



Landslide Zones Successfully Treated in Uttarakhand

Why in News?

According to the [Border Roads Organisation \(BRO\)](#), the **rock bolt technology** is successfully treating **active landslide zones** in the hilly areas of Uttarakhand.

Key Points

- **Landslide Challenges in Uttarakhand:**
 - **Landslides** occur regularly in the hill areas, especially during the [monsoon season](#), causing roadblocks and inconveniences for **Chardham pilgrims**.
 - These landslides often **result in loss of lives** and have long been a major concern.
 - Persistent landslide zones on the [Gangotri and Yamunotri highways](#) have posed significant risks for years.
- **Adoption of Australian Rock Bolt Technology:**
 - The BRO is using **Australian rock bolt technology** to **treat active landslide zones at Raturisera and Bandarkot** on the Gangotri highway in Uttarkashi district.
 - Previously, the technology was **successfully applied at Nalupani and Chungi Badethi landslide zones**.
 - The technology has been instrumental in treating landslide zones active for years as part of the [Chardham road-widening project](#).
- **Effectiveness and Techniques:**
 - The technology has been 90% effective in preventing landslides.
 - It **involves soil nailing to stabilize loose soil and rock bolting in bedrock** to strengthen vulnerable areas.

Border Roads Organisation (BRO)

- Established in 1960 with only two projects, **Project Tusker (now Vartak) in the East and Project Beacon in North India**, the BRO has grown to become a vibrant organisation with 18 projects operating in 11 States and three Union Territories.
 - It is now recognised as the leading infrastructure construction agency in high-altitude and difficult snow-bound areas.
- In 2023-24, the BRO completed 125 infrastructure projects, including the construction of [the Sela Tunnel in Arunachal Pradesh on Balipara-Chardwar-Tawang Road](#).
 - The BRO will soon start construction on **the 4.10-km long Shinkun La Tunnel, which will become the world's highest tunnel at 15,800 ft** once completed, bypassing **China's Mila Tunnel at 15,590 ft**.
- The BRO is an Indian executive force under the **Ministry of Defence**, to secure India's borders and develop infrastructure in remote areas of the north and north-eastern states.
- It operates under the **Border Roads Development Board (BRDB)** and is responsible for road networks in border areas and neighbouring countries.
 - The **motto of BRO is "Shramena Sarvam Sadhyam"**, which translates to **"Everything is achievable through hard work."**

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