Sub-AG Face Mapping
  3. Sub-AG Monitoring
- AG Excavation
  1. Sub-AG Mechanized Support
  2. Sub-AG TBM Materials - Consumable
  3. Sub-AG Services Guideline
  4. Sub-AG Pre-Excavation Grouting
- AG Lining, Support & Waterproofing
  1. Sub-AG Sprayed Applied Waterproofing update
  2. Sub-AG Cast in Situ linings
  3. Sub-AG Bolts & Arches
- AG Maintenance & Repair
  1. Sub-AG Condition Survey
  2. Sub-AG Coatings
- AG Design



Due to the ongoing global pandemic, the committee found itself focusing on online activities as the other committees. The following activities took place. A number of meetings were held online, including those of the Activity Group NATDP and the ITACUS Steering Board. Also, the committee was hosted by the Greek Tunnelling Society Young Members for an online workshop on "Expanding underground, Knowledge & Passion to Make a Positive Impact on the world" on the 1st of July 2020.

The first-ever semester course at a university on the “Planning of Underground Space“ started at spring semester 2020 with over 135 enrolled students at the Swiss Federal Institute of Technology (ETH) in Zurich. The lecture series focused on the role of underground space in urban development from a historical, social, design, ecological, economic and sustainability perspective.

Taught by lecturer Antonia Cornaro, whose background is in urban and infrastructure planning, with a professional specialisation in underground space planning, the lecture series is based on the book by Han Admiraal and herself: “Underground Spaces Unveiled: Planning and Creating the Cities of the Future“, which received the Gerd Albers Award 2018 in the category best book by the International Society of City and Regional Planners (ISOCARP). Further info can be found here. Both co-authors also co-chair the ITA Committee of Underground Space ITACUS.

September marked the start of the Innovation, Inspiration and Demonstration of Underground Spaces webinar Series. The first webinar “How Cool is Underground Space“, as part of the Hagerbach NXT50 celebrations, was attended 260 registrants. This webinar was Co-hosted and moderated by ITACUS which shares the vision of the « Mission Earth First ». The followed webinars explained more about the background of this initiative and future plans:

- “Moving beyond the obvious”,
- “Innovating for Underground Spaces”,
- “Demonstrating Underground Space”,
- “Planning for Sustainable Underground Spaces”.



Itacus has also taken part in a number of online events and conferences. ITACUS co-chair Antonia Cornaro presented during the ICE Hong Kong conference.

Itacus held a special session “ planning for sustainable underground spaces” during ACUUS 17th World Conference as part of ACUUS Online Congress. The session "Planning for sustainable underground spaces" has been featured the activity

groups of Itacus on urban integration ( Dr. Marilu Melo in dialogue with Shana Debrok - Flanders Spatial Planning Dept.) and Loretta von der Tann (NGI), underground space sustainability (Dr. Chrysothemis Parasevopolou) and young professional think deep program (Petr Salak and Rosanne Verloop).

Both co-chairs, Han Admiraal and Antonia Cornaro took part in online ISOCARP on the Review of World Planning Practice and also presented via pre-recorded video at the IFUS Conference in Shanghai, China.



ITAYM have been involved in the following activities:

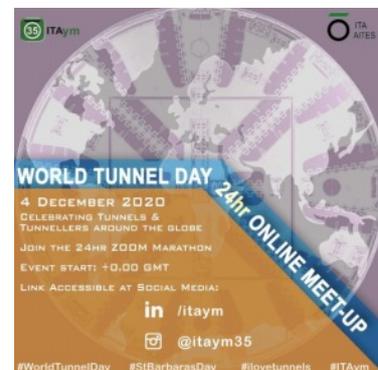
ITA young members successfully participated in the Digital WTC 2020 in Malaysia (including the ITAYM stand at the digital exhibition). On this occasion, the steering board was renewed.

The new Committee has been elected during the General Assembly of ITAYM which has been held on Tuesday the 15th of September. Jasmin Amberg (Switzerland) and Chrysothemis Paraskevopoulou (Greece) have been elected respectively as Chair and Vice-Chair.

Significant effort has been done with the ITA committees to get young people involved and actively contributing to the activities of the organisation. This includes participation in ITACUS and especially ITACET.

On 4th of December a almost 24 hour virtual celebration of St. Barbaras Day / World Tunnel Day was organised by the ITAYM. With a contribution of 29 national YM groups, the meeting had over 3'000 clicks worldwide and the different sessions were attended by up to 170 participants. The event started in Downunder (New Zealand, Australia) at 00:00 GMT, headed on to Asia and Africa , visited Europe , crossed the Atlantic to North America and ended up in South America

In terms of communications, In addition to the Breakthrough magazine, a newsletter with information from YM groups around the world has been distributed on a bi-monthly basis. The groups were also very active on social networks, especially on Facebook and LinkedIn.





## 2020-2021 ITA Executive Council



Jinxiu (Jenny) Yan  
President  
2019-2022



Tarcisio B. Celestino  
Past-President  
2019-2022



Lars Babenderede  
First Vice-President  
2019-2022



Tarcisio B. Celestino  
Vice-President  
2019-2022



Randall Essex  
Vice-President  
2019-2022



Guiseppe Lunardi  
Vice-President  
2019-2022



Abidemi Agwor  
2019-2022



Hamdi Aydin  
2019-2022



Hangseok Choi  
2019-2022



Jeyatharan Kumarasamy  
2019-2022



Andres Marulanda  
2019-2022



Jamal Rostami  
2019-2022



Gérard Seingre  
Treasurer  
2019-2022



Søren Eskesen  
WTC2022  
2019-2022



Ioannis Fikiris  
WTC2023  
2020-2023

## 2020-2021 ITA Governance Council

As an NGO, ITA is very concerned by its governance. In 2019, the General Assembly voted the creation of the Governance Council. Their 2 members worked with the ExCo to improve the Governance. Following the decision of the General Assembly, the Executive Council also worked to identify a company able to do an Organisational Review and Compliance Assessment. In parallel, the ExCo is working on handbook and process guides.



Damian McGirr  
Governance council  
2019-2021



Eivind Grøv  
Governance council  
2019-2021



## WORKING GROUPS

	ANIMATEUR	VICE-ANIMATEUR
WG2	Elena Chiriotti	Ron Tluczek
WG3	Matthias Neunschwander	Martin Smith
WG5	Donald Lamont	Werner Burger
WG6	Henry Russel	Ed Taylor
WG9	Conrad Felice	Wenge Qiu
WG11	Jonathan Baber	Eelco Van Putten
WG12	Karl Gunnar Holter	Alun Thomas
WG14	Brian Fulcher	Karin Böppler
WG15	Cedric Thalman	Nikolai Bobylev
WG17	Magali Schivre	Roberto Schuerch
WG19	Nasri Munfah	Robert Galler
WG20	Wout Broere	Giuseppe M. Gaspari
WG21	Martin Muncke	Laeticia D'Aloia Schwartzentruber
WG22	Jurij Karlovsek	Paolo Cucino
WG23	Siamak Hashemi	Joe Luxford



## COMMITTEES

	CHAIR	VICE-CHAIR
ITA-CET	Robert Galler	Michel Deffayet
ITA-COSUF	Maximilian Wietek	Eric Premat
ITAtch	Nick Chittenden	Alberto Rey
	CO-CHAIR	CO-CHAIR
ITACUS	Han Admiraal	Antonia Cornaro



## YOUNG MEMBERS GROUP

CHAIR	VICE-CHAIR
Jasmin Amberg	Chrysothemis Paraskevopoulou



## SECRETARIAT

Olivier Vion	Executive Director
Anne Brissaud	Communication Officer
Claudia Clivaz	Executive Secretary
Jocelyne Kervinio	Accountant
Sonia Salles	ITAtch Secretariat & Awards secretary
Anette Schmidt	Marketing

# « TOGETHER FOR A SUSTAINABLE EARTH »

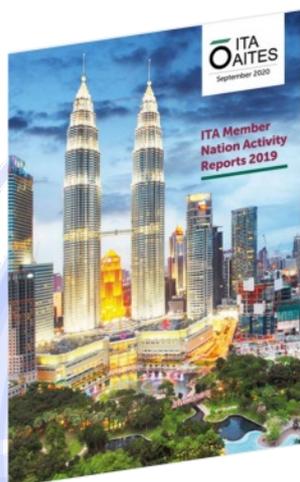


# MEMBER NATIONS



The Executive Council pursued in priority the development of its relations with the Member Nations:

Member Nations have participated in the activities of the Association, notably on virtual WTC and Activity report. For the fifth year, the activity reports have been presented in a dedicated magazine. We have received reports from 38 Member Nations out of the 78 Member nations. Thanks to the work done by each Member Nation, the ITA Secretariat and Tunnelling Journal, can share with everyone the various activities done in ITA Member Nations, as well as know more about present and future tunnelling activities all over the world.



different topics such as ITA role in the tunnelling community and update of ITA strategy, Working Groups and Committees, dissemination of knowledge, WTCs, ITA Awards, coordination with other international bodies, Governance.

Due to the Covid pandemic, many Member Nations had to cancel their physical events and they have mostly been organised online.

In granting the sponsorship of the Association to the events organised by the Member Nations in:

- Course online "Túneles en medios urbanos", organized by AATES, each Wednesday from May 20 to June 10, 2020
- WTC 2020, foreseen in Malaysia has been organised on line, 16 September, 2020
- "Jornada: Metro de Sevilla, solución sostenible para el transporte de la ciudad", Seville, Espagne, 14 October, 2020
- "Tunnelling 4.0: New Technologies and Future Perspectives for Maintenance, Upgrading and Refurbishment of Tunnels", Bologne, Italy, 15-16 October 2020
- "BEYOND A TUNNEL VISION 2.0", The Hague, the Netherlands, 27 November 2020
- "ACUUS 2020 Conference", Helsinki, Finland, 2-4 February 2021
- "3rd International Conference Tunnels construction and operations", online, organized by Poland Association, 3-4 February 2021, attendance: Olivier Vion et Arnold Dix
- "2020 China Tunnel and Underground Works Conference", Shenzhen, China, April 18 to 20, 2021.



Austria • Belgium • France  
Germany • Italy • Portugal  
Netherlands • Spain • Switzerland

European Underground and Tunnel Forum (this Forum gathers the following Member Nations: Austria, Belgium, France, Germany, Italy, Portugal, Spain, Switzerland): A meeting between the Executive Committee members and EUTF members took place

on July 16th 2020. Executive Committee and members of EUTF discussed EUTF proposals on

# « SET AND REACH YOUR GOALS »



# STRATEGY 2020-2023

## GOAL 1

**Encourage Member Nations to actively develop and share technology, promote underground space and be active as Member Nation in ITA.**

1. Improve communication and exchanges between Member Nations and the Industry, by encouraging experience sharing and organizing symposiums, dialogue, training courses and other similar events, which will create a win-win situation for both Member Nations and the Industry.
2. Provide support to Member Nations, especially the developing countries and new Member Nations, with the purpose of facilitating their involvement in ITA activities and strengthening their role in the tunnelling industry of their countries.
3. Encouraging the Member Countries, who cannot participate in ITA Working Groups and activities, to contribute in ITA and thus to develop their ITA relationships.

### Actions:

- Organize workshops for Member Nations to showcase their activities / developments and invite exchanges of ideas,
- Provide digital means of communication for Member Nations and their members who cannot participate in ITA activities in person,



## GOAL 2

**Optimize the contribution of Working Groups and Committees through facilitating interaction with Member Nations & Sponsors, encouraging synergies and deploying modern communication practices.**

1. Strengthening the functioning the production of the existing Working Groups by providing additional resources, operating guidelines, and more standard working procedures and review criteria
2. Develop a Committee comprised of Animateurs and Tutors to explore how WGs and Activity Committees can better function and collaborate. Topics could include research, report development, and Member Nation outreach.
3. Organize a task group to permanently seek and research ideas, areas or initiatives where ITA should create a new Working Group.

### Actions:

- Help Working Groups to work with digital means of communication,
- Reorganize the structure of the Working Groups to be able to produce guidelines or reports more efficiently and cooperate among Working Groups and committees,
- Improve ITA reports and guidelines review process and have more feedback from ITA family and the industry,



### Encourage further knowledge sharing through education and training.

1. Encourage training sessions in developing countries.
2. Collect and analyze what are the offers in term of tunnelling in the University courses (undergraduate/post-graduate) in the different countries - make proposals.

#### Actions:

- Better use of digital tools to facilitate knowledge sharing and education,
- Organize different level course to meet requirements of different participants,
- Organize more physical and virtual training courses on basic and practical tunnelling skills for developing MNs,
- Organize systematic or series courses for challenging and emerging issues.



### Enhance tunnelling and underground space awareness.

1. Develop pedagogic communication brochures for public entities (planning agencies, ministers, public works entities, etc.) emphasizing the benefits of underground works vs other alternatives and providing examples where underground works have solved problems around the world.
2. Enhance communication with related International Organizations, National Policy-making

Forums, and well-known International Development Banks to increase the contributions of tunnelling in implementing Sustainable Development Goals.

#### Actions:

- Organize ITA GLOBAL FORUM ON UNDERGROUND SPACE - IGFUS to strengthen, ITA leading roles in underground space,
- Enhance communication and cooperation with well-known International Development Banks to increase the contributions of underground space to sustainable infrastructure,
- Organize webinars for “general public”,
- Better partnership with other organizations to bring a louder voice to international bodies.



### Improve communication with Member Nations, industry and the general public.

1. Continue the development of ITA in social media, in the press.
2. Recognize the achievements of our industry and promote the knowledge sharing and application of well recognized new technologies among all parties involved, including decision makers and investors.

#### Actions:

- Organize a yearly Tunnelling week to brief “ the whole picture of tunnelling worldwide”, including major activities of ITA, mega projects and significant innovations worldwide,
- Better promote in Social Media ITA activities, notably WTC, ITA Awards and IGFUS,
- Summarize and visualize at ITA website the subjects which WGs and committees are working to attract more participants,
- Organize more press conferences to promote ITA and the industry.



# COMMUNICATION



As every year, the ITA produced various communication materials and supported the promotion of events. Several significant actions have been carried out this year.

## Print

On the occasion of the General Assembly in September 2020, ITA has published its Activity Report and also the Member Nations report, both available on the ITA website.



## Newsletters



In addition to the "ITA@news" sent 3 times this year, ITA continues to publish twice a month a "scoop-it" newsletter on tunnelling and underground works. Every two weeks about 12 articles published in the international press are selected and put together for the tunnelling community. Several specific newsletters concerning the WTC and the ITA Awards were also sent to this community.

## Website

The redesign of the website in 2020 has increased traffic and improved the visibility of the portal.

Total traffic of all ITA Websites:

137,800 sessions (Vs 117,800)  
= + 17%

107,850 users (Vs 86,800) per year  
= + 25%



Traffic via mobile was stabilizing: 31 % for the site "About Tunnelling" and 20% for "ITA Activities".

## Social media

Social networks increase awareness, visibility and trust in a company. That's why we work on acquiring followers.



The number of followers on our LinkedIn company page has significantly increased: more than 3,500 i.e. +60% in one year.

The Twitter account is also booming with an increase of 30 % in one year.

## Press

In 2020-2021, ITA directly or indirectly participated in articles published in technical journals or current affairs programmes. Some of them are available on ITA web site in the sections ITA Press releases and ITA in the Press.

Due to the pandemic, it has not been possible this year to organise any physical press conference. Nevertheless, during the Awards, 4 press meetings have been organised on different topics: Tunnelling industry, challenges and global market trends; Major projects; Oddities of the underground; Overcoming the challenge; Innovative and contributing underground spaces.

During the year 26 press releases have been sent out all over the world (data base of 35 000 media). i.e. 20 Press releases for the ITA Awards 2020 6 Press releases concerning the digital WTC.

Concerning the awards, the press coverage has been of 237 impacts in magazines, journals and social media.

### Publications and report

The scientific journal Tunnelling and Underground Space Technology (TUST) is available in electronic version for all the members (Member Nations and Affiliate Members). The access is through the private area available from ITA web portal.

ITA's Working groups have the task, in their specific field, of reviewing the current situation, identifying good practice and making recommendations which are published and widely disseminated. For this year, the following ITA reports have been published:

- WG3: ITA Checklist 2nd edition
- WG5: Planning Health and Safety Risk Management for Underground Works
- WG12/ITAtch: Permanent Sprayed Concrete Linings



### Tunnel Market Survey

On the occasion of the ITA Awards, a summary of the last market survey - a full market survey is prepared every 3 years for ITA Prime Sponsors - has been presented to the press.

This study is the third edition of a market survey compiling global figures of construction of tunnels over the world. One of the objectives is of course for stakeholders of the industry to know trends in the market as well as possibility of development for their own business. The 78 countries of ITA-Member Nations have been involved in collecting

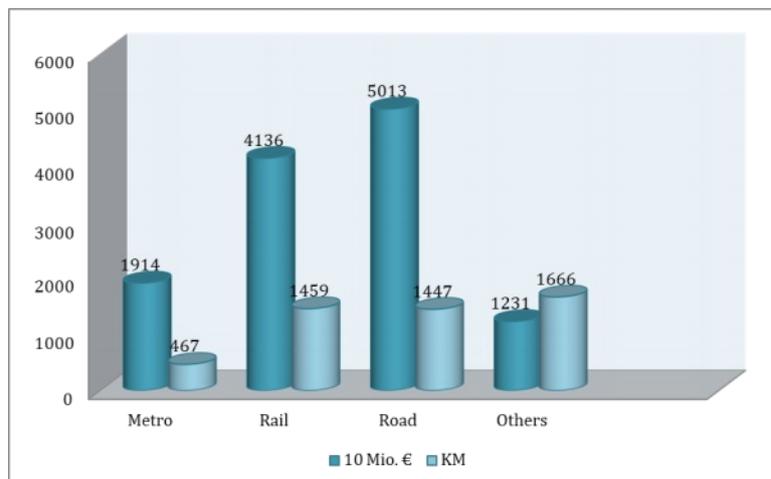
the data prepared by ITA secretariat. In this analysis data are coming from 96 countries.

This market analysis clearly shows that the tunnelling market has a considerable size, with a global annual output of 125 billion euros. The market has grown in the past years and will continue to do so. The growth of around 9% per year in the tunnelling market is 2.5 times as big as the global construction growth.

In terms of km of tunnels constructed, the yearly average is the same as in previous years: 5,200 km.

Considering that civil engineering is usually 20% of the construction market, the tunnelling market is representing 6 to 7% of the infrastructure construction market. Of course this share varies a lot depending on the countries. Nevertheless, these figures really show the growing importance of tunnels in the worlds.

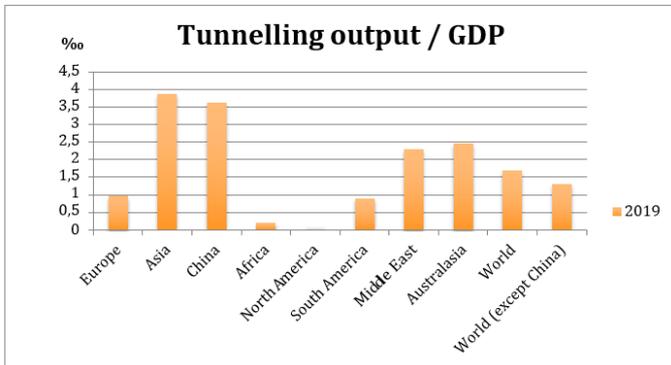
It is also interesting to see the breakdown by use of tunnels.



Rail tunnels are over the world representing a share of 29% of the length of tunnels excavated during the year and 34% of the output. Road tunnels represent 29% in kilometres and 40% in output, where metro tunnels represent only 9% in kilometres but 16% in output. At the opposite other types of tunnels, including tunnels for hydro and utilities represent 33% in length and only 10% in cost.

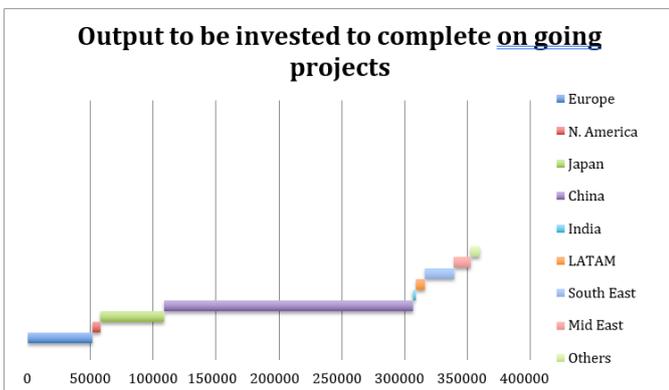
Globally the tunnel market grew by 45% in output between 2016 and 2019 with differences depending on geographical areas, such as 100% in Europe and Asia (except China) and much less or even a market contraction in some parts of the world.

The importance of the tunnelling construction in regards of the total GDP of the country has been also studied. Worldwide tunnel construction represents 1.7‰ of GDP varying from 0.1‰ in North America to 3.9‰ in Asia, with 1‰ in Europe, 2.3‰ in Middle East, 2.5‰ in Australasia and 3.5‰ in China.



In terms of tunnel construction, taking into account all the tunnels that were under construction in 2019, the output remaining to be invested to complete all these projects has been quantified.

This global output is €360bn, of which €200bn is for Chinese projects. It represents a total of three years of work.



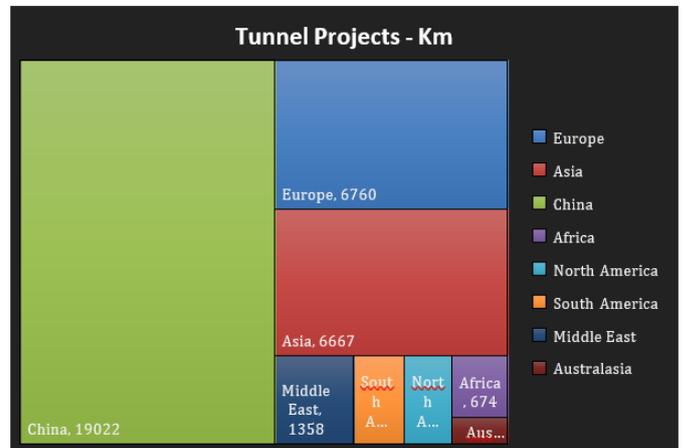
The planned global output is of 1385 bn€ representing more than 11 years of tunnelling works. Outside China it represents 912 bn€.

Concerning future projects in design or planning phases, we have identified tunnelling projects all over the world. For those which studies have already been made or being in an advanced stage, the information, notably on the cost are accurate, for those that will be built in a longer term or which are only at a feasibility study stage, the cost estimation has been made on average costs for similar projects in a similar geographical zone.

The data collected represent around 2,600 different projects all over the world. Depending on the

stage of the project, the project can be considered as a whole or if the studies are more advanced, it could have been divided in several projects.

As we know, in Europe most of projects often needs years or even decades to come to the construction stage where in other parts of the world decision and financing can go more quickly.

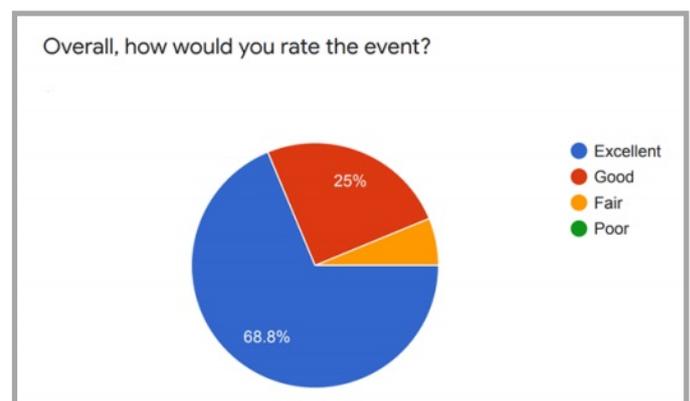


Lastly to conclude, we have to take a new parameter - the pandemic - into consideration. It is not yet over, will have consequences on the tunnel market for the following years. For the years to come, the various conjuncture institutes forecast a growth of 2 to 4% per year for the years 2022 to 2024. At this stage, it is difficult to predict what the exact consequences will be on the tunnelling industry.

### ITA Awards satisfaction survey

During the ITA awards, we have put in place on the digital platform, an online satisfaction survey.

The survey was brief with 5 questions. Among the responses obtained, the evaluations were generally positive.



# CONFERENCES & EVENTS



## 6<sup>TH</sup> ITA Tunnelling and Underground Space Awards



After a challenging year, especially on safety issues, the event went digital and awarded the best achievements in the industry, through 8 categories. After editions in Switzerland, Singapore, France, China and USA, this virtual edition this year allowed to gather more than 700 attendees during the first 2 days and revealed that even through digital, tunnelling industry is still powerful. By the way, the event, which officially took place from 3 to 4 December 2020, remained online until 18 December.

It was also the occasion for ITA to review the past year and announce some forecasts: Although it has been a very challenging year, ITA Tunnelling Awards has received 55 entries from 22 countries. Moreover, the number of participants has been higher than in physical event. The exhibition has been also successful with over 100 visits to each exhibitor'booth (some over 300).

Since 2015, the entries could be submitted through 8 categories but the 2020 edition brings a new format with 7 categories : The "Safety initiative of the Year" category has been deleted as safety is a major criteria and is now fully integrated to all

category. A new category called "Overcoming the challenge" has been created and is dedicated to projects which overcame either foreseen or unforeseen extreme difficulties during excavation and construction. Another new category "Oddities of the Underground" has also been implemented to reward creativity, ingenuity and originality of projects undertaken in subterranean space.

The winners of the ITA Tunnelling Awards 2020:

- For the category "Major Project of the Year, over €500 million": "John Holland CPB Ghella Joint Venture Tunneling and Station Excavation Works for the Sydney Metro City & Southwest Project - Australia",



- Project of the Year (between €50M and €500M): Chinatown Station of the Central Subway Program - USA,
- Project of the Year incl. Renovation (up to €50M) - 2 winners:

1. FEDRO's Tunnel Renovation Method - renovation of a non-reinforced primary lining using night shifts while keeping all traffic lanes open during the day - Switzerland;

2. Lower Otta Hydropower Project - Norway,



- Technical Innovation of the Year: An Innovative Automated Geological Forward-prospecting Technique Mounted on Hard-Rock TBM - China,
- Overcoming the challenges: Chengdu-Guiyang High-speed Railway -Yujingshan Mountain Tunnel Crossing Giant Karst Cave and Underground River - China,

- Oddities of the Underground: Tunnelling in the service of archeology – Israel ,
- Innovative and Contributing Underground Spaces: Union Square Market Street Station - Battered Drilled Shafts as Permanent Ground Support - USA,
- Young Tunneller of the year: Josh Barry - Australia.



## World Tunnel Congress - WTC2020



Originally scheduled for 15-21 May 2020, the ITA-AITES World Tunnel Congress (WTC) 2020 was held in Kuala Lumpur, Malaysia,

from 11-17 September 2020 via an all-digital platform due to the impacts of COVID-19.

The theme of the World Tunnel Congress 2020 «Innovation and Sustainable Underground Serving Global Connectivity», has conscientiously been chosen to timely reflect the innovation achievements in the efforts of ITA-AITES in promoting the use of tunnels and underground space for the benefits of public, environment and sustainable development.

A one-day training session has been organised on Friday Sept 11th. About 30 persons were registered.

In conjunction with the ITA-AITES World Tunnel Congress (WTC) 2020, Tunnelling and Underground Space Technical Division of IEM (TUSTD Young Member Sub-committee) and WTC2020 Organising Committee jointly organised the 1st-Symposium for Young Tunnellers of Asia (SYTA) on 12 September 2020. The theme of the 1st SYTA was Tunnelling: Design, Operations and Surveillance which acknowledges the valuable contributions of young, enterprising and energetic Tunnellers working in increasingly challenging projects.



## DIGITAL WTC 2020 AT A GLANCE

PARTICIPANTS

1096

DELEGATES

655

ABSTRACTS RECEIVED

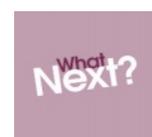
659

AUTHORS

272

EXHIBITORS

169



- WTC 2022 Copenhagen, Denmark
- WTC 2023 Athens, Greece
- WTC 2024 Shenzhen, China



ASSOCIATION  
INTERNATIONALE DES TUNNELS  
ET DE L'ESPACE SOUTERRAIN

**AITES**

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