

Pre-normative research for safety of hydrogen driven vehicles and transport through tunnels and similar confined spaces

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Dissemination, Communication and awareness plan

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Summary

The dissemination, communication and awareness plan (DCAP) defines the communication tools to be developed and used towards a successful dissemination of the Project and its results. The project Grant Agreement, through the Description of Action, contained the draft of this plan as part of the measures to maximise the Project's impact. The definition of a dissemination and communication plan for the suitable promotion of the project: identification of agreed dissemination measures/procedures/channels, dissemination events, stakeholders engagement and events. The DCAP will be updated two times during the Project duration.

Keywords

Communication, Strategy, Awareness

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1. Introduction

The aim of the HyTunnel-CS project is to perform pre-normative research for safety of hydrogen driven vehicles and transport through tunnels and similar confined spaces (FCH-04-1-2018). The main ambition is to facilitate hydrogen vehicles entering underground traffic systems at risk below or the same as for fossil fuel transport. The specific objectives are: critical analysis of effectiveness of conventional safety measures for hydrogen incidents; generation of unique experimental data using the best European hydrogen safety research facilities and three real tunnels; understanding of relevant physics to underpin the advancement of hydrogen safety engineering; innovative explosion and fire prevention and mitigation strategies; new validated CFD and FE models for consequences analysis; new engineering correlations for novel quantitative risk assessment methodology tailored for tunnels and underground parking; harmonised recommendations for intervention strategies and tactics for first responders; recommendations for inherently safer use of hydrogen vehicles in underground transportation systems; recommendations for RCS.

The objectives will be achieved by conducting inter-disciplinary and inter-sectoral research by a carefully built consortium of academia, emergency services, research and standard development organisations, who have extensive experience from work on hydrogen safety and safety in tunnels and other confined spaces. The complementarities and synergies of theoretical, numerical and experimental research will be used to close knowledge gaps and resolve technological bottlenecks in safe use of hydrogen in confined spaces. The project outcomes will be reflected in appropriate recommendations, models and correlations could be directly implemented in relevant RCS (UN GTR#13, ISO/TC 197, CEN/CLC/TC 6, etc.). HyTunnel-CS will reduce over-conservatism, increase efficiency of installed safety equipment and systems to save costs of underground traffic systems.

2. Objectives

The objective of Deliverable 6.1 is to describe the planning for dissemination, communication and awareness activities and tools to be carried out so that HYTUNNEL-CS can achieve an adequate level of visibility and impact in Europe and abroad at the desired dissemination levels.

The report describes through the sections the approach to dissemination, procedures, means and methodologies for internal communication between partners, reviewing also the procedure to present the project to a further audience outside the project consortium.

The document aims at defining the general communication tools that will be used to disseminate the project and also the method to follow by the Project partners to ensure the impact of the project through media and press releases and information distribution to stakeholders.

The dissemination and awareness plan is an important set of tools that has to be complementary to the outcomes resulting of the project developments, having the common goal of maximising the impact. Therefore, the plan definition and the following updates have to be also dedicated

to maximise the impact to the general public, national networks and stakeholder advisory Board according to promote and disseminate hydrogen safety culture within and outside the FCH2 JU program.

For this, in this document it is foreseen:

- Define the communication objectives of the HYTUNNEL-CS project to achieve maximum diffusion and the results obtained during its development.
- Delimit the protagonists, actors and public interest of the project and the partners that promote it from the point of view of communication.
- Determine the most appropriate messages for each of the defined audiences and the main channels and communication strategies to disseminate them.
- Establish and coordinate the main dissemination actions of the HYTUNNEL-CS project in a plan that allows planning and structuring them.
- Propose actions that facilitate internal communication between project partners in order to achieve maximum effectiveness.
- Pose communication guidelines and behaviour to be followed in contingencies that may subject the project to high levels of stress: crisis.
- Establish communication management procedures in social networks.

3. Determination of audiences

Stakeholders or interest groups are, from a broad perspective, any group or individual that may affect or be affected by the achievement of the project's objectives. For an adequate development of the same, it is possible to determine the following groups and interest, of which some fundamental criteria are exposed in terms of their management:

Target audience	Influence	Objective	Message Content	Possible tools
Community, national and regional administration	High	Inform Sensitize	General information about the project: beneficiaries, phases, results and achievements Benefits derived from the cooperation developed	Project events Explanatory meetings Send of materials Transfer of socio-economic and environmental benefits of the action
Beneficiaries and partners of the project	High	Accompany Support Sensitize	Communicate the results and the progress of the project Coordinate communication	Internal communication Participation in acts of other partners and groups

D6.1 Dissemination, communication and awareness plan

			Cooperation in the dissemination and distribution of tasks	Joint meetings with other entities Project work meetings and networking among partners Participation in events, fairs and congresses
SMEs and large companies	Medium	Inform Attract	General information about the project Results and business opportunities	Sending information Meetings Demonstrative acts Technical sessions
Stakeholder Advisory Board	High	Inform Involve	Business opportunities and business transformation Cost effectiveness Security and simplicity of operations Dissemination	Meetings Workshops Generation of contents Sending material Experiment demonstrations Actions with media
Research and educational centers	Medium	Inform	General information about the project Technological developments	Sending information Technical sessions Project presentations
Event organizers	High	Inform Involve	Business opportunities and business transformation Cost effectiveness Security and simplicity of operations Dissemination	Training Generation of contents Sending materials for your exhibition Demonstration events Actions with media and interest groups
Vehicle Safety Companies	High	Inform Involve	Business opportunities and business transformation Cost effectiveness	Training Generation of contents Sending materials for your exhibition

D6.1 Dissemination, communication and awareness plan

			Security and simplicity of operations Dissemination	Demonstration events Actions with media and interest groups
Clusters and sectoral organizations related to hydrogen	Medium	Inform	General project information	Sending information Meetings with associations and other representative projects
General and specialized media	High	Inform	General information of the project and evolution Construction of prototypes Cooperation Technological developments Associated investments Energy sustainability	Sending information periodic meetings. Participation in events Offer of contents (written and audiovisual) that are generated with the project Provision of qualified HyTunnel-CS spokespersons Participation in radio, TV and special written or online programs Driving experiences Transfer of socio-economic and environmental benefits of the action
Promoters of other related initiatives	Medium	Inform Collaborate	General project information Opportunities for cooperation	Meetings Participation in events Forums of the sector Search for collaborations and support in diffusion

Economic and social agents at European level	Low	Inform	General project information Business and employment opportunities Environmental benefits and sustainability	Explanatory meetings Participation in the events that are organized Collaboration for dissemination in sectorial organizations
Tunnel Safety	High	Inform Involve	Business opportunities and business transformation Cost effectiveness Security and simplicity of operations Dissemination	Training Generation of contents Sending materials for your exhibition Demonstration events Actions with media and interest groups

4. Main Messages

Below are some proposed messages for dissemination to the indicated audiences or others in the communication tasks that are carried out around the HYTUNNEL-CS project. This selection may be modified and completed in the different updates of this document that are carried out:

- Hydrogen is a chemical element, very light and with a large amount of energy per unit mass. From the point of view of energy use, it allows to store large amounts of energy from any primary energy source.
- Hydrogen can play a key role in the solutions proposed for the energy future system, as it is an energy carrier. By means of water electrolysis electricity can be used to convert water into hydrogen, obtaining a gas that can be stored, injected in the existent natural gas grid, or converted to other products.
- Hydrogen produced by renewable energy sources such as solar or wind at its starting point guarantees its respect for the environment and blocks polluting emissions.
- Hydrogen vehicles that are already marketed are approved and have passed all tests and safety tests.

- The HYTUNNEL-CS Project will carry out critical analysis of effectiveness of conventional safety measures in tunnels and other underground transportation infrastructure.
- The results of HYTUNNEL-CS go beyond the duration of the project and it is planned to establish mechanisms so that the cooperation experiences developed and the achievements obtained last over time.
- The HYTUNNEL-CS Project will generate unique experimental data regarding the interaction of hydrogen with safety equipment and systems of underground transportation infrastructure using the best European hydrogen safety research facilities and three real tunnels.
- The HYTUNNEL-CS Project will create deeper knowledge of the relevant physics to underpin advanced hydrogen safety engineering and develop innovative prevention and mitigation strategies.
- The HYTUNNEL-CS Project will develop further existing and new contemporary computational fluid dynamics (CFD) and finite element (FE) models, simpler engineering correlations of relevant physics models, hazard and risk assessment tools; validate them against generated experimental data for use as predictive tools for safety design.
- The HYTUNNEL-CS Project will potential reduction of over-conservatism and increased efficiency of installed safety equipment will save costs.
- The HYTUNNEL-CS project will prepare harmonised recommendations for intervention strategies and tactics for first responders providing conditions for their life safety and property protection during accidents with hydrogen powered vehicles in tunnels, underground parking, etc.
- The HYTUNNEL-CS project contributes to environmental and energy sustainability and to achieving the decarbonisation objectives of the European Union economy.
- The HYTUNNEL-CS project will develop recommendations for inherently safer use of hydrogen vehicles in underground transportation systems.
- The HYTUNNEL-CS project will produce commonly agreed, scientifically based recommendations for the update of relevant RCS and level up the safety culture of using hydrogen cars in general and especially in confined spaces.

- The HYTUNNEL-CS project opens a wide range of possible business and technical developments in the construction, maintenance and operation of tunnels and its safety for hydrogen vehicles.

5. Communication and Public Relations Actions

This section contains a proposal for internal, external, crisis and public relations communication actions. The beginning of the actions is proposed as of July 2019.

5.1 Communication Actions

5.1.1 Internal Communication Actions

Joint planning with partners and development of the actions included in the initial version of the Dissemination, Communication and Awareness Plan (DCAP) of the HYTUNNEL-CS project and in its two planned updates, as well as a careful consideration of all the activities developed in the summary execution report at the end of the project, which will serve as a reference for the launch of new initiatives and implementation phases of HYTUNNEL-CS.

Creation of an **internal communication network** between the project partners, determining the responsible person or persons in each organization and establishing the channels so the communication is continuous. It has been established a NextCloud page for the project so the partners can shared documents, information, etc. about the project.

Update with the collaboration of all partners of the **contact databases** to send information about the HYTUNNEL-CS project.

Making a **calendar with the communication milestones** that each member has in their own organization to disseminate HYTUNNEL-CS and avoid overlaps. Continuous update.

Creation of **complete and up-to-date databases with journalists** from regional, national and international, generalist and specialized media.

Sharing among all the partners of the available **communication material** that can be used to disseminate the project: photographs, videos, documentation, graphics...

Determination of collective spokesperson and spokespersons in each of the participating organizations to report on the progress of the project.

5.1.2 External communication and public relations actions

Preparation of a **press kit** on the HYTUNNEL-CS project that collects the main information about the project and about the participating partners, as well as graphic material for use in publications and the Internet. It must be on the web and be downloadable.

Periodic preparation of **press releases** that record the milestones and progress of the project, as far as possible with audio, photo and video file treatment to accompany them. Among them, those corresponding to the following milestones:

- Stakeholders workshop.
- Project work meetings and conferences, press releases and publications and magazines collecting what was discussed in these meetings.
- Presentation of the HYTUNNEL-CS project at the FCH JU.
- Specific work meetings to transfer project experiences to interested entities.
- Seminar on research conclusions for use by emergency services.
- Results of experimental analytical and numerical studies of the HYTUNNEL-CS project.

Launch at the end of the project an explanatory video with the main results, experiments, messages and impacts obtained during the development of the same.

Preparation of a question and answer document (FAQ) about the project.

5.2 Communication Channels and Tools

The following are the communication channels that HYTUNNEL-CS will use to disseminate the knowledge, progress and results of the project:

5.2.1 HYTUNNEL-CS website

With a simple and already operational approach, it will be one of the main communication tools of the project. It will publish their progress, news, events and useful content. It will be maintained with contributions from all partners, who will have a link in their respective web pages to HYTUNNEL-CS to disseminate it and ensure its visibility.

The HYTUNNEL-CS website www.hytunnel.net will have two main roles:

- **Dissemination of information about the HYTUNNEL-CS Project:** This will contain information for different audiences, news and events listings, as well as a repository for project reports and other background information such as guidelines, methods, evaluation criteria or questionnaires. The website will be added to regularly to encourage return visits. The website will create links with other related projects in order to improve search ranking results, to help promote the project and engage with the wider community.
- **Dissemination of information to allow the project results implemented:** Content will form a toolkit of information and resources to facilitate the replication and exploitation of the project results. This includes technical reports and case studies that explain how HYTUNNEL-CS is structured, HYTUNNEL-CS achievements and the lessons learned, so others can benefit from HYTUNNEL-CS experience.

The overall responsibility of designing, updating and operating the website will be the one of Ulster and all partners will be asked to validate the website specifications and to contribute to its content development.

Planned dissemination actions beyond the completion of the HYTUNNEL-CS project are that the HYTUNNEL-CS website platform will be maintained for at least 2 years after the completion of the project, to serve as a reference for future EU replications of HYTUNNEL-CS concept.

The public deliverables are envisaged to be maintained for 2 years after the finalisation of HYTUNNEL-CS project. Its maintenance will be responsibility of Ulster as task manager and FHA as WP leader.

5.2.2 HYTUNNEL-CS Graphic Material

The HYTUNNEL-CS project logo has been developed to create a distinct brand:

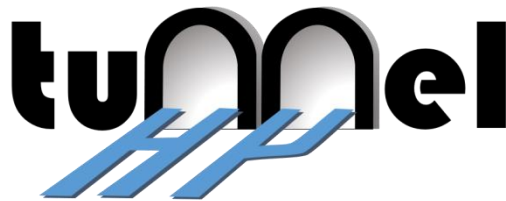


Figure 1. HYTUNNEL-CS Project Logo

The HYTUNNEL-CS logo will be used on all HYTUNNEL-CS communications (presentations, leaflets, posters, video, etc).

The HYTUNNEL-CS project logo, the FCH2JU logo and the EC logo must be present in all publications, presentations and equipment funded by the project:



Figure 2 Financing logos from EC and FCH2 JU

The HYTUNNEL-CS project logo, the FCH2JU logo and the EC are to be displayed in every document, presentation, communication tools, etc. funded by the project, this is a requirement from the project funders. There are no specific stipulations on logo size, HYTUNNEL-CS will take a common sense approach to make these sufficiently prominent and ensure the project funders are properly recognised for the significant support they have provided.

5.2.3 Events and work meetings.

Presentation of HYTUNNEL-CS in the main forums of the sector. Among them, with other European regions interested in results of the project, with SMEs and companies that show interest in hydrogen safety in tunnels.

5.2.4 Press

Main channel to reach the general public. Articles and press releases are included in local, regional and national newspapers, as well as a press kit that will help the informants who will publish content about HYTUNNEL-CS.

Press releases to announce important achievements will be coordinated with and delivered through the Steering Committee. The objective will be to get steady and significant coverage of HYTUNNEL-CS in national and international press and media throughout the duration of the project.

5.2.5 Leaflets and posters.

With the basic information, objectives and expected results of the project, they will be on the web to be downloaded and will serve to support the presentations that take place in fairs and congresses, as well as in the work meetings that are organized.

HYTUNNEL-CS will produce literature (eg flyers) for local dissemination to help inform the community groups and networks of the attributes and benefits of FCH technologies and its safety, with the aim of raise their awareness and levels of knowledge so that any negative preconceptions can be dispelled.

Further activities in this area will help address any potential areas of concern which may be raised by local stakeholders – individuals or community groups – on any aspects of the HYTUNNEL-CS project or ongoing activities.

5.2.6 Cooperation with projects and initiatives.

Since HYTUNNEL-CS is a project of the FCH2JU and also is aligned with the different existing national initiatives in Europe in relation to hydrogen mobility, working meetings will be organized with these entities and with relevant projects that are already underway in the EU as HyLaw, H2Me, etc.

The HYTUNNEL-CS will collaborate closely with the IA HySafe and the European Hydrogen Safety Panel; both promote and disseminate hydrogen safety culture, within and outside the FCH2 JU.

5.2.7 Social and professional networks

There will be no social media accounts set up specifically for the project, but partners should reference and advertise the project on their individual or organisation's social media accounts. Any social media posts regarding the project must be professional and appropriate to the situation; it must use the hash tag #HyTunnelCS and should provide a link to the project website.

The social network strategy will ensure the correct dissemination of HYTUNNEL-CS information and a coherent action with the general communication strategy, disseminating key messages, as well as interacting with audiences and profiles of interest.

5.2.8 Email Newsletters

Visitors to the HYTUNNEL-CS website will be offered the opportunity to sign up for a regular email newsletter which will give regular updates, develop HYTUNNEL-CS profile, and achieve wider stakeholder recognition. It will use examples from HYTUNNEL-CS activities, interviews with project 'champions', quotes from end users and will highlight HYTUNNEL-CS success and linked opportunities. This will also be distributed via a database of stakeholders and interested parties.

At this purpose a newsletter will be distributed at least **twice a year**. This is an electronic means to distribute project findings, news, and related events, workshops, seminars etc. and thus used to inform the interested audience with key findings and topics of project. The contents of the

newsletter will be based on the continuous progress of the project and will be prepared by FHA with partners contributions. WP leader (FHA) will edit and distribute the newsletter, which will be sent out electronically to key stakeholders.

5.2.9 Technical & Academic Conferences

European technical conferences and academic events will present opportunities to share HYTUNNEL-CS achievements with experts in the technical field, but also with potential wider stakeholders and investors. This will utilise presentations, posters, and papers.

Conferences with most relevance to HYTUNNEL-CS will be identified in a forward event planner (see Appendix 2) that enables suitable events to be identified, possible partner speakers to be identified and abstracts submitted.

Using posters at events such as the FCH JU Annual Stakeholder Forum may also be appropriate during the early stages of the HYTUNNEL-CS project, while work is in progress and also to engage people, gauge their reactions, and get one-to-one industry and stakeholder feedback on wider dissemination opportunities.

Ongoing Participation in forums after the demos will be planned, so that HYTUNNEL-CS partners can share the results obtained after the project at conferences, fairs and events related to the project targets.

5.2.10 Workshops

HYTUNNEL-CS will use opportunities to deliver workshops at events to gather feedback from participants or from experts on particular issues.

Moreover, a close cooperation will be established with relevant National and International projects ensuring networking activities and knowledge sharing.

6. Criteria for the Evaluations of Results

In order to have accurate information at all times and especially before each update of the DCAP on how the contemplated communication actions are being developed and how they are valued, it is proposed:

- Annual survey of anonymous satisfaction survey to the partners of the HYTUNNEL-CS project to know their assessment of the communication actions that are being developed.
- Systematized collection of feelings and opinions of the partners in each joint act that is organized.
- Coverage tracking and press clipping after each action with media.
- Monitoring of the number and typology of the internal and external communication actions undertaken: press releases, calls, managed interviews, information requests and their origins...

In order to track this, a table with all measurable indicators will be created and shared with all partners through the NextCloud platform.

The partners should be responsible for sharing and adding in the excel table all the news that comes out in the press (with links included), presentations that make the project, and all communications that are made.

These indicators will be completed in the different updates and among the actions will be, at least, the following:

- Initial version of the Awareness, Communication and Dissemination Plan of the HYTUNNEL-CS project and its updates.
- HYTUNNEL-CS summary execution report that reflects all the activities carried out.
- Press releases. At least 5 press releases, corresponding the most important milestones of the project.
- Work meetings and conferences, with at least 15 publications in journals.
- At least four specific work meetings to transfer experiences to interested entities.
- At least 3 publications for technical journals specialized in hydrogen and fuel cells.
- Maintenance and updating of the website with the collaboration of all project partners.
- Development of news boards describing the project on the HYTUNNEL-CS website, in the partners' websites and in their physical locations (screens or panels).
- Publication of information about the project on social networks with the collaboration of all partners in its dissemination through their respective profiles.
- Preparation of quarterly reports of social networks, monitoring the increase of followers and fans in each social network, mentions and comments, interactions and quality of the same

This Dissemination and Communication Plan will be periodically updated throughout the project to ensure that activities planned have a suitable spread of messages and audiences project awareness and maximise the chances of replication.

7. Conclusions

The present document constitutes the main guide to be followed for any communication activity related to the HYTUNNEL-CS project. It contains all the necessary information in relation to the target groups, how to reach them and which are the necessary tools to perform these tasks, as well as a selection of potential partners within Europe and conferences, congress and fairs that are suitable for the dissemination of the results of the Project.

The main target groups identified are the public regulator bodies, the hydrogen technology providers and manufacturers, the renewable energy stakeholders, DSOs, TSOs and of course the general public too. The ways of reaching these audiences are different for each of them, but in any case, the website of the project is meant to be the central point of information related to the project, as it will contain all the public documents generated during the project, as well as a 'News' section to gather all the important updates on the project. During the time of execution of the project, the partners will have to make use of their institutional accounts in social networks (Twitter, Facebook, LinkedIn, etc.) to promote the work performed in the project as well as the content promoted in HYTUNNEL-CS social Networks.

A set of graphic materials has been prepared to unify the corporate image of any work performed under HYTUNNEL-CS and to help the diffusion of the Project and its presence in fairs, congress, etc. These include the logo and a press kit, between other materials. Overall, they serve as the main support material to introduce the Project to both technical and non-technical audiences.

At the same time, a search between other European projects has resulted in the need of a selection of ongoing projects approaching any of the main topics addressed by HYTUNNEL-CS, in a more or less detailed level. Collaborations with some of the participants of these projects might ensue in the near future.

The report also includes an extensive list of many congresses and fairs to be celebrated in Europe during the time of execution of the Project that will serve as scenarios for the showcasing of the Project, as well as very good networking opportunities.

Finally, the list of planned workshops is introduced. These workshops are planned to be carried out close to the ending of the Project, targeting both the general public and more specific audiences that will have more interest in the Project results.

8. Annex 1: FCH Stakeholders classification

1. Production of hydrogen	1.1 Centralised production of hydrogen
	1.2 Localised production of hydrogen
2a. Stationary storage	2a. Gas, liquid, metal hydrides
2b. Long-term storage	2b. Salt caverns, aquifer, porous rock
3. Transport and distribution of hydrogen	3.1 Road transport; Cylinders and tube trailers
	3.2 H2 pipelines
4. Hydrogen as a fuel and refuelling infra for Mob	4.1 Fuel Origin
	4.2 Fuel Quality
	4.3 Fuel Measurement
	4.4 HRS and Hydrogen delivered to stations
5. Vehicles	5.1 Cars, taxis, buses, trolleybuses, trucks
	5.2 Motorcycles (and bikes) and quadricycles
	5.3 Material handling
	5.4 Boat/Ships
	5.5 Trains
	5.6 Aviation (?)
6. PtH2 and electricity grid issues	6. Connection of the E-grid to the electrolyser.
7. Gas grid issues	7.1 Injection of Hydrogen at transmission level
	7.2 Injection of Hydrogen at distribution level
	7.3 Methanisation and injection of SNG at transmission / distribution level
8. Stationary power	8.1 Residential stationary FC (micro-CHP)
	8.2 Commercial FC (>5kW up to several hundreds of kW)
	8.3 Industrial large scale FC (1MW and above)
	8.4 FC back-up power
9. Introduction of green hydrogen in industry	9.1 Industrial Feedstock
	9.2 Industrial Fuel

9. Annex 2: Event Plan for Maximising Impact of Dissemination & Communication

A table of forthcoming events/activities has been developed as part of HYTUNNEL-CS dissemination plans. This format concentrates on events over the next 12 months, but includes key dates out to the end of HYTUNNEL-CS project and for 12-18 months afterwards.

With the increasing level of activity in hydrogen and fuel cells for clean transport, energy storage, and clean embedded generation this planner will be an essential tool to keep on top of all relevant events, to avoid potential diary conflicts, and to identify availability of the most suitable HYTUNNEL-CS partners for participation in dissemination and exploitation activities. Most of these events will be listed on the HYTUNNEL-CS website, which will help to further raise awareness of the HYTUNNEL-CS project and its outcomes.

Name	Place	Date
Energy Security and Chemical Engineering Congress (ESChE) 2019	Kuala Lumpur- Malaysia	17-19 July 2019
International Conference on Sustainable Energy and Green Technology 2019	Bangkok- Thailand	11-14 December 2019
11th International Exergy, Energy, and Environment Symposium	Chennai-India	14-18 July 2019
Hannover Messe	Hannover - Germany	20-24 April, 2020
IBERCONAPPICE 2019	Madrid -Spain	23 -25 October 2019
WHEC2020	Istanbul- Turkey	5-9 July, 2020
8th International Conference on Hydrogen and Fuel Cell (IHFC2019)	Mumbai-India	8-10 December 2019
World Tunnel Congress	TBC	TBC
WHTC2021	TBC	TBC
EHEC2020	TBC	TBC

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