

**JASPERS Networking Platform**  
**Webinar on**  
**Sustainable Underground Infrastructures Development**  
**Methods, tools and applications**

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**Date:** 5<sup>th</sup> October 2023, from 13:30 to 17:30 CET

**Location:** Virtual meeting - WebEx Events

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The JASPERS Networking Platform was created to complement JASPERS project advisory operations by implementing knowledge sharing and capacity building activities, as well as fostering dissemination of good practices and exchange of experiences among all EU member states, pre-accession countries and other JASPERS Stakeholders.

More information is available at [www.jaspersnetwork.org](http://www.jaspersnetwork.org).

### Description of the Webinar

Tunnels are common elements of transport infrastructure projects in most EU member states and the benefits are many: they ensure the passage of physical obstacles such as mountains, they reduce travel distances and travel time, they can alleviate surface congestion, they can contribute to climate change mitigation and -adaptation and they can improve traffic flow, leading to faster and more reliable transportation.

Further, tunnels are expensive and complex structures established in (very often) environmentally and geologically complex and vulnerable locations.

Consequently, while tunnels can reduce some types of environmental impacts, they also have the potential to create other types of environmental impact.

This webinar address – with a water and transport infrastructure focus:

- EU environmental legislation
- Environmental consequences of tunnelling
- The Hydrogeological Excavation Code (HEC) for identifying- and improving technical and environmental aspects of tunnel design, construction, and operation.

Early identification of potential environmental impacts and corresponding mitigation in tunnel projects, can contribute to reduce the risks of environmental damage as well as save time and resources. Consequently, this promotes economic and environmental feasibility as well as public consent.

Tunnels, by nature, impact on water bodies and, as a large proportion of NATURA 2000 sites include water dependent elements, an early attention to water bodies also facilitates attention to possible hydraulic links between projects impact zone and NATURA 2000 sites.

The Hydrogeological Excavation Code (HEC) is a series of investigative tools aimed at promoting timely and environmentally sustainable tunnel project development.

The application of the HEC can provide preventive measures in order to avoid issues such as project delay, cost increase, negative public opinion, economic and environmental irreversible damages etc.

The webinar aims to raise the awareness of stakeholders such as authorities and project promoters involved in underground tunnelling projects, on topics such as:

- General aspects related to developing tunnel projects
- The EU environmental directives and their significance in the planning, design and construction of tunnels (including the application of JASPERS' checklist tool on the Water Framework Directive).
- Ex-ante project risk analysis with focus on hydrogeological risk, and importance of project specific and geotechnical data.
- The Hydrogeological Excavation Code (HEC) and the use of HEC in tunnel design, in environmental impact assessment and in the identification of mitigation measures.
- Case studies including pre-submitted contributions from participants.

The webinar will be held in English and participants will have the chance to join Q&A sessions.

Participants are encouraged to submit questions and to share their own tunnel experiences related to the workshop topics when filling the pre-event questionnaire included in the online registration form. Received questions will be included in the debates and Q&A sessions in the webinar.

#### FINAL AGENDA

13:30 – 13:35	<b>Welcome and introduction</b> Massimo Marra, Principal Advisor, Capacity Building Coordinator, JASPERS
13:35 – 13:45	<b>Opening remarks</b> Inge Vermeersch, Head of Division, Regional Transport Division, JASPERS and Jeroen van Oel, DG REGIO
13:45 – 13:55	<b>Tunnels and water – a short introduction</b> Lorenzo Martelli, Senior Transport Engineer, JASPERS
13:55 – 14:20	<b>Tunnels and the environment - Impact assessments (EU environmental legislation)</b> Lise Præstegaard, Senior Environment Specialist, JASPERS
14:20 – 14:50	<b>A water focus – the Water Framework Directive and River Basin Management Plans</b> Lise Præstegaard, Senior Environment Specialist, JASPERS
14:50 – 15:00	<b>Coffee Break</b>
15:00 – 15:20	<b>The HEC – introduction</b> Lorenzo Martelli, Senior Transport Engineer, JASPERS
15:20 – 15:50	<b>HEC methods - data collection, interpretation, presentation</b> Lorenzo Martelli, Senior Transport Engineer, JASPERS
15:50 – 16:20	<b>Using HEC – results, mitigation, compensation</b> Lorenzo Martelli & Lise Præstegaard, Senior Transport Engineer, JASPERS / Senior Environment Specialist, JASPERS
16:20 – 17.20	<b>Example(s) of implementation of HEC is tunnelling project(s)</b> Mr. Lubos Duric, Director, Ministry of Transport, Slovakia and Mr. Massimo Coli, Member of the Scientific-Technical Committee of ASPI (Italian Motorway Company) and Ministry of Transport, Italy.
	<b>Final Q &amp; A</b>
17:20 – 17:30	<b>Closing remarks</b> Inge Vermeersch, Head of Division, Regional Transport Division

Note: all session include. a 5 to 10 minutes Q/A session at the end of each session

For any further information this event and on the activities of the JASPERS Networking Platform please contact us at [jaspersnetwork@eib.org](mailto:jaspersnetwork@eib.org) or visit our website [www.jaspersnetwork.org](http://www.jaspersnetwork.org)

## Recommended Reading

Controlling water risks in tunnels: the Hydrogeological Excavation Code methodology  
<https://jaspers.eib.org/publications/Hydrogeological%20Excavation%20Codes%20-%20JASPERS%20Roads%20brochure%202018%20FINAL.pdf>

Hydrogeological Excavation Code, a value added methodology for water safeguarding  
[https://www.researchgate.net/publication/346865586\\_Hydrogeological\\_Excavation\\_Code\\_a\\_value\\_added\\_methodology\\_for\\_water\\_safeguarding](https://www.researchgate.net/publication/346865586_Hydrogeological_Excavation_Code_a_value_added_methodology_for_water_safeguarding)

Water Framework Directive, Checklist tool by JASPERS (new version under publication)  
<https://jaspers.eib.org/LibraryNP/JASPERS%20Working%20Papers/Water%20Framework%20Directive%20JASPERS%20Checklist%20tool.pdf>

Water Framework Directive  
[https://environment.ec.europa.eu/topics/water/water-framework-directive\\_en](https://environment.ec.europa.eu/topics/water/water-framework-directive_en)

Habitat Directive  
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01992L0043-20130701&from=EN>

EIA Directive  
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02011L0092-20140515>

Science Direct article – review article - tunnels in karst areas (requires institutional log on)  
[A review of the effects of tunnel excavation on the hydrology, ecology, and environment in karst areas: Current status, challenges, and perspectives - ScienceDirect \(can be forwarded to the interested participants after the Webinar\)](#)