

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 3829
TO BE ANSWERED ON WEDNESDAY, 18TH DECEMBER, 2024**

PROTECTION OF VARKALA CLIFF IN KERALA

3829. ADV. ADOOR PRAKASH:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the iconic Varkala cliff in Kerala is under the threat of destruction, if so, the details thereof;
- (b) whether the pilot study conducted by the National Centre for Earth Science Studies (NCESS) on cliff erosion in Varkala beach in Kerala has been completed;
- (c) if so, the findings thereof and the follow up action taken thereon;
- (d) whether the Government proposes to take urgent measures for protection of said cliff; and
- (e) if so, the details thereof?

ANSWER

THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

- (a) Yes. Geological aspects and anthropogenic factors have contributed to the instability of the Varkala Coastal Cliff.
- (b) to (c) Yes. The pilot study on “cliff erosion in Varkala Beach, Kerala” jointly carried out by National Centre for Earth Science Studies (NCESS), Thiruvananthapuram an autonomous institute under Ministry of Earth Sciences, and National Centre for Coastal Research (NCCR), Chennai, an attached office under Ministry of Earth Sciences, as per the request of Vision Varkala Infrastructure Development Corporation Ltd. (VVIDC Ltd.), a Government of Kerala undertaking has been completed in 2023.

NCESS has completed the study and submitted the report on Varkala Cliff Stability, entitled “A Geoscientific Appraisal on the Stability of the Varkala Cliff” to Govt. of Kerala in October 2024. In this report the geological aspects and other factors that have contributed to the instability of the Varkala Coastal Cliff are discussed in detail along with the recommendations for stabilising and preserving the cliff face. The main findings of the study are given below:

1. In the northern sector (Odayam to northern edge of Papanasam valley), rock failure and slumping/sliding are most common. Unscientific constructions and anthropogenic interventions are severe.
2. The middle sector (Papanasam Valley) has experienced rapid widening due to unscientific human interventions in the last 3-4 decades.

3. In the southern sector (south of Papanasam Valley to Aliyirakkam), fissures, cracks, caving and piping are noticed. Regulatory measures are to be adopted to reduce the overburden pressure on the cliff top including limiting hard permanent structures within 50-100 m buffer zone. All unauthorised activities that are detrimental to cliff stability (eg; sand mining/quarrying, construction of pathways, etc.) to be prohibited. Vehicular movements can be allowed only in the 50-100m buffer zone. Appropriate cliff strengthening measures to prevent caving at locations on the cliff face where groundwater seepages are observed to be installed. Coastal regulatory zonation (CRZ) regulations are to be strictly implemented. Maintenance and management of the cliff and its aesthetics for preserving it as a geological monument may be entrusted with a consortium of geoscientists, and civil engineers.

(d) to (e) NCESS has submitted the report on Varkala Cliff Stability to Govt. of Kerala in October 2024 with specific recommendations for stabilising and preserving the cliff face.
