

## **Transforming Tunnel Construction in India: Advances, Obstacles, and Future Directions**

### **A brief write-up**

Drawing from the speaker's extensive four-decade experience, the lecture explores the dynamic world of tunnelling and underground construction in India. It traces the evolution from ancient engineering feats to modern marvels, highlighting India's infrastructural development and the challenges faced, particularly in the Himalayas. The Silkyara tunnel collapse is emphasized as a stark reminder of the inherent risks and complexities, underscoring the need for technological and methodological advancements for safety and efficiency.

The lecture discusses how tunnelling in India has adapted over centuries, noting a post-independence shift towards more ambitious projects. It acknowledges milestones like Tunnel Boring Machines (TBMs) and the New Austrian Tunnelling Method (NATM) for their contributions to efficiency and safety, while also pointing out obstacles in consistent adoption due to varied awareness, budget constraints, and a shortage of skilled professionals.

Furthermore, it addresses the necessity for comprehensive geological surveys, risk assessments, and international best practices to navigate institutional and regulatory hurdles. The lecture stresses the importance of research and development (R&D), academic-industry collaboration, and public-private partnerships in fostering innovation, safety, and sustainability.

In conclusion, it envisions a transformative future for Indian tunnelling, driven by a collaborative effort across government, industry, academia, and the workforce, emphasizing the continuous embrace of technological advancements, stringent safety standards, and sustainable practices for India to become a global leader in tunnelling and underground construction.