

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

LOK SABHA
UNSTARRED QUESTION NO. 3060

ANSWERED ON 04.08.2022

FLOOD PATTERN

3060 SHRI PRADEEP KUMAR SINGH

Will the Minister of JAL SHAKTI be pleased to state:

- (a) whether the Government has studied any flood pattern during the last three years in the country including Bihar and if so, the details thereof;
- (b) whether the Government is using any new technology with respect to tackling floods in the country and if so, the details thereof;
- (c) whether the Government has common flood assistance programme to the affected areas in the country, if so, the details thereof and if not, the reasons therefor; and
- (d) the details of crop area affected due to floods in the country, State-wise?

ANSWER

THE MINISTER OF STATE FOR JAL SHAKTI

(SHRI BISHWESWAR TUDU)

(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 332 forecasting stations (199 river level forecast stations & 133 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 flood prone States of Assam, Bihar, Uttar Pradesh and West Bengal, extreme floods were witnessed in the States of Andhra Pradesh, Chhattisgarh, Kerala, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu and Telangana due to excess rainfall in these States combined with extremely heavy rainfall in short duration. The flood situation in the State of Bihar for last 3 years is given at **Annexure-I**.

(b) Flood Hazard Atlases have been prepared by Indian Space Research Organisation (ISRO) in respect of Andhra Pradesh, Assam, Bihar, Odisha, Uttar Pradesh and West Bengal. ISRO has developed long term cumulative flood maps for the States/UT of Gujarat, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra and Tamil Nadu. The flood inundation details as derived from Satellite data are also made available to the stakeholders through the National Database for Emergency Management (NDEM) and Bhuvan Geoportals.

Flood Forecasting by 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 and for providing inundation alerts. CWC is issuing 5-day advisory flood forecast at 332 flood and inflow forecasting stations using state-of-art rainfall run off mathematical modelling tools based on rainfall forecast by IMD and results are shared with stakeholders using website <https://aff.india-water.gov.in/>. 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. To strengthen the structural measures of flood management, Ministry had implemented Flood Management Programme (FMP) during XI & XII Plan for providing central assistance to States for works related to flood control, anti-erosion, drainage development, anti-sea erosion, etc. which subsequently continued as a component of "Flood Management and Border Areas Programme" (FMBAP) for the period from 2017-18 to 2020-21 and has been further extended up to September 2022. So far, central assistance amounting to Rs. 6,686.79 crore has been released to States/UTs under this programme since inception.

(d) The details of crop area affected due to heavy rain and floods compiled by CWC after receipt of confirmation from respective States for the period from 2018 to 2020 is given in **Annexure-II**.

ANNEXURE REFERRED TO IN REPLY OF PART (a) OF LOK SABHA UNSTARRED QUESTION NO.3060 TO BE ANSWERED ON 04.08.2022 REGARDING "FLOOD PATTERN".

Summary of Flood Situation in Bihar from 2019-2021

Year	No. of Flood Forecasting Station flowed in Extreme Flood	No. of monitoring Station (other than FF) flowed in Extreme Flood	No. of FF Station flowed in Severe Flood	No. of forecast issued	No. of forecast within limit	% age of accuracy (%)
2019	1	3	32	2,186	2155	98.58
2020	3	6	28	3,223	3192	99.04
2021	2	2	33	3,317	3248	97.92

Extreme Flood Situation (Above Highest Flood Level):

Flood Forecasting Stations Flowed in Extreme Flood Situation in Bihar during (2019-2021)

Sl. No	State	District	River	Station	Period	
					From	To
2019						
1	Bihar	Madhubani	Kamlabalan	Jhanjharpur	14/07/2019	14/07/2019
2020						
1	Bihar	Gopalganj	Gandak	Dumariaghat	23/07/2020	25/07/2020
2		Muzzafarpur	Gandak	Rewaghat	24/07/2020	25/07/2020
3		Samastipur	BurhiGandak	Rosera	31/07/2020	05/08/2020
2021						
1	Bihar	Patna	Ganga	Hatidah	13/08/2021	19/08/2021
2		Bhagalpur	Ganga	Bhagalpur	16/08/2021	19/08/2021

In 2022 flood season till June 2022, 1 station Taibpur on river Mahananda in Kishanganj district flowed in Extreme flood situation on 29th June 2022 and 10 stations flowed in Severe flood situation. Till June 2022, 338 forecasts were issued in Bihar out of which 326 were within permissible limit with 96.44 % of accuracy.

ANNEXURE REFERRED TO IN REPLY OF PART (d) OF LOK SABHA UNSTARRED QUESTION NO. 3060 TO BE ANSWERED ON 04.08.2022 REGARDING "FLOOD PATTERN"

STATEMENT SHOWING CROP DAMAGE DUE TO FLOODS FROM 2018 TO 2020

INo	Name of State	2018		2019		2020	
		Damages to Crops		Damages to Crops		Damages to Crops	
		Area (Mha)	Value (Rs. Crore)	Area (Mha)	Value (Rs. Crore)	Area (Mha)	Value (Rs. Crore)
1	ANDHRA PRADESH	0.170	237.480	0.004	19.618	0.213	903.000
2	ARUNACHAL PRADESH	0.743	462.915	NR	NR	0.006	10.129
3	ASSAM	0.031	23.490	0.233	167.470	0.188	145.870
4	BIHAR	0.001	5.137	NR	NR	0.517	727.876
5	CHATTISGARH	0.004	12.246	NR	NR	0.005	3.660
6	GOA	0	0	NR	NR	NR	NR
7	GUJARAT	0.054	47.820	0.000	0.000	2.902	2912.820
8	HARYANA	0.079	88.446	0.000	0.600	NR	NR
9	HIMACHAL PRADESH	0.411	12.570	0.040	87.120	0.001	16.750
10	JAMMU & KASHMIR	0.000	0.000	NR	NR	NR	NR
11	JHARKHAND	0.000	0.000	0.005	2.715	13.297	0.728
12	KARNATAKA	0.232	2220.700	1.02	NR	1.310	NR
13	KERALA	0.087	168.480	0.013	NR	0.006	NR
14	MADHYA PRADESH	0.000	0.000	6.047	NR	0.629	NR
15	MAHARASHTRA	0.000	0.000	NR	NR	NR	NR
16	MANIPUR	0.005	0.000	0.000	0.000	NR	NR
17	MEGHALAYA	0.000	0.038	0.000	0.000	NR	NR
18	MIZORAM	0.000	0.000	0.000	0.000	0.12	NR
19	NAGALAND	0.002	0.000	NR	NR	NR	NR
20	ODISHA	0.026	29.020	0.038	43.250	0.314	542.300
21	PUNJAB	0.057	120.410	0.152	NR	0.152	NR
22	RAJASTHAN	0.002	2.200	2.390	8787.770	0.040	45.790
23	SIKKIM	0.000	0.000	NR	NR	0.010	3.000
24	TELANGANA	NR	NR	NR	NR	NR	NR
25	TAMILNADU	0.191	0.000	0.000	0.000	NR	NR
26	TRIPURA	0.025	24.282	0.001	2.610	0.006	137.720
27	UTTAR PRADESH	0.383	230.364	0.650	625.120	0.120	176.380
28	UTTARAKHAND	0.001	0.000	0.000	0.000	NR	NR
29	WEST BENGAL	0.011	22.410	0.095	1166.074	NR	NR
30	A & N ISLAND	0.000	0.000	0.000	0.000	NR	NR
31	CHANDIGARH	Nil	Nil	NR	NR	Nil	Nil
32	D & N HAVELI	0.000	0.000	NR	NR	NR	NR
33	DAMAN & DIU	0.000	0.000	NR	NR	NR	NR
34	DELHI	0.000	0.000	NR	NR	NR	NR
35	LADAKH	NR	NR	NR	NR	NR	NR
36	LAKSHADWEEP	0.000	0.000	0.000	0.000	NR	NR
37	PUDUCHCHERRY	0.000	0.180	NR	NR	NR	NR
	Total	2.515	3708.187	10.688	10902.347	19.836	5626.023

NR- NOT REPORTED
