GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI,
DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION
LOK SABHA
UNSTARRED QUESTION NO. 2949
ANSWERED ON 05.08.2021

STUDY ON FLOOD PATTERN

2949. SHRIMATI QUEEN OJA
SHRI JANARDAN SINGH SIGRIWAL

Will the Minister of JAL SHAKTI be pleased to state:

(a) whether the Government has made any study or research about flood pattern in the country particularly in Bihar if so, the details and outcome thereof;
(b) whether the Government has any plan to use any new technology with regard to tackling floods in the country and if so, the details thereof;
(c) the details of flood assistance programme for the affected areas in the country including the crop area affected due to floods, State/UT-wise; and
(d) whether the Government is preparing any road map to prevent frequent floods in various parts of the country including North Bihar and if so, the details thereof?

ANSWER

MINISTER OF STATE FOR JAL SHAKTI & FOOD PROCESSING INDUSTRIES

(SHRI PRAHLAD SINGH PATEL)

(a) Central Water Commission (CWC) is the nodal Organisation entrusted with the task of flood forecasting & early flood warnings in the country. Presently, CWC issues flood forecasts for 330 forecasting stations (198 river level forecast stations & 132 dam/ barrage inflow forecast stations). These stations cover 20 major river basins in 23 States & 2 Union Territories. As per flood forecasting network of CWC, during the last 3 years, in addition to existing flood prone states of Assam, Bihar and Uttar Pradesh, extreme floods (water level above previous Highest Flood Level) were witnessed in the states of Kerala, Karnataka, Tamilnadu, Andhra Pradesh, Telangana, Odisha, Maharashtra, Chhattisgarh, Madhya Pradesh and Rajasthan due to excess to large excess rainfall in these states combined with extremely heavy rainfall in short duration. Indian Space Research Organisation (ISRO) has prepared flood hazard Atlases for the States of Assam, Bihar and Odisha. These Atlases provide information on various categories of flood hazard, such as, very high, high, moderate, low and very low based upon the number of times the area was inundated for past two dedcades.

(b) CWC uses all the latest technology including remote-sensing, Geographical Information System (GIS), Internet, Artificial Intelligence and Machine Learning in development/ running/ formulation and calibration of Mathematical models for flood forecasting and for providing Inundation Alerts which are

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closely at par with international standards. CWC is issuing 5-day advisory flood forecast at 330 flood and inflow forecasting stations using state-of the art rainfall run off mathematical modelling tools based on forecasted rainfall by IMD and results are displayed at portal https://120.57.99.138. These forecasts help in better management of floods by concerned agencies and departments.

(c) The flood management & anti-erosion schemes are planned, investigated and implemented by the State Governments with their own resources as per priority within the State. The Union Government supplements the efforts of the States by way of technical guidance and promotional financial assistance for flood management in critical areas. Government of India launched "Flood Management Programme (FMP)" during XI Plan period for providing central assistance to the State Governments for taking up works related to river management, flood control, anti-erosion, drainage development, restoration of damaged flood management works and anti-sea erosion works which was continued during XII Plan. A scheme viz. "Flood Management and Border Areas Programme (FMBAP)" for flood management works in entire country and River Management activities and works related to Border Areas with an outlay of Rs. 3342 crores was under implementation during 2017-18 to 2019-20 later extended upto March, 2021. Central Assistance amounting to Rs.6447.96 crores has been released since XI Plan till March, 2021 under FMP component of this Programme. The State-wise details of losses due to floods are compiled by Central water Commission (CWC) based on the data provided by the States. The State-wise details of the crop area affected due to floods in country during the years 2017, 2018 and 2019 are given in **Annexure-I**.

(d) Government of India is having regular dialogue with the Government of Nepal through existing India-Nepal bilateral mechanisms for mutual benefit of water resources of the common rivers between the two countries which includes flood control. Specific India-Nepal water management issues are discussed in the India-Nepal Joint Committee on Kosi and Gandak Project (JCKGP) and Joint Committee on Inundation and Flood Management (JCIFM). JCKGP discusses issues related to Gandak & Kosi Projects like water logging, water supplies to canals, maintenance of pond level, etc. whereas, JCIFM discusses issues of river training works to be taken up on rivers in Nepal, flood inundation issues on India Nepal border, etc.

As a non-structural measure of flood management, CWC issues flood forecasts at 40 level forecasting stations (for villages/towns on the bank of the rivers) and 3 inflow forecasting stations (for Dams/ Barrages) in the state of Bihar. During flood season 2020 ending 31st December 2020, a total of 3223 forecasts have been issued for Bihar state out of which 3192 have been found to be within the accuracy limit which . works out to 99.04%. Flood forecasts are also issued for rivers common to Nepal and India namely Sharda, Ghaghra, Rapti, Gandak, Burhi Gandak, Bagmati, Kamala, Kosi and Mahananda using meteorological and hydro-meteorological data.

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ANNEXURE-I

Annexure referred to part (c) of Lok Sabha Unstarred Question No. 2949 to be answered on 05.08.2021 regarding "Study on Flood Pattern".

State	Damage to Crops (Area in M.Ha.)		
	2017	**2018**	**2019**
Andhra Pradesh	*	0.170	0.004
Arunachal Pradesh	0.041	0.743	*
Assam	0.280	0.031	0.233
Bihar	0.810	0.001	*
Chhattisgarh	Nil	0.004	*
Gujarat	0.891	0.054	Nil
Goa	Nil	Nil	Nil
Haryana	0.001	0.079	Nil
Himachal Pradesh	0.003	0.411	0.040
Jammu & Kashmir	*	*	*
Jharkhand	Nil	*	0.005
Karnataka	Nil	0.232	1.02
Kerala	0.001	0.087	0.013
Madhya Pradesh	Nil	Nil	6.047
Maharashtra	Nil	*	
Manipur	0.089	0.005	Nil
Meghalaya	Nil	Nil	Nil
Mizoram	0.046	*	Nil
Nagaland	0.568	0.002	*
Odisha	0.021	0.026	0.038
Punjab	0.006	0.057	0.152
Rajasthan	0.739	0.002	2.390
Sikkim	0.001	*	*
Tamilnadu	Nil	0.191	Nil
Tripura	0.047	0.025	0.001
Uttar Pradesh	0.396	0.383	0.650
Uttarakhand	Nil	0.001	0.000
West Bengal	1.033	0.011	0.095
Andaman & Nicobar	Nil	Nil	*
Chandigarh	Nil	Nil	*
Daman & Diu	Nil	*	*
Dadra & Nagar Havali	Nil	Nil	*
Delhi	Nil	*	*
Lakshadweep	Nil	*	Nil
Puducherry	*	Nil	*

* Not Reported

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