

GOVERNMENT OF INDIA  
MINISTRY OF WATER RESOURCES,  
RIVER DEVELOPMENT & GANGA REJUVENATION  
**LOK SABHA**  
**STARRED QUESTION NO. †\*228**  
ANSWERED ON 02.08.2018

**AREAS SUBMERGED DUE TO FLOODS**

†\*228.           SHRI RAM KUMAR SHARMA

Will the Minister of WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION be pleased to state:

- (a) whether some areas in the country are submerged almost every year due to floods in the country during the monsoon season;
- (b) if so, the details thereof along with the percentage of such areas getting submerged in the country, State/locationwise;
- (c) whether any assessment has been made regarding the annual loss in each State as a result of the same and if so, the details thereof; and
- (d) whether any permanent measures have been taken to address the issue and if so, the details thereof?

**ANSWER**

THE MINISTER OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION, ROAD TRANSPORT & HIGHWAYS AND SHIPPING

(SHRI NITIN JAIRAM GADKARI)

(a) to (d)   A statement is laid on the table of the House.

\*\*\*\*\*

**STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (d) OF STARRED QUESTION NO †\*228 TO BE ANSWERED IN LOK SABHA ON 02<sup>nd</sup>, AUGUST 2018 REGARDING “AREAS SUBMERGED DUE TO FLOODS” ASKED BY SHRI RAM KUMAR SHARMA, M.P.**

(a) & (b) Floods are natural calamity that India faces almost every year, in varying degrees of magnitude. The maximum area assessed to be affected due to flood in any one of the years under consideration is taken as the area liable to flood in that State. Considering all such figures for all the States for the period from 1953 to 1978, Rashtriya Barh Ayog (RBA) has assessed the total area liable to flood in the country as 40 million ha. The XII Plan Working Group on Flood Management and Regional Specific Issues in its October 2011 report has subsequently increased the area liable to floods to 49.815 million Ha. The State-wise break up of area prone to flood as given by RBA is at **Annexure-I** and the breakup given by XII Plan Working Group is given at **Annexure-II**.

The study carried out by National Remote Sensing Centre (NRSC), of ISRO based on historic data for five States, viz. Assam, Bihar, Odisha, West Bengal, and Uttar Pradesh found 15 districts of Assam, 10 districts of Bihar, 9 districts of Odisha, 10 districts of Uttar Pradesh and 6 districts of West Bengal submerged by floods for varying percentage.

(c) CWC compiles the details of annual damage due to floods as supplied by all the State Governments. These data are available from year 1953 onwards. The Statewise damages for the period from 1953 to 2017 is at **Annexure-III**.

(d) The subject of Flood Management including erosion control falls within the purview of the States. The flood management & anti-erosion schemes are planned, investigated and implemented by the State Governments with own resources as per priority within the State. The Union Government renders technical guidance and promotional financial assistance to States. Government of India had launched a Flood Management Programme (FMP) during XI Plan for providing central assistance to the State Governments for taking up works related to river management, flood control, anti-erosion, drainage development, flood proofing works, restoration of damaged flood management works and anti-sea erosion works which was continued during XII Plan.

A total of 522 projects costing Rs.13238.36 crore were approved and included under FMP. During XI Plan, 420 projects with an estimated cost of Rs.7857.08 crore were approved while during XII Plan 102 projects with an estimated cost of Rs.5381.28 crore were approved. Central Assistance amounting to Rs.3566.00 crore was released during XI Plan and Rs.1307.07 crore during XII Plan. Further a Central Assistance of Rs.562.67 crore has also been released during year 2017-18. Since start of XI Plan, total Central Assistance released to States under FMP up to 31-Mar-18 is Rs.5435.74 crore. The State-wise details of works approved and funds released are given at **Annexure-IV**.

In addition to that, Flood Forecasting, which is an efficient non-structural measure of flood management, is being carried out by Central Water Commission (CWC) on inter-state rivers covering 22 States/ Union Territories & National Capital Territory of Delhi through a network of 226 flood forecasting stations. State-wise distribution of flood forecasting stations of CWC is provided at **Annexure-V**.

## ANNEXURE REFERRED TO IN REPLY TO PARTS (a) &amp; (b) OF STARRED QUESTION NO. †\*228 TO BE ANSWERED IN LOK SABHA ON 02.08.2018 REGARDING “AREAS SUBMERGED DUE TO FLOODS”

## Flood Affected area in India as assessed by the RBA

(Area in Lakh ha.)

Sl. No.	Name of States/UTs	Area Liable to Floods as Assessed by RBA
(A)	<b>STATES</b>	
1	Andhra Pradesh	13.90
2	Arunachal Pradesh	
3	Assam	31.50
4	Bihar	* 42.60
5	Chattisgarh	-
6	Delhi (NCT)	0.50
7	Goa	
8	Gujarat	13.90
9	Haryana	23.50
10	Himachal Pradesh	2.30
11	Jammu & Kashmir	0.80
12	Jharkhand	-
13	Karnataka	0.20
14	Kerala	8.70
15	Madhya Pradesh	* 2.60
16	Maharashtra	2.30
17	Manipur	0.80
18	Meghalaya	0.20
19	Mizoram	-
20	Nagaland	-
21	Orissa	14.00
22	Punjab	37.00
23	Rajasthan	32.60
24	Sikkim	-
25	Tamil Nadu	4.50
26	Tripura	3.30
27	Uttar Pradesh	* 73.36
28	Uttarakhand	-
29	West Bengal	26.50
	<b>Sub-Total</b>	<b>335.06</b>
30	Andaman & Nicobar Islands	-
31	Chandigarh	-
32	Dadra & Nagar Haveli	-
33	Daman & Diu	-
34	Lakshadweep	-
35	Pondicherry	0.10
	Sub-Total(UTs)	<b>0.10</b>
	<b>Grand Total</b>	<b>335.16</b>

\* Figures are before bifurcation

**Area liable to floods as assessed by RBA**

(i) Sum of the maxima of flood affected area in a year (from 1953 to 1980 Protected area upto 1978	= 33.516 mha, say 34 mha
(ii) Total protected area upto 1978	= 10 mha
(iii) Deduction for protected area included under flood affected area due to breach / failure of protection	= 4 mha
<b>Area liable to floods = (i) + (ii) - (iii) = 34 + 10 - 4</b>	<b>= 40 mha</b>

**ANNEXURE REFERRED TO IN REPLY TO PARTS (a) & (b) OF STARRED QUESTION NO. †\*228 TO BE ANSWERED IN LOK SABHA ON 02.08.2018 REGARDING “AREAS SUBMERGED DUE TO FLOODS”****STATE-WISE MAXIMUM AREA AFFECTED BY FLOODS IN ANY YEAR DURING 1953-2010**

S.No.	State	Max.Area affected ( mha)	Year of Maximum Area affected
1	Andhra Pradesh	9.040	2005
2	Arunachal Pradesh	0.207	2003
3	Assam	3.820	1988
4	Bihar	4.986	2004
5	Chhattisgarh	0.089	2001
6	Delhi	0.458	1997
7	Goa	0.000	0
8	Gujarat	2.050	1988
9	Haryana	1.000	1977
10	Himachal Pradesh	2.870	1999
11	Jammu & Kashmir	0.514	1987
12	Jharkhand	0.000	0
13	Karnataka	0.900	1988
14	Kerala	1.470	1989
15	Madhya Pradesh	0.377	1994
16	Maharashtra	0.391	2002
17	Manipur	0.080	1989
18	Meghalaya	0.095	1987
19	Mizoram	0.541	1993
20	Nagaland	0.009	1993
21	Orissa	1.400	1960
22	Punjab	2.790	1988
23	Rajasthan	3.260	1977
24	Sikkim	1.170	2000
25	Tamil Nadu	1.466	2010
26	Tripura	0.330	1963
27	U.P.	7.340	1978
28	Uttarakhand	0.002	2001
29	West Bengal	3.080	1978
30	Andaman & Nicobar	0.030	1988
31	Chandigarh		
32	Dadra & Nagar Haveli		
33	Daman & Diu		
34	Lakshadweep		
35	Puducherry	0.050	1977
	<b>Total</b>	<b>49.815</b>	

Source – as per the reports received in CWC from State Revenue Authorities and MHA.

## ANNEXURE REFERRED TO IN REPLY TO PART (c) OF STARRED QUESTION NO. †\*228 TO BE ANSWERED IN LOK SABHA ON 02.08.2018 REGARDING "AREAS SUBMERGED DUE TO FLOODS"

## STATEMENT SHOWING DAMAGE DUE TO FLOODS / HEAVY RAINS DURING 1953 TO 2016

Sl. No.	Year	Area affected in m. ha.	Population affected in million	Damage to Crops		Damage to Houses		Cattle Lost Nos.	Human live Lost Nos.	Damage to Public Utilities in Rs. Cr.	Total damages Crops, Houses & Public utilities in Rs. Cr. (col.6+8+11)
				Area in m. ha.	Value in Rs. Cr.	Nos.	Value in Rs. Cr.				
1	2	3	4	5	6	7	8	9	10	11	12
1	1953	2.290	24.280	0.930	42.080	264924	7.420	47034	37	2.900	52.400
2	1954	7.490	12.920	2.610	40.520	199984	6.561	22552	279	10.150	57.231
3	1955	9.440	25.270	5.310	77.800	1666789	20.945	72010	865	3.980	102.725
4	1956	9.240	14.570	1.110	44.440	725776	8.047	16108	462	1.140	53.627
5	1957	4.860	6.760	0.450	14.120	318149	4.979	7433	352	4.270	23.369
6	1958	6.260	10.980	1.400	38.280	382251	3.896	18439	389	1.790	43.966
7	1959	5.770	14.520	1.540	56.760	648821	9.418	72691	619	20.020	86.198
8	1960	7.530	8.350	2.270	42.550	609884	14.309	13908	510	6.310	63.169
9	1961	6.560	9.260	1.970	24.040	533465	0.889	15916	1374	6.440	31.369
10	1962	6.120	15.460	3.390	83.180	513785	10.655	37633	348	1.050	94.885
11	1963	3.490	10.930	2.050	30.170	420554	3.701	4572	432	2.740	36.611
12	1964	4.900	13.780	2.490	56.870	255558	4.588	4956	690	5.149	66.607
13	1965	1.460	3.610	0.270	5.870	112957	0.195	7286	79	1.070	7.135
14	1966	4.740	14.400	2.160	80.150	217269	2.544	9071	180	5.736	88.430
15	1967	7.120	20.460	3.270	133.310	567995	14.264	5827	355	7.857	155.431
16	1968	7.150	21.170	2.620	144.610	682704	41.112	130305	3497	25.373	211.095
17	1969	6.200	33.220	2.910	281.900	1268660	54.423	270328	1408	68.112	404.435
18	1970	8.460	31.830	4.910	162.780	1434030	48.606	19198	1076	76.441	287.827
19	1971	13.250	59.740	6.240	423.130	2428031	80.241	12866	994	129.113	632.484
20	1972	4.100	26.690	2.450	98.560	897301	12.460	58231	544	47.174	158.194
21	1973	11.790	64.080	3.730	428.030	869797	52.482	261016	1349	88.489	569.001
22	1974	6.700	29.450	3.330	411.640	746709	72.434	16846	387	84.942	569.016
23	1975	6.170	31.360	3.850	271.490	803705	34.097	17345	686	166.050	471.637
24	1976	11.910	50.460	6.040	595.030	1745501	92.160	80062	1373	201.495	888.685
25	1977	11.460	49.430	6.840	720.610	1661625	152.290	556326	11316	328.948	1201.848
26	1978	17.500	70.450	9.960	911.090	3507542	167.574	239174	3396	376.100	1454.764
27	1979	3.990	19.520	2.170	169.970	1328712	210.606	618248	3637	233.627	614.203
28	1980	11.460	54.120	5.550	366.370	2533142	170.851	59173	1913	303.283	840.504
29	1981	6.120	32.490	3.270	524.560	912557	159.630	82248	1376	512.314	1196.504
30	1982	8.870	56.010	5.000	589.400	2397365	383.869	246750	1573	671.607	1644.876
31	1983	9.020	61.030	3.290	1285.850	2393722	332.327	153095	2378	873.429	2491.606
32	1984	10.710	54.550	5.190	906.090	1763603	181.308	141314	1661	818.164	1905.562
33	1985	8.380	59.590	4.650	1425.370	2449878	583.855	43008	1804	2050.043	4059.268
34	1986	8.810	55.500	4.580	1231.580	2049277	534.410	60450	1200	1982.535	3748.525
35	1987	8.890	48.340	4.940	1154.640	2919380	464.490	128638	1835	950.590	2569.720
36	1988	16.290	59.550	10.150	2510.900	2276533	741.600	150996	4252	1377.800	4630.300
37	1989	8.060	34.150	3.010	956.740	782340	149.820	75176	1718	1298.770	2405.330
38	1990	9.303	40.259	3.179	695.610	1019930	213.733	134154	1855	455.266	1708.920
39	1991	6.357	33.889	2.698	579.015	1134410	180.421	41090	1187	728.893	1488.329
40	1992	2.645	19.256	1.748	1027.578	687489	306.284	78669	1533	2010.670	3344.532
41	1993	11.439	30.409	3.206	1308.627	1926049	528.324	211193	2864	1445.534	3282.485
42	1994	4.805	27.548	3.963	888.622	914664	165.206	52315	2078	740.762	1794.590
43	1995	5.245	35.932	3.245	1714.787	2001898	1307.894	62438	1814	679.627	3702.308
44	1996	8.049	44.729	3.827	1124.491	726799	176.589	73208	1803	861.393	3005.743
45	1997	4.569	29.663	2.258	692.743	505128	152.504	27754	1402	1985.934	2831.181
46	1998	10.845	47.435	7.495	2594.167	1932874	1108.783	107098	2889	5157.771	8860.721
47	1999	7.765	27.993	1.753	1850.873	1613260	1299.057	91289	745	462.830	3612.760
48	2000	5.382	45.013	3.580	4246.622	2628855	680.943	123252	2606	3936.979	8864.544
49	2001	6.175	26.463	3.964	688.481	716187	816.474	32704	1444	5604.461	7109.416
50	2002	7.090	26.323	2.194	913.092	762492	599.368	21533	1001	1062.083	2574.543
51	2003	6.120	43.201	4.268	7307.230	775379	756.481	15161	2166	3262.154	11325.866
52	2004	5.314	43.725	2.888	778.694	1664388	879.601	134106	1813	1656.090	3314.385
53	2005	12.562	22.925	12.299	2370.923	715749	380.531	119674	1455	4688.219	7439.672
54	2006	1.096	25.224	1.822	2850.668	1497428	3636.848	266945	1431	13303.926	19790.922
55	2007	7.145	41.402	8.795	3121.532	3280233	2113.108	89337	3389	8049.037	13283.677
56	2008	3.427	29.910	3.186	3401.563	1566809	1141.891	101780	2876	5046.481	9589.935
57	2009	3.844	29.537	3.592	4232.609	1235628	10809.795	63383	1513	17509.353	32551.758
58	2010	2.624	18.297	4.994	5887.380	293830	875.952	39706	1582	12757.253	19520.586
59	2011	1.895	15.973	2.718	1393.847	1152518	410.475	35982	1761	6053.570	7857.892
60	2012	2.141	14.689	1.950	1534.108	174526	240.572	31558	933	9169.968	10944.648
61	2013	7.546	25.927	7.484	6378.078	699525	2032.830	163958	2180	38937.843	47348.751
62	2014	12.775	26.505	8.007	7255.151	311325	581.978	60196	1968	7710.948	15548.077
63	2015	4.478	33.203	3.374	17043.948	3959191	8046.969	45597	1420	32200.182	57291.099
64	2016	7.065	26.555	6.658	4052.723	278240	114.676	22367	1420	1507.926	5675.325
65	2017	5.742	18.644	5.104	6928.800	1152959	9185.750	6899	2014	2744.835	18859.385
	<b>TOTAL</b>	<b>466.002</b>	<b>2058.910</b>	<b>256.150</b>	<b>109202.443</b>	<b>80618038</b>	<b>53576.094</b>	<b>6029575</b>	<b>107486</b>	<b>202474.989</b>	<b>366404.587</b>
	<b>AVG</b>	<b>7.169</b>	<b>31.676</b>	<b>3.941</b>	<b>1680.038</b>	<b>1240278</b>	<b>824.248</b>	<b>92763</b>	<b>1654</b>	<b>3115.000</b>	<b>5637.547</b>
	<b>MAX</b>	<b>17.500</b>	<b>70.450</b>	<b>12.299</b>	<b>17043.948</b>	<b>3959191</b>	<b>10809.795</b>	<b>618248</b>	<b>11316</b>	<b>38937.843</b>	<b>57291.099</b>
	<b>(YEAR)</b>	<b>1978</b>	<b>1978</b>	<b>2005</b>	<b>2015</b>	<b>2015</b>	<b>2009</b>	<b>1979</b>	<b>1977</b>	<b>2013</b>	<b>2015</b>

## ANNEXURE REFERRED TO IN REPLY TO PART (d) OF STARRED QUESTION NO. †\*228 TO BE ANSWERED IN LOK SABHA ON 02.08.2018 REGARDING “AREAS SUBMERGED DUE TO FLOODS”

State-Wise Works Approved, Works Completed and Funds Released under Flood Management Programme (FMP) since start of XI Plan and upto 31-Mar-18 (Rs. in Cr.)													
Sl. No.	State	XI Plan			XII Plan			Total (XI + XII Plan) Status					Total funds released
		Works Approved		Funds Released (XI Plan)	Works Approved		Funds Released (XII Plan)	Works Approved		Works Completed	Funds Released (XI + XII Plan)	Funds released during FY :2017 - 18	
		Nos.	Estimated Cost		Nos.	Estimated Cost		Nos.	Estimated Cost				
1	Arunachal Pradesh	21	224.69	81.69	0	0.00	87.91	<b>21</b>	<b>224.69</b>	11	<b>169.60</b>	21.18	190.78
2	Assam	100	996.14	748.86	41	1386.97	64.89	<b>141</b>	<b>2383.11</b>	95	<b>813.75</b>	245.49	1059.24
3	Bihar	43	1370.42	723.18	4	447.63	184.64	<b>47</b>	<b>1818.05</b>	41	<b>907.82</b>		907.82
4	Chhattisgarh	3	31.13	15.57	0	0.00	3.75	<b>3</b>	<b>31.13</b>	0	<b>19.32</b>		19.32
5	Goa	2	22.73	9.98	0	0.00	2.00	<b>2</b>	<b>22.73</b>	2	<b>11.98</b>		11.98
6	Gujarat	2	19.79	2.00	0	0.00	0.00	<b>2</b>	<b>19.79</b>	1	<b>2.00</b>		2.00
7	Haryana	1	173.75	46.91	0	0.00	0.00	<b>1</b>	<b>173.75</b>	0	<b>46.91</b>		46.91
8	Himachal Pradesh	3	225.32	165.98	4	1139.62	221.87	<b>7</b>	<b>1364.94</b>	1	<b>387.85</b>	87.50	475.35
9	Jammu & Kashmir	28	408.22	252.57	15	562.47	169.95	<b>43</b>	<b>970.69</b>	8	<b>422.52</b>	110.40	532.92
10	Jharkhand	3	39.30	18.44	0	0.00	4.27	<b>3</b>	<b>39.30</b>	2	<b>22.71</b>		22.71
11	Karnataka	3	59.46	23.80	0	0.00	0.00	<b>3</b>	<b>59.46</b>	0	<b>23.80</b>		23.80
12	Kerala	4	279.74	63.68	0	0.00	55.22	<b>4</b>	<b>279.74</b>	0	<b>118.90</b>	19.05	137.95
13	Manipur	22	109.34	66.34	0	0.00	24.36	<b>22</b>	<b>109.34</b>	19	<b>90.70</b>		90.70
14	Meghalaya	0	0.00	3.81	0	0.00	0.00	<b>0</b>	<b>0.00</b>	0	<b>3.81</b>		3.81
15	Mizoram	2	9.13	14.48	0	0.00	1.93	<b>2</b>	<b>9.13</b>	0	<b>16.41</b>	0.47	16.89
16	Nagaland	11	49.35	28.96	6	74.52	54.17	<b>17</b>	<b>123.87</b>	9	<b>83.12</b>		83.13
17	Orissa	67	169.00	101.12	1	62.32	0.00	<b>68</b>	<b>231.32</b>	60	<b>101.12</b>		101.12
18	Puducherry*	1	139.67	7.50	0	0.00	0.00	<b>1</b>	<b>139.67</b>	0	<b>7.50</b>		7.50
19	Punjab	5	153.40	40.43	0	0.00	0.00	<b>5</b>	<b>153.40</b>	0	<b>40.43</b>		40.43
20	Sikkim	28	104.92	83.69	17	261.40	8.15	<b>45</b>	<b>366.32</b>	21	<b>91.84</b>		91.84
21	Tamilnadu	5	635.54	59.82	0	0.00	0.00	<b>5</b>	<b>635.54</b>	0	<b>59.82</b>		59.82
22	Tripura	11	26.57	23.62	0	0.00	0.00	<b>11</b>	<b>26.57</b>	8	<b>23.62</b>		23.62
23	Uttar Pradesh	26	667.57	290.69	3	291.70	111.22	<b>29</b>	<b>959.27</b>	6	<b>401.91</b>	13.55	415.46
24	Uttarakhand	12	119.82	49.63	10	715.72	153.98	<b>22</b>	<b>835.54</b>	8	<b>203.61</b>		203.61
25	West Bengal	17	1822.08	643.26	1	438.94	158.75	<b>18</b>	<b>2261.02</b>	6	<b>802.01</b>	65.03	867.03
	<b>Total</b>	<b>420</b>	<b>7857.08</b>	<b>3566.00</b>	<b>102</b>	<b>5381.28</b>	<b>1307.07</b>	<b>522</b>	<b>13238.36</b>	<b>298</b>	<b>4873.07</b>	<b>562.67</b>	<b>5435.74</b>

**ANNEXURE REFERRED TO IN REPLY TO PART (d) OF STARRED QUESTION NO. †\*228 TO BE ANSWERED IN LOK SABHA ON 02.08.2018 REGARDING “AREAS SUBMERGED DUE TO FLOODS”**

State-wise Existing Flood Forecasting Stations of CWC as on January 2018

Sr. No.	Name of State/UT	Number of flood forecasting Stations		
		Level	Inflow	Total
1	Andhra Pradesh	7	7	14
2	Arunachal Pradesh	2	0	2
3	Assam	29	0	29
4	Bihar	34	0	34
5	Chhatisgarh	1	0	1
6	Gujarat	6	6	12
7	Haryana	0	1	1
8	Jammu & Kashmir	3	0	3
9	Jharkhand	2	5	7
10	Karnataka	1	9	10
11	Madhya Pradesh	2	2	4
12	Maharashtra	7	3	10
13	Odisha	11	2	13
14	Rajasthan	0	3	3
15	Tamil Nadu	0	10	10
16	Telangana	4	6	10
17	Tripura	2	0	2
18	Uttar Pradesh	38	2	40
19	Uttarakhand	3	1	4
20	West Bengal	11	3	14
21	Dadra & Nagar haveli	1	0	1
22	NCT of Delhi	2	0	2
	<b>Total</b>	<b>166</b>	<b>60</b>	<b>226</b>