

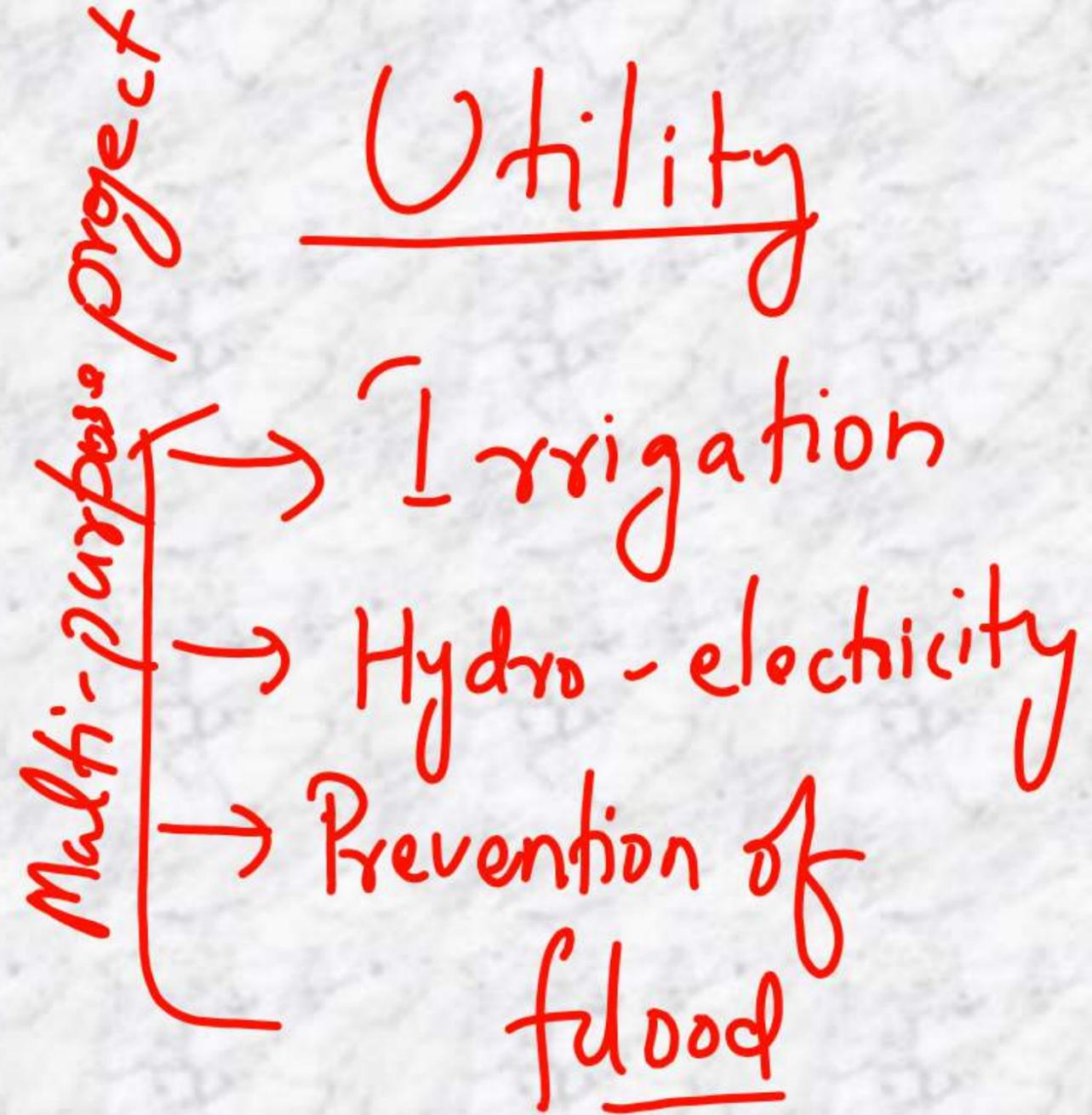


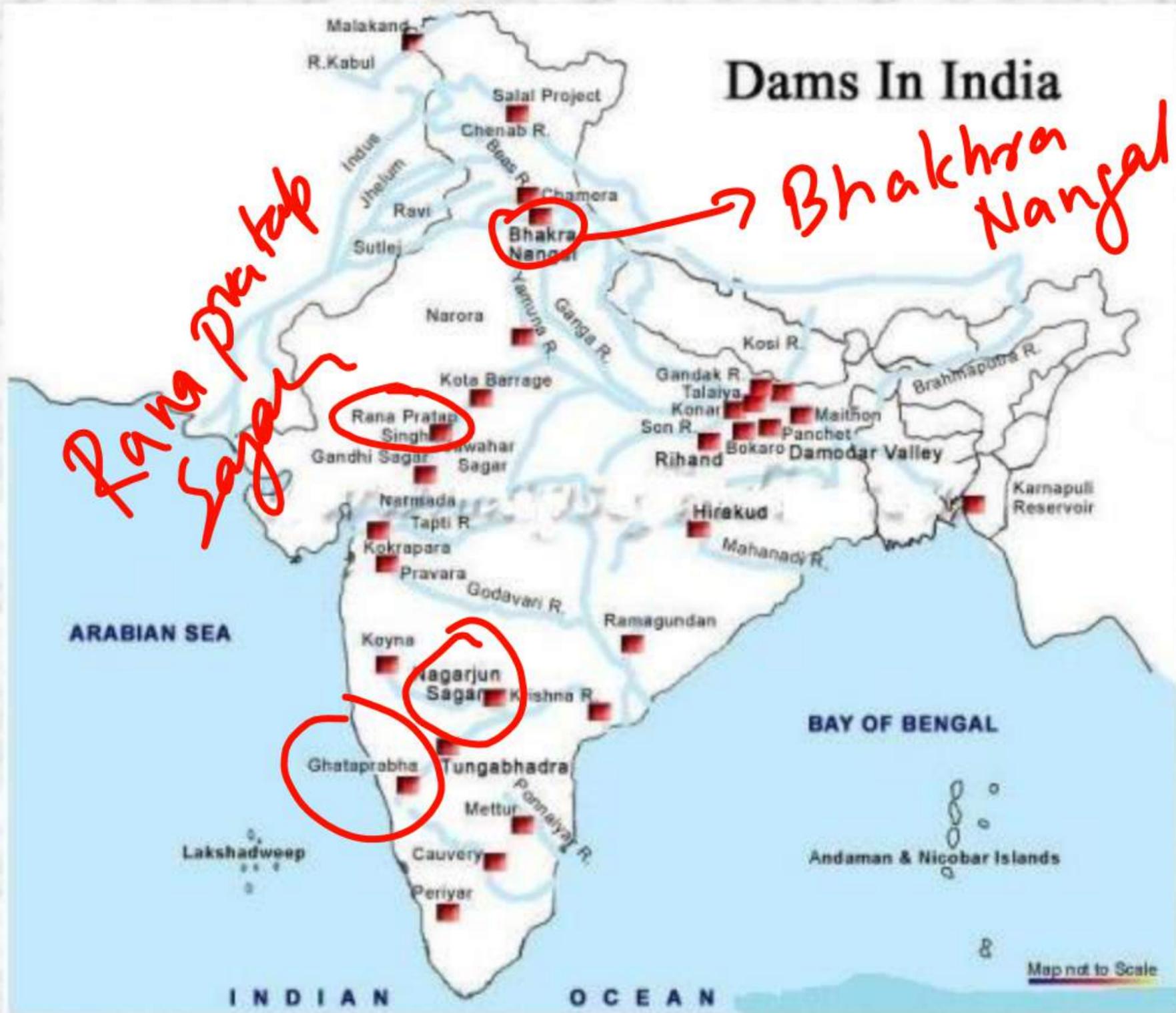
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Dams in India

- India has almost 6,000 large dams and about 80% of them are more than 25 years old and carry safety risks. A new Dam Safety Act (DSA) was passed in late 2021
- In October 2023, a glacial lake outburst flood (GLOF) in North Sikkim's South Lhonak Lake washed away one of the biggest hydropower projects in India, the Teesta III dam at Chungthang
- According to a parliamentary panel, there are 234 functional large dams in India that are more than 100 years old, some of them over 300 years old.

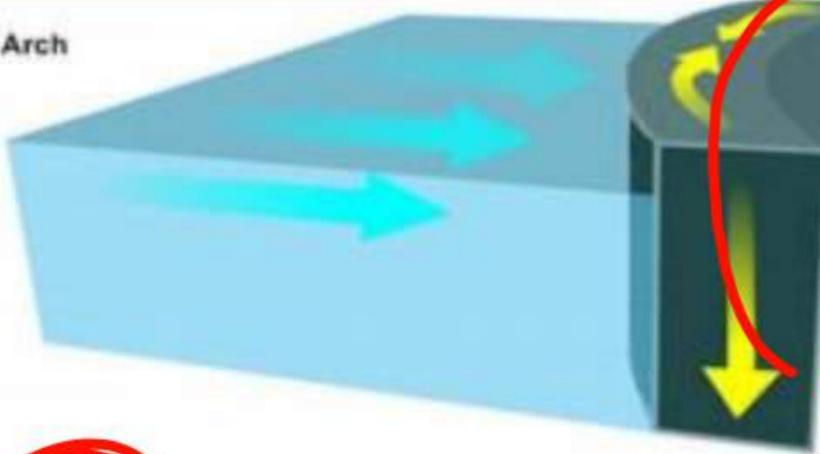




Indian Mapping
Reservoirs
Rivers

Types Of Dams And Different Components

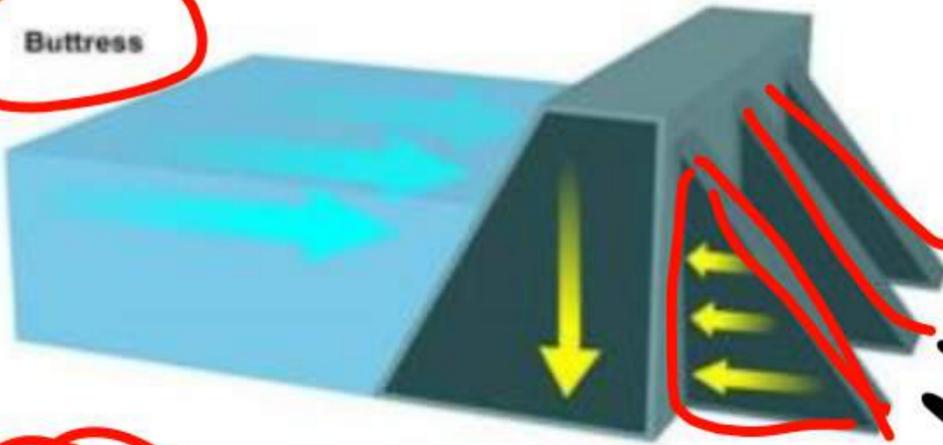
Arch



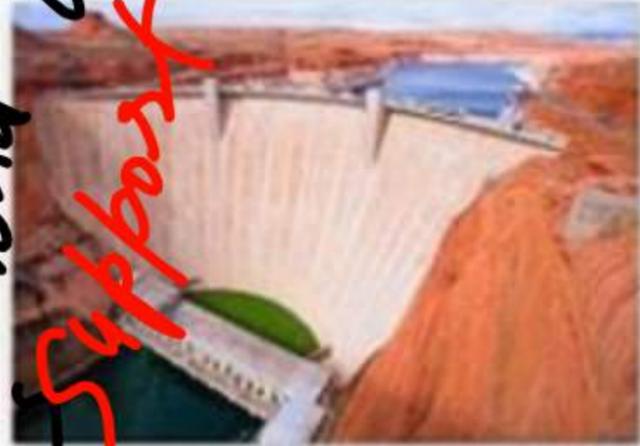
Distribution of Pressure



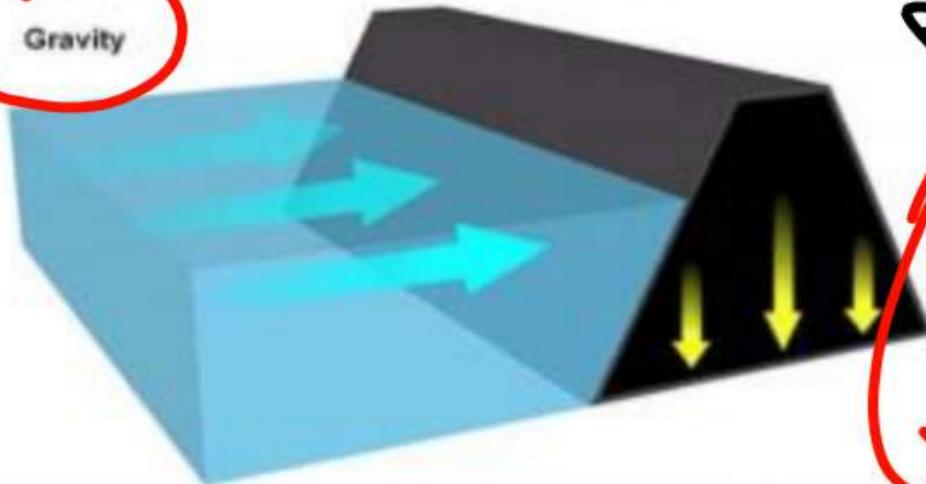
Buttress



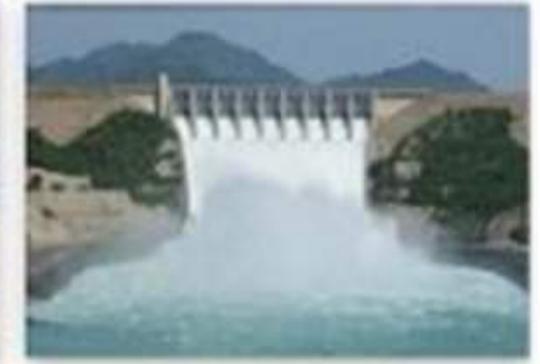
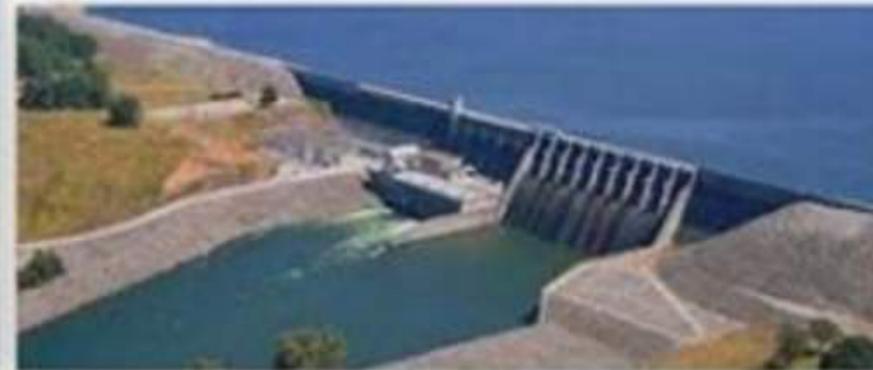
Addition of Support



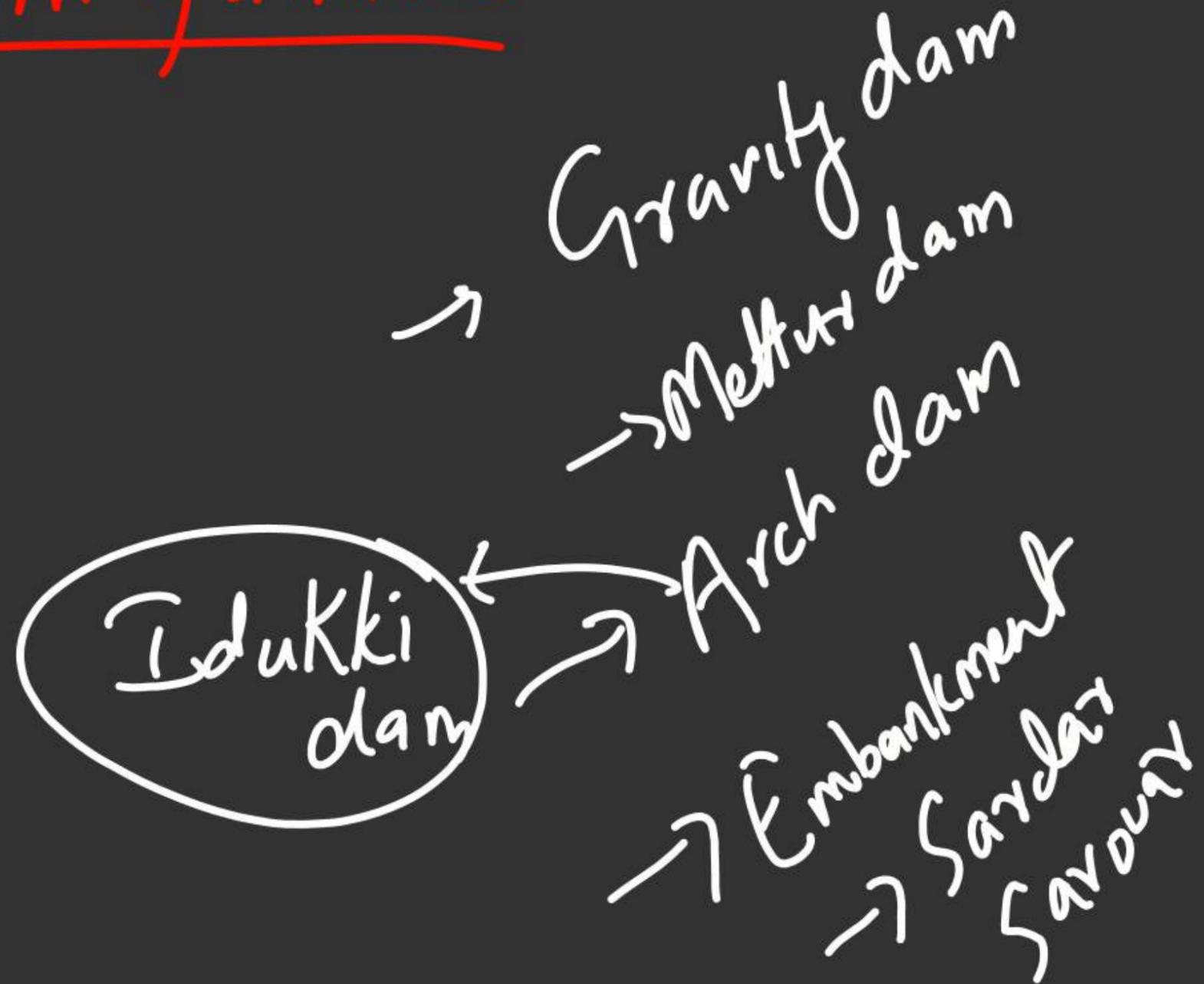
Gravity



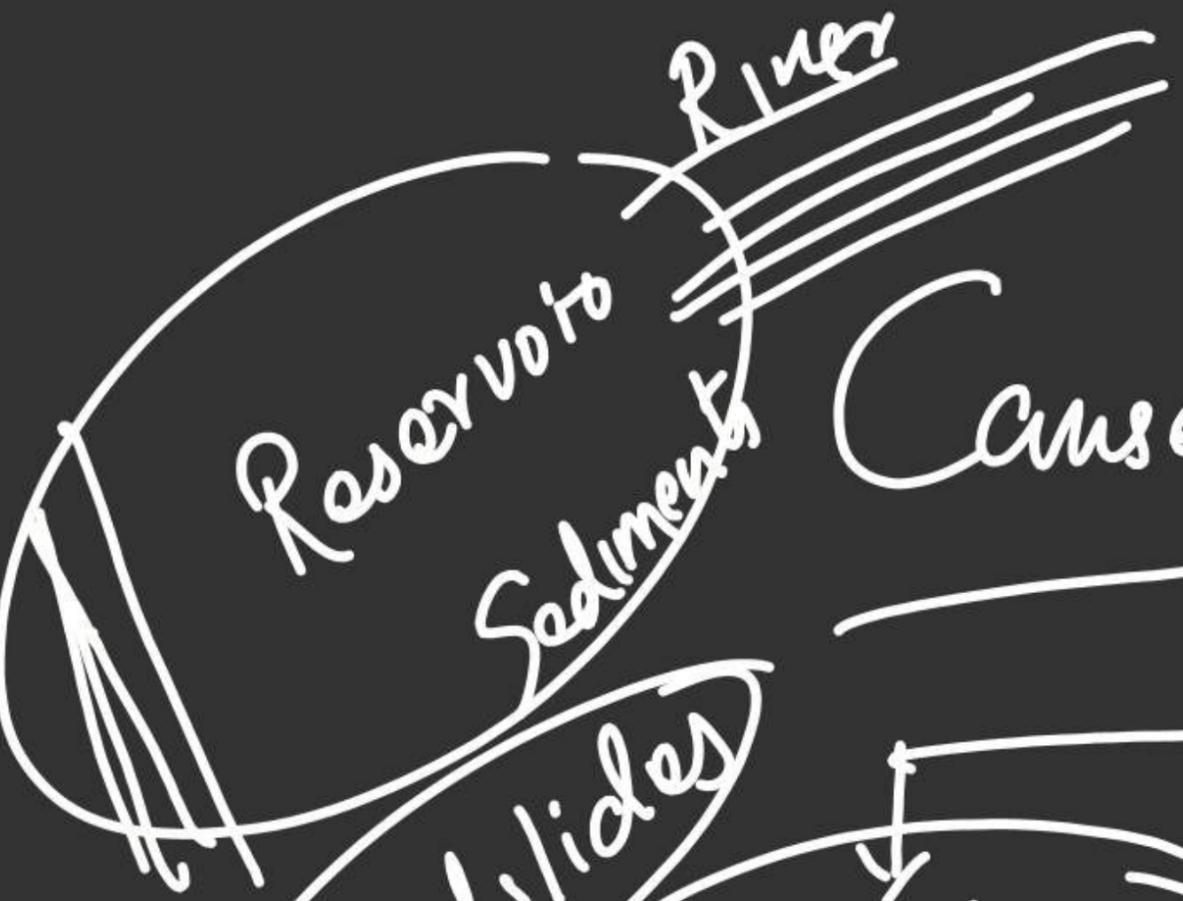
heavy



Dam failure



Causes of Dam failure



Landslides

Natural

Glacial
outburst
flood

Flood → 1979

Earthquake

Macchu
Dam failure
Gujarat

Koyna, Maharashtra
Dam → 1967

Human factors.

Human factors

→ Design issues / Structural Issues.

→ Malprabha dam - Karnataka - 2000s

→ Maintenance

Structural Issues.

Siltation

Dredging

Malprabha dam

Embankment dams

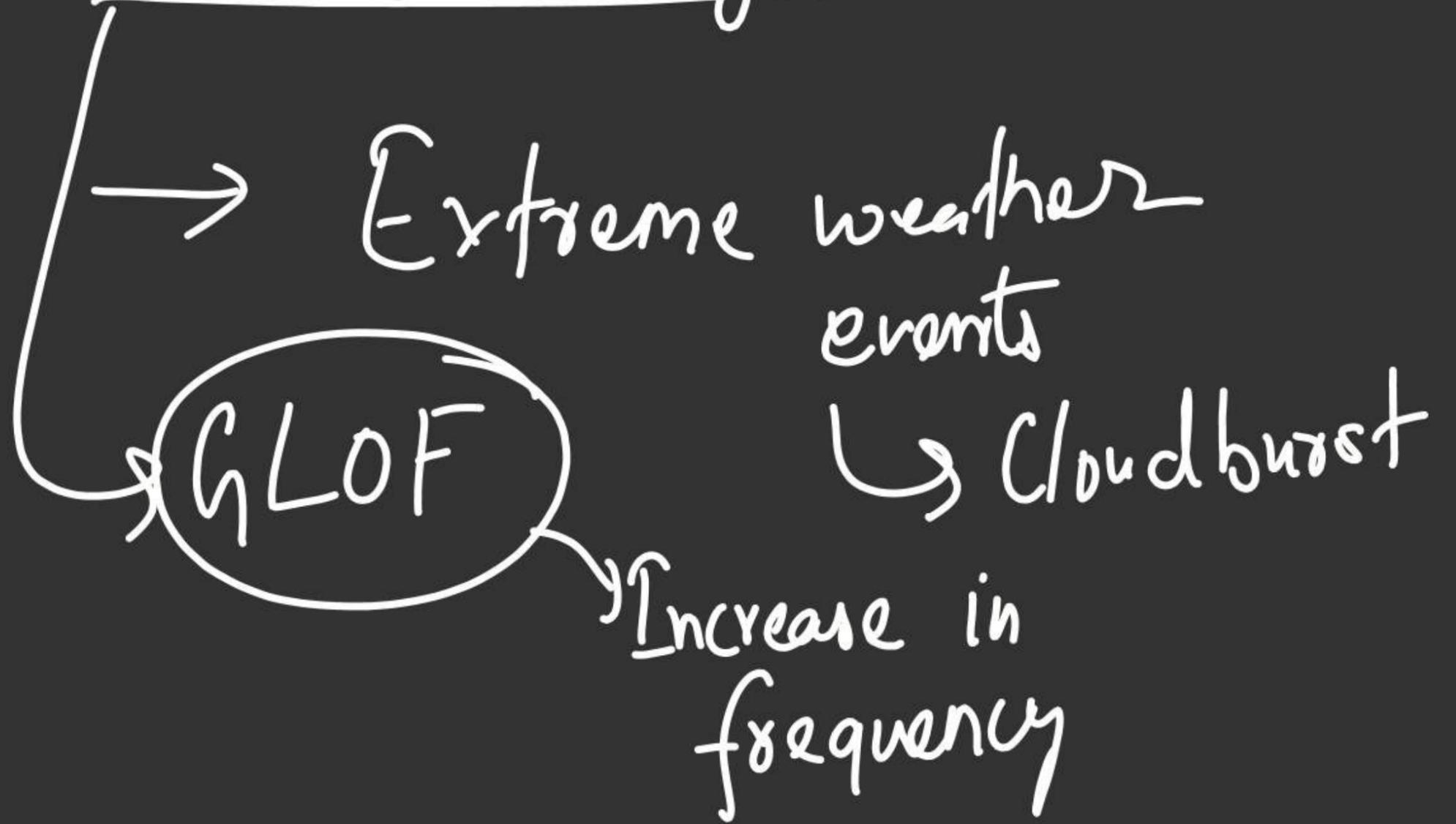
→ Sedimentation

✓
→ deforestation/mining.

✓ ✓ → Tehri dam - Uttarakhand.



Climate change



Impact

→ Loss of life and property.

→ Environmental damage.

→ Economic losses → plants/animal.

→ Economic losses → Tourism

↓
Irrigation

↳ hydropower generation.

↳ Agriculture.

→ Disruption of Common Services.

Adaptation and mitigation

→ Assessment of Risk

→ Advance monitoring and surveillance
↳ Advance tools for structural Integrity measurement.

→ Modernization and Retrofitting

80% dams are 25 yrs old.

→ Community engagement
and participation

→ Capacity building and training.

Replacement

Dam failure, Forest fire, landslides.

→ The Himalayan landscape have become extremely fragile due to excessive human interference and have become a hotspot of landslides. Enume

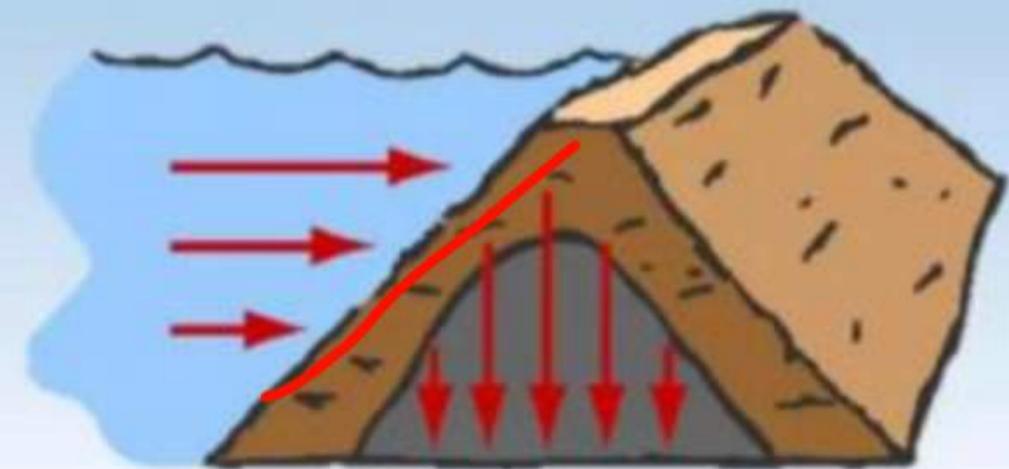
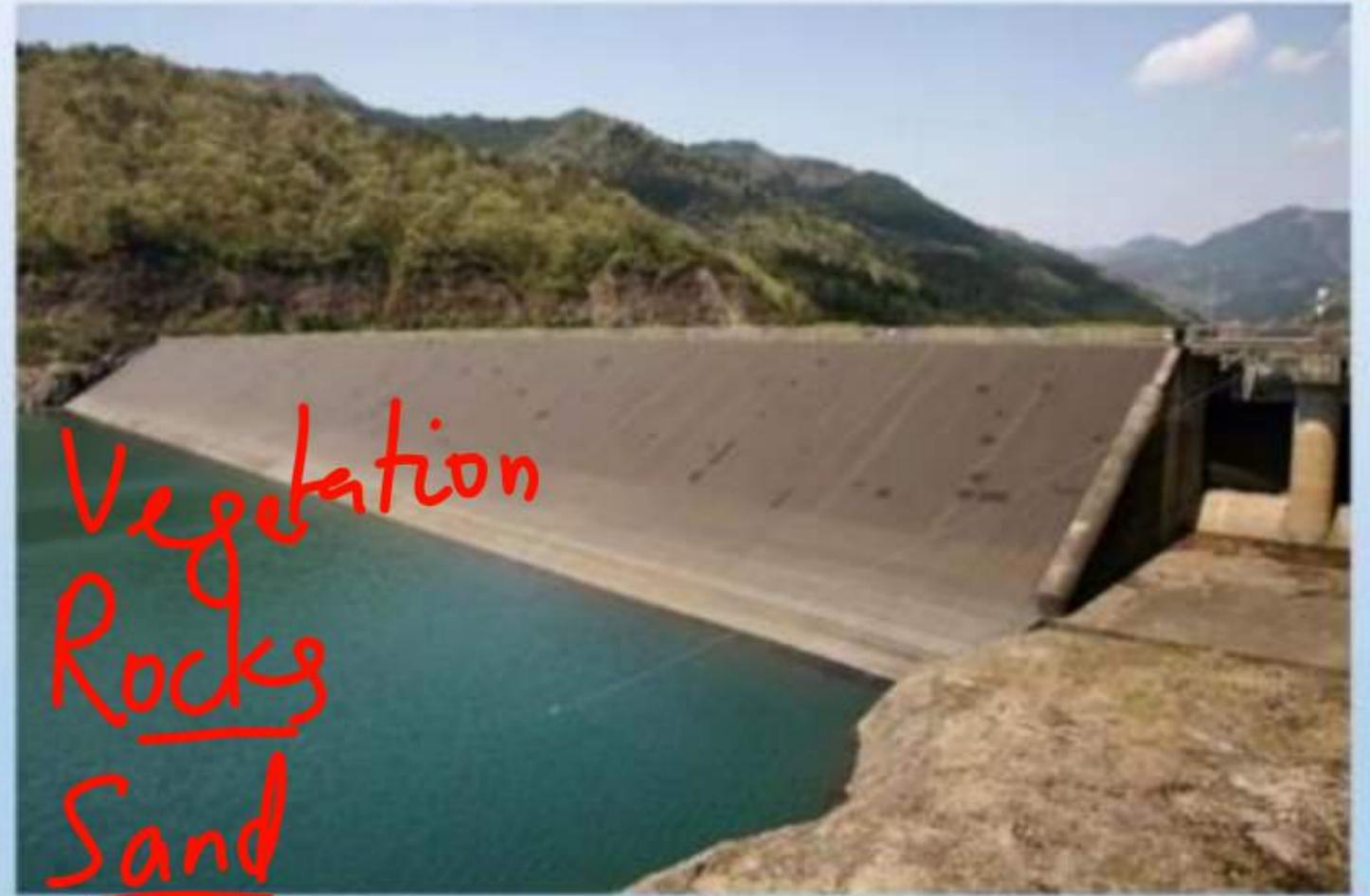
rate the reasons behind landslides in

Western Himalayan states with recent examples. Also suggest the remedial measures.

250 words

Embankment Dams

- They are massive dams made of earth and rock.
- Like gravity dams, embankment dams rely on their heavy weight to resist the force of the water.
- But embankment dams are also armed with a dense, waterproof core that prevents water from seeping through the structure.
- Embankment dams are of two main types, rock-fill and earth-fill dams.



UPSC



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THANKS FOR WATCHING

