GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

LOK SABHA
UNSTARRED QUESTION NO. 1067
TO BE ANSWERED ON 10.02.2025

Steps to Check Coastal Erosion

1067. SHRI SRIBHARAT MATHUKUMILLI:

Will the MINISTER OF ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

(a) the details of coastal erosion along the coastal regions of Andhra Pradesh and Konkan Coast States, including specific data on the extent of land loss and the areas most affected;
(b) whether any research/study has been conducted on the potential impacts of this coastal erosion on the local economy, particularly the fishing communities and coastal habitats, if so, the details thereof;
(c) whether any proposals for the restoration of coastal areas, either through externally aided projects or requests for funds from the Central Government, have been received from the Andhra Pradesh State Government and if so, the details thereof;
(d) the details of the Integrated Coastal Zone Management Project (ICZMP) implemented by the Government in Andhra Pradesh;
(e) the current status of erosion between Visakhapatnam and Bheemunipatnam beaches and the steps being taken to restore and protect this coastline, including specific initiatives planned or underway; and
(f) the measures taken by the Government to control Coastal Erosion in the country?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

(SHRI KIRTI VARDHAN SINGH)

(a)&(b) The National Centre for Coastal Research (NCCR), an attached office of the Ministry of Earth Sciences (MoES), has been monitoring shoreline erosion along the Indian coast since 1990 using remote sensing data and GIS mapping techniques. Based on the results of the study, the **Annexure** provides detailed information on coastal erosion in the regions of Andhra Pradesh and the Konkan Coast States, including specific data on the extent of land loss and the most affected area. NCCR has conducted studies and prepared "Shoreline Management Plan (SMP)" for management of erosion along the coast of Andhra Pradesh with aim to address shoreline concerns and erosion issues in a more integrated, sustainable and strategic manner.

(c) The 15th Finance Commission has recommended Rs. 1000 crore for resettlement of displaced people affected by erosion for 2021- 26 under National Disaster Response Fund (NDRF). In addition, Rs. 1500 crore is earmarked for mitigation measures to prevent river and coastal

erosion for the same period under National Disaster Mitigation Fund (NDMF). For both funds (NDRF and NDMF), State Governments will have to avail resources on a cost-sharing basis. The proposal submitted by the Government of Andhra Pradesh for funding under National Disaster Mitigation Fund (NDMF) is as follows:

- Detailed Project Report (DPR) with an amount of Rs.323.00 Crore for developing an integrated coastal protection strategy from Kakinada City to Uppada by summarizing and integrating the site-specific works like construction of groyne, sea wall, deflecting wall, Bio-shield etc.

- DPR with an amount of Rs.200.00 Crore for Control of coastal erosion through structural and non-structural mitigation measures, restoration of ecosystems, and enhancement of community resilience in the Visakhapatnam Metropolitan Development Authority (VMRDA) region.

(d) One of the component of Integrated Coastal Zone Management Project (ICZMP) deals with the mapping of hazard lines, eco-sensitive areas and sediment cells for the entire Indian coastline, including that of Andhra Pradesh. These data are used to strengthen the shoreline, protect biodiversity, manage livelihoods and resources, and regulate development activities in coastal Andhra Pradesh.

(e) A study by the NCCR has revealed that the coastal stretch from Visakhapatnam to Bheemunipatnam is approximately 29 km long. Of this, 42.6% is in stable condition, while 34.5% is experiencing erosion and 22.9% is undergoing accretion. Along the eroding coastline, Visakhapatnam Port Authority conducts beach nourishment activities every year by depositing dredged material on the northern coast to restore and protect the beach from erosion.

(f) The Government of India is committed to taking proactive steps in combating sea erosion and protection of India's coastal areas. Some of the important measures undertaken in this regard are as follows:

- MoEFCC has issued Coastal Regulation Zone (CRZ) Notifications with a view to conserve and protect the unique environment of coastal stretches and marine areas, besides livelihood security to the fisher communities and other local communities in the coastal areas and to promote sustainable development based on scientific principles taking into account the dangers of natural hazards, sea level rise due to global warming.
- As per CRZ Notification, 2019, measures for control of erosion are permissible activity in CRZ areas. The Ministry has issued directions to Coastal States/UTs, for incorporation of Shoreline Management Plan in CZMP. NCSCM, an organization under Ministry of Environment Forest & Climate Change (MoEFCC) and NCCR is providing technical support to coastal States for implementation of coastal protection measures at vulnerable stretches and also involved in the preparation of Shoreline Management Plans.
- MoEFCC has delineated the hazard line for the entire coast of the country. The hazard line is used by agencies in Coastal States as a tool for Disaster Management including planning of adaptive and mitigation measures. The hazard line features in the Coastal Zone Management Plan (CZMP) of the coastal States/Union territories and approved by the MoEFCC.

- Coastal Protection Projects are planned & executed by respective Maritime States/ UTs. Central Government's role is largely advisory, technical support and catalytic in nature. These projects are generally funded by States/ UTs from their own fund or from multilateral funding or through Central Assistance. In some cases, Government of India has facilitated multilateral funding to States/ UTs in tackling the coastal erosion. The total expenditure incurred by maritime States/ UTs for protection of coastal erosion is Rs 2641.39 Cr in coastline length of 227.965 Km in last 10 years.
- "Coastal Management Information System (CMIS)" under Central Sector Scheme namely "Development of Water Resources Information System" of Ministry of Jal Shakti has been developed considering the importance of data on coastal processes towards coastal protection measures. Coastal data collected through CMIS can be used in planning, design, construction and maintenance of site specific coastal protection structures at vulnerable Coastal stretches. Establishment of three sites under CMIS in the State of Kerala, Tamil Nadu and UT of Puducherry has been completed.
- In addition, Indian National Centre for Ocean Information Services (INCOIS), MoES has prepared the Coastal Vulnerability Index (CVI) maps for the entire coastline of India by using seven parameters such as shoreline change rate, sea-level change rate, coastal elevation, coastal slope, coastal geomorphology, significant wave height and tidal range.

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Annexure

I. Status of coastal erosion along the coastal regions of Andhra Pradesh and Konkan Coast States

Andhra Pradesh Coast

The shoreline change study for Andhra Pradesh coast was carried for the past 32 years (1990-2022). The study shows that about 31.95% of the coast is eroding, 23.86% of the coast is stable and 44.20% of the coast is accreting nature. The details of estimated coastline changes along various districts of Andhra Pradesh are given below:

District	Coastal Length (km)	Erosion		Stable		Accretion	
		km	%	km	%	km	%
Sri Potti Sriramulu Nellore	111.2	39.02	35.09	40.22	36.17	31.96	28.74
Prakasam	48.52	13.16	27.12	14.26	29.39	21.1	43.49
Anakapalli	70.92	4.98	7.02	24.94	35.17	41	57.81
Kakinada	119.26	63.2	52.99	17.6	14.76	38.46	32.25
Konaseema	84.96	25.8	30.37	8.02	9.44	51.14	60.19
Bapatla	101.88	20.58	20.20	4.58	4.50	76.72	75.30
Krishna	125.18	53.46	42.71	14.5	11.58	57.22	45.71
West Godavari	16.94	8.9	52.54	0.36	2.13	7.68	45.34
Tirupati	93.76	27.02	28.82	21.92	23.38	44.82	47.80
Vishakhapatnam	68.08	18.28	26.85	33.68	49.47	16.12	23.68
Vizianagaram	21.44	0.7	3.26	8.48	39.55	12.26	57.18
Srikakulam	165.44	53.18	32.14	56.58	34.20	55.68	33.66
Total	**1027.58**	**328.28**	**31.95**	**245.14**	**23.86**	**454.16**	**44.20**

Konkan coast

The shoreline change study was carried out for the past 28 years (1990-2018) along the Konkan coast. The details of estimated coastline changes along districts of Konkan States are given below:

Karnataka Coast

District	Coastal length (km)	Erosion		Stable		Accretion	
		In Km	%	In Km	%	In Km	%
Uttara Kannada	175.65	21.64	12.3	107.8	61.4	46.22	26.3
Udupi	100.71	34.96	34.7	40.97	40.7	24.78	24.6
Dakshina Kannada	36.66	17.74	48.4	8.02	21.9	10.9	29.7
Total	**313.02**	**74.34**	**23.7**	**156.79**	**50.1**	**81.9**	**26.2**

Goa Coast:

District	Coastal length (km)	Erosion		Stable		Accretion	
		In Km	%	In Km	%	In Km	%
North Goa	36.4	6.66	18.3	17.74	48.7	12	33.0
South Goa	103.24	20.16	19.5	75.98	73.6	7.1	6.9
Total	**139.6**	**26.82**	**19.2**	**93.72**	**67.1**	**19.1**	**13.7**

Maharashtra Coast:

District	Coastal length (km)	Erosion		Stable		Accretion	
		In Km	%	In Km	%	In Km	%
Sindhudurg	137.02	6.16	4.5	88.02	64.2	42.84	31.3
Ratnagiri	258.93	49.49	19.1	199.81	77.2	9.64	3.7
Raigad	134.83	43.54	32.3	83.95	62.3	7.34	5.4
Mumbai city	41.02	2.18	5.3	37.72	91.9	1.12	2.7
Mumbai suburban	41.15	17.02	41.4	20.95	50.9	3.18	7.7
Thane	6.95	0.96	13.8	5.71	82.2	0.28	4.0
Palghar	119.69	68.92	57.6	41.55	34.7	9.22	7.7
Total	**739.59**	**188.26**	**25.5**	**477.69**	**64.6**	**73.62**	**10.0**

II. Land loss and gain along the coastal regions of Andhra Pradesh and Konkan Coast States

Land loss and gain due to shoreline change were quantified in hectares (ha), by geo-processing between 1990 and 2018 with symmetric difference tools by NCCR.

Andhra Pradesh coast

District	Land loss (In ha) (Approx.)	Land gain (In ha) (Approx.)
Nellore	266	491
Prakasam	91	399
Guntur	35	1348
Krishna	1834	1322
West Godavari	172	235
East Godavari	2529	2456
Vishakhapatnam	70	224
Vizianagaram	39	41
Srikakulam	65	487

Konkan Coast

State	District	Land loss (In ha) (Approx.)	Land gain (In ha) (Approx.)
Karnataka	Uttara Kannada	148	82
	Udupi	97	79
	Dakshina Kannada	68	76
Goa	North Goa	40	23
	South Goa	54	26
Maharashtra	Sindhudurg	45	173
	Ratnagiri	249	71
	Raigad	171	70
	Mumbai city	30	7
	Mumbai suburban	64	40
	Thane	2	2
	Palghar	332	59

III. Area most affected by coastal erosion along the coastal regions of Andhra Pradesh and Konkan Coast States

The details of most eroding coast (hot spots), which requires priority attention, are given below as per the shoreline change study by NCCR.

Region along Andhra Pradesh Coast

District	Location
Tirupati	SHAR
Prakasam	Binginapalli
Krishna	Southern coast of Krishna delta
	Krishna delta region
	Hamsaladeevi beach
	North of Hamsaladeevi beach
	Palathumbalapalayem
West Godavari	Pedamaina vanilanka beach
Konaseema	Odalarevu beach
Kakinada	Bhairavapalem
	Coringa Mangroves
	West of Hope Island
	Uppada
	Nemam beach
	Ponnada
	Konapapapetta
Vishakhapatnam	Pedanagamayyapalem

Region along Konkan Coast

State	District	Location
Karnataka	Uttar Kannad	Dadebag
		Tonka beach
	Udipi	Kirimanjeshwara
		Malpe
	Dakshin Kannad	Mukka
		Tannirbhavi beach
		Ullal beach
		Someshwar beach
Goa	South Goa	Arosem
	South Goa	Varca
Maharashtra	Thane	Varor beach
	Thane	Mahim beach
	Raigarh	Awas
	Raigarh	Murud
	Ratnagiri	Murud beach, Dapoli

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