Sustainable Tunnelling

Objective: To provide an introduction to the environmental impacts of tunnel construction and the way to adopt a more eco-friendly and sustainable approach to resource consumption. It will also outline the specific issues of the management of excavated material and give more details about methodologies and tools that can be used to assess environmental impacts, especially LCA (Life Cycle Assessment),

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Day 1

Session 1: General overview of sustainable tunnelling and environmental impacts
09:00-09:15 Welcome and opening
09:15-10:00 Introduction to sustainable development and motivation for underground space use
10:00-10:30 Efficient tunnelling concepts and levers for action

10:30-11:00 Coffee Break

11:00-11:30 Main environmental impacts of tunnel construction
11:30-12:30 Qualitative and quantitative methods of impact assessment
12:30-13:00 Questions

13:00-14:00 Lunch

Session 2: The environmental issues of excavated material
14:00-14:30 European and national policies regarding extracted material from tunnelling
14:30-15:00 Industrial classification of minerals – End users requirements
15:00-15:30 Chemical and physical characterization of excavated material

15:30-16:00 Coffee Break

16:00-16:30 Excavation material processing
16:30-17:00 Case study 1: Examples of material processing
17:00-17:30 Case study 2: Lessons learned from experiences
17:30-18:00 Questions and open discussion

Day 2

Session 3: Sustainability - LCA (Life Cycle Assessment) applied to tunnel
09:00-09:45 Presentation of LCA method : general principle and application fields
09:45-10:30 Implementing LCA: main steps, data collection, choice of environmental databases and calculation of impact indicators

10:30-11:00 Coffee Break

11:00-11:45 Case studies in several sectors (building industry, roads and railways, bridges,..)
11:45-12:30 Application to tunnel: Part 1: Definition of objective, scope and functional unit
12:30-13:00 Application to tunnel: Part 2: Specificities of the life cycle of a tunnel

13:00-14:00 Lunch

Session 4 : Environmental Impacts of the construction and operation phases
14:00-14:30 LCA of construction materials and works
14:30-15:30 LCA of operation

15:30-16:00 Coffee Break

16:00-16:30 Case studies
16:30-17:00 Tunnel contribution in the global linear infrastructure assessment
17:00-17:30 Open discussion and closure