GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI,
DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION

LOK SABHA

UNSTARRED QUESTION NO. 2535

ANSWERED ON 17.03.2022

SALINITY IN COASTAL AREAS

2540. SHRI SHRIRANG APPA BARNE
SHRI SANJAY SADASHIVRAO MANDLIK
SHRI SUDHEER GUPTA
SHRI DHAIRYASHEEL SAMBHAJIRAO MANE
SHRI BIDYUT BARAN MAHATO
SHRI SUBRAT PATHAK
SHRI MANOJ TIWARI
SHRI PRATAPRAO JADHAV
SHRI RAVINDRA KUSHWAHA
SHRI RAVI KISHAN

Will the Minister of **JAL SHAKTI** be pleased to state:

(a) whether as per a research by the Ministry, most parts of the 1600 kilometre coastline of Gujarat is seeing salinisation of coastal ground water resulting in deterioration of its quality;

(b) if so, the details thereof and the reasons for the same;

(c) whether in various coastal parts of the country, ground water near coastal areas is merging with sea water making it more saline and if so, the details thereof and the the reasons therefor;

(d) whether salinity in coastal areas of the country is increasing thereby posing a serious threat to aquaculture in the State and if so, the details thereof;

(e) whether the Ministry is formulating any policy in this regard and if so, the details thereof; and

(f) the corrective measures taken/being taken by the Government in this regard?

ANSWER

THE MINISTER OF STATE FOR JAL SHAKTI

(SHRI BISHWESWAR TUDU)

(a) & (b) Some parts of the 1600 kilometre coastline, i.e. in the coastal parts of Mongrol – Chorwad of Saurashtra region of Gujarat, have been studied by Central Ground Water Board (CGWB). Ingress of salinity has been observed in groundwater during the said study. The presence of salinity in ground water along coastal Gujarat may be due to various reasons viz. prevailing hydro-geological settings, presence of physiographic depression in the coastal areas, inundation of sea water in low lying areas due to tidal fluctuation etc.

(c) As per available information, the details of various coastal parts of the country vis-a-vis merging of groundwater with seawater are given at **Annexure I.**

(d) There is no specific study conducted by this department highlighting increase in salinity in coastal areas and its effect on aquaculture.

(e) & (f) Water being a State subject, management of groundwater water resources including tackling the salinity related issues is mainly State subject. Still, Central Government has taken a number of important measures for conservation, management of ground water including effective implementation of rain water harvesting in the country which to some extant reduces salinity effect in groundwater which can be seen at URL:http://jalshakti-dowr.gov.in/sites/default/files/Steps_to_control_water_depletion_Feb2021.pdf.

In addition, National Water Policy 2012 talks about monitoring water use pattern, planning appropriate interventions for tackling salinity, alkalinity or, similar quality problems.

Further, various measures which have been taken by the State Governments vis-à-vis salinity in groundwater, are given at **Annexure II**.

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ANNEXURE I

ANNEXURE REFERRED TO IN REPLY TO PARTS (c) OF UNSTARRED QUESTION NO. 2540 TO BE ANSWERED IN LOK SABHA ON 17.03.2022 REGARDING "SALINITY IN COASTAL AREAS".

The details of various coastal parts of the country vis-a-vis merging of groundwater with seawater as per information with CGWB

In Gujarat, in areas close to the coast, the ground water is saline even at shallow depths. The tidal ingress occurs in upper aquifers and low lying marshy lands inundated by sea water during high tides resulting into mixing of saline sea water with ground water in aquifers. The downward seepage in these areas increases ground water salinity. Further, during pre-monsoon, the water table gets lowered and a reverse hydraulic gradient is established near the coast leading to the landward flow of seawater in some of the stretches along the sea coast. During monsoon season, the water table recovers and a positive gradient is setup which generates submarine groundwater discharge into the Arabian Sea.

In Maharashtra, saline water ingress has been reported in isolated areas along the Maharashtra coast. The studies carried out by the CGWB in Vasai-Virar area of the Thane district have indicated possible seawater ingress in a small area. The main cause of ingress is excessive exploitation of ground water for irrigation, encroachment of sea water into creeks during high tides and salt pan activities in and around the area.

In Goa, the instance of salinity problem is generally not noticed in the coastal aquifer. However, during summer surrounding areas close to the coast, creeks, marshy areas, islands and along tidal waves localized salinity has been noticed.

In Karnataka, there is no widespread problem of coastal salinity on the Karnataka coast except at a few sporadic locations like Ullal Beach, Mangalore taluk of Dakshina Kannada district and at Baindur in Kundapura taluk of Udupi district. However, it is a localized phenomenon in isolated pockets along the coastal stretch and tidal rivers.

Sea water ingress has not been reported by studies carried out by CGWB in Kerala coastal region. However, seasonal tidal ingress is noticed all along the coastal region of Kerala.

In Tamil Nadu on the basis of exploration and Groundwater management studies by government and non-government agencies, certain areas (Minjur area, North of Chennai city, Chennai District, Tiruvanmiyur- Kovalam Tract, Southern part of Chennai City, Cuddalore Coast, Ramanathapuram, Nagapattinam, Thanjavur, Tiruvarur & Tuticorin Districts, Kuttam, Radhapuram, Tuticorin District) have been identified as salinity affected areas due to anthropogenic reasons or due to in-situ salinity problems. In Minjur area, located north of Chennai city the interface was about 3.5 kms inland in 1972. It has moved to about 15 kms inland at present

In Andhra Pradesh, fresh aquifer zones in the form of unconfined aquifers occur and are limited to the depth of 20 m to 30 m only, followed by confined aquifers which are mainly saline/brackish. However, the salinity of the confined aquifers is attributed to the marine depositional environment in the geological past. As of now, no saline water ingress is observed/reported along the coastal tracts of Andhra Pradesh State.

In Odisha, Parts of coastal Odisha suffers from salinity hazard which occurs to the east of Kasba Kumurda – Balasore – Gopalpur – Basudevpur – Kothar -Chandikhole – Salepur – Raghunathpur – Niali – Pipli section and extend upto the coastline. No instance of increase in salinity of ground water in the coastal region due to merging of sea water with it has been reported/observed in Odisha.

In West Bengal, the hydrogeological continuum of the sub-surface aquifers, water always flows and merges into sea water, and its salinity is naturally enhanced, even without any anthropogenic intervention.

ANNEXURE II

ANNEXURE REFERRED TO IN REPLY TO PARTS (e) & (f) OF UNSTARRED QUESTION NO. 2540 TO BE ANSWERED IN LOK SABHA ON 17.03.2022 REGARDING "SALINITY IN COASTAL AREAS".

Initiatives by the State Governments to control salinity in the Coastal areas

Karnataka: The State government is taking up schemes for construction of Vented dams and Salt Water Exclusion Dams in coastal areas and rejuvenation of Kharlands which is likely to improve the quality of groundwater in the vicinity in the targeted areas.

Gujarat: The Government of Gujarat (GOG) appointed High Level Committees (HLC) to examine the problems of salinity ingress along with the coastal areas of Saurashtra and Kutch, and to propose remedial measures, determine the cost of the works and set up priorities for implementation to arrest salinity ingress and push back the saline water front towards the sea. As per recommendations of the committees, the State Government has taken up some of the works in most affected areas. Further, Government has posed dark zone in some area of coastline to reduce over exploitation of groundwater, and also taken up various measures for ground water recharge and also adopted micro- irrigation up to some extent.

Kerala: State Government has installed tidal regulators in major inlets to contain the salinity problem arising out of sea water ingress through the inlets and backwaters.

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