

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

**LOK SABHA**  
**UNSTARRED QUESTION NO. 4317**  
ANSWERED ON 11.08.2016

**PREVENTION OF FLOODS**

†4317. SHRI HARINARAYAN RAJBHAR  
SHRI NITYANAND RAI

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

- (a) whether the Government is aware that most parts of the country face severe floods during rainy/monsoon season and great loss to the society is incurred in various fields;
- (b) if so, the details and the facts thereof;
- (c) whether any permanent/ comprehensive scheme has been prepared or is under consideration to prevent recurring floods in the country;
- (d) if so, the details and the salient features thereof; and
- (e) the financial assistance provided/to be provided to each State/UT during the current plan to tackle the problem?

**ANSWER**

THE MINISTER OF STATE FOR WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION  
(DR SANJEEV KUMAR BALYAN)

(a) & (b) Floods are a natural calamity that India faces almost every year, in varying degrees of magnitude. The frequent occurrence of floods can be attributed to various factors, including wide variations in rainfall both in time and space with frequent departures from the normal pattern, inadequate carrying capacities of rivers, river bank erosion and silting of river beds, landslides, poor natural drainage in flood prone areas, snowmelt and glacial lake out bursts. The XII Plan Working Group on “Flood Management and Region Specific Issues” constituted by Planning Commission has compiled the maximum flood affected area in the country as 49.815 million hectare (mha). The average annual flood damages in India during the period from 1953 to 2015 are of the order of Rs. 4267.24 crore as per data base compiled by Central Water Commission. The details are given at **Annex-1**.

(c), (d) and (e) The subject of flood management being under the purview of the States, the schemes for flood control are formulated and implemented by concerned States as per their priority. The Union Government supplements the efforts of the States by providing technical guidance and also promotional financial assistance for management of floods in critical areas.

The Government of India had launched Flood Management Programme (FMP) for works related to river management, anti-erosion, restoration of damaged flood management works, anti-sea erosion etc. Under this programme, a total of 518 projects were approved in XI and XII Plan and the central assistance of Rs 4773.08 Crore has been released till date out of which, the amount of Rs. 1207.08 Crore was released in XII Plan.

Out 518 projects approved under FMP in XII Plan, 293 projects have been completed till date, which have provided reasonable protection against floods in 19.593 lakh hectare of area and benefited the population of 197.227 lakh in the country. The State- wise details of projects approved, projects completed and funds released in XI and XII Plan under FMP are given at **Annex-2**

Besides the structural measures mentioned above, the Central Water Commission (CWC) under the Ministry maintains flood forecasting network of 708 stations out of which flood forecasts are presently issued for 184 stations. The flood forecasts issued by CWC are utilized by local administration in deciding plans for shifting of people from flood affected areas to safer locations and by State / Project Authorities in optimum regulation of reservoirs for ensuring safety of people residing in the downstream areas of dams / reservoirs.

In addition, Ministry has approved a plan scheme during XII Plan for Rs.281 crore for flood forecasting, modernisation and expansion of the flood forecasting network for automatic data collection, expeditious transmission and flood forecast dissemination. The scheme has the following broad components:

- i) The Flood Forecasting network is proposed to be expanded from existing 184 flood forecasting stations to 275 stations as per details in **Annex-3**. Simultaneously, the support network of 708 hydrological observation sites would be increased to 1118 out of which 1074 stations, as against the current 507, would be on an automatic satellite based telemetry system. As a result of the telemetry network, live information would be available on the real time basis. It will eliminate the delays in dissemination of flood warnings to the States due to the manual system of dissemination.
- ii) All the 12 regional offices of CWC will have the facility of carrying out data modeling for making timely forecasts to forewarn the community and the local authorities with lead time upto 72 hours before occurrence of the event. This is in contrast with the existing forecast lead time of 24 hours.
- iii) The enhanced network will ensure coverage of the hitherto uncovered additional regions in sub-basins of Ganga, Brahmaputra, Mahanadi & Godavari, which are amongst highly flood prone areas and experience huge flood damages.

- iv) It is also proposed to provide inundation forecast on pilot basis in 3 mha flood prone area of Kosi, Brahmaputra, Godavari and Sabri sub-basins using high resolution Digital Elevation Models already available with National Remote Sensing Centre.
- v) Currently, on an average 6000 flood warnings are issued annually with an accuracy of over 98%. It is expected that with expanded network of flood forecast systems, these would go upto 10,000 annual warnings covering hitherto uncovered areas in the basins mentioned above, with an enhanced lead time of upto 72 hours. This would give community enough time to ensure preventive action to save life and property.

In addition, the Government of India is having continuous dialogue with Government of Nepal for construction of storage projects in Nepal for mitigation of floods in India caused by rivers flowing from Nepal.

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**ANNEXURE REFERRED TO IN REPLY OF PARTS (a) & (b) , LOK SABHA UNSTARRED QUESTION NO. 4317 FOR ANSWER ON 11.08.2016 REGARDING “PREVENTION OF FLOODS”**

**Annex-1**

STATEMENT SHOWING DAMAGE DUE TO FLOODS / HEAVY RAINS DURING 1953 TO 2015											
SN	Year	Area Affected (mha)	Population affected (million)	Damage to crops		Damage to houses		Cattle Lost (Nos.)	Human Live Lost (Nos)	Damage to Public utilities (Rs. Cr.)	Total damages Crops, Houses & Public utilities in Rs.Crore (col.6+8+11)
				Area (mha)	Value (Rs. Cr.)	Nos.	Value (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

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**ANNEXURE REFERRED TO IN REPLY OF PARTS (a) & (b) ,LOK SABHA UNSTARRED QUESTION NO. 4317 FOR ANSWER ON 11.08.2016 REGARDING “PREVENTION OF FLOODS”**

**Annex-1(Contd..)**

SN	Year	Area Affected ( mha)	Populati on affected (million)	Damage to crops		Damage to houses		Cattle Lost ( Nos.)	Human Live Lost ( Nos)	Damage to Public utilities (Rs. Cr.)	Total damages Crops, Houses & Public utilities in Rs.Crore (col.6+8+11)
				Area ( mha)	Value ( Rs. Cr.)	Nos.	Value (Rs. Cr.)				
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*	3.640	21.147	3.635	3214.987	662495	526.125	156855	2137	3938.119	11094.961
62	2014*	10.238	9.248	5.094	1439.151	169410	459.216	16562	1402	4740.341	6638.274
63	2015*	0.020	22.680	2.258	12382.361	865792	7974.296	25689	944	8718.057	29384.773
	<b>TOTAL</b>	<b>442.293</b>	<b>1981.151</b>	<b>236.510</b>	<b>84580.241</b>	<b>75914495</b>	<b>42573.528</b>	<b>5929664</b>	<b>102967</b>	<b>136769.771</b>	<b>268835.957</b>
	<b>AVG</b>	<b>7.021</b>	<b>31.447</b>	<b>3.754</b>	<b>1342.544</b>	<b>1204992</b>	<b>675.770</b>	<b>94122</b>	<b>1634</b>	<b>2170.949</b>	<b>4267.237</b>
	<b>MAX</b>	<b>17.500</b>	<b>70.450</b>	<b>12.299</b>	<b>12382.361</b>	<b>3507542</b>	<b>10809.795</b>	<b>618248</b>	<b>11316</b>	<b>17509.353</b>	<b>32551.758</b>
	<b>(YEAR)</b>	<b>1978</b>	<b>1978</b>	<b>2005</b>	<b>2003</b>	<b>1978</b>	<b>2009</b>	<b>1979</b>	<b>1977</b>	<b>2009</b>	<b>2009</b>

**ANNEXURE REFERRED TO IN REPLY OF PARTS (e) ,LOK SABHA UNSTARRED QUESTION NO. 4317 FOR ANSWER ON 11.08.2016 REGARDING “PREVENTION OF FLOODS”**

**Annex-2**

**State-Wise Works Approved, Works Completed and Funds Released under  
Flood Management Programme ( FMP ) during XI and XII Plan**

Rs. in crore

Sl. No.	State	XI Plan			XII Plan			Total (XI + XII Plan) Status			
		Works Approved		Funds Released ( XI Plan)	Works Approved		Funds Released ( XII Plan)	Works Approved		Number of Works Completed	Total Funds Released ( XI + XII Plan)
		Nos.	Estimated Cost		Nos.	Estimated Cost		Nos.	Estimated Cost		
1	Arunachal Pradesh	21	224.69	81.69	0	0.00	64.22	21	224.69	11	145.91
2	Assam	100	996.14	748.86	41	1386.97	64.89	141	2383.11	94	813.75
3	Bihar	43	1370.42	723.18	4	447.63	184.64	47	1818.05	41	907.82
4	Chhattisgarh	3	31.13	15.57	0	0.00	3.75	3	31.13	0	19.32
5	Goa	2	22.73	9.98	0	0.00	2.00	2	22.73	2	11.98
6	Gujarat	2	19.79	2.00	0	0.00	0.00	2	19.79	1	2.00
7	Haryana	1	173.75	46.91	0	0.00	0.00	1	173.75	0	46.91
8	Himachal Pradesh	3	225.32	165.98	4	1139.62	221.87	7	1364.94	1	387.85
9	Jammu & Kashmir	28	408.22	252.57	15	562.47	129.39	43	970.69	8	381.96
10	Jharkhand	3	39.30	18.44	0	0.00	4.27	3	39.30	2	22.71
11	Karnataka	3	59.46	23.80	0	0.00	0.00	3	59.46	0	23.80
12	Kerala	4	279.74	63.68	0	0.00	55.22	4	279.74	0	118.90
13	Manipur	22	109.34	66.34	0	0.00	24.36	22	109.34	19	90.70
14	Meghalaya	0	0.00	3.81	0	0.00	0.00	0	0.00	0	3.81
15	Mizoram	2	9.13	14.48	0	0.00	1.93	2	9.13	0	16.41
16	Nagaland	11	49.35	28.96	6	74.52	31.04	17	123.87	9	60.00
17	Orissa	67	169.00	101.12	1	62.32	0.00	68	231.32	60	101.12
18	Puducherry	1	139.67	7.50	0	0.00	0.00	1	139.67	0	7.50
19	Punjab	5	153.40	40.43	0	0.00	0.00	5	153.40	0	40.43
20	Sikkim	28	104.92	83.69	17	261.40	8.15	45	366.32	21	91.84
21	Tamilnadu	5	635.54	59.82	0	0.00	0.00	5	635.54	0	59.82
22	Tripura	11	26.57	23.62	0	0.00	0.00	11	26.57	8	23.62
23	Uttar Pradesh	26	667.57	290.69	3	291.70	111.22	29	959.27	6	401.91
24	Uttarakhand	12	119.82	49.63	10	715.72	153.98	22	835.54	8	203.61
25	West Bengal	17	1822.08	643.26	1	438.94	146.14	18	2261.02	6	789.40
	<b>Total</b>	<b>420</b>	<b>7857.08</b>	<b>3566.00</b>	<b>102</b>	<b>5381.28</b>	<b>1207.08</b>	<b>522</b>	<b>13238.36</b>	<b>297</b>	<b>4773.08</b>

**ANNEXURE REFERRED TO IN REPLY OF PARTS (d) ,LOK SABHA UNSTARRED QUESTION NO. 4317 FOR ANSWER ON 11.08.2016 REGARDING “PREVENTION OF FLOODS”**

**Annex-3**

**State-wise Details of Flood Forecasting Network**

Sl. No.	State	Existing Flood Forecasting Stations	Additional Flood Forecasting Stations proposed to be installed	Total flood Forecasting Network after expansion
1	Andhra Pradesh	8	9	17
2	Arunachal Pradesh	1	2	3
3	Assam	25	4	29
4	Bihar	32	2	34
5	Chhattisgarh	1	0	1
6	Gujarat	11	1	12
7	Haryana	1	1	2
8	Himachal Pradesh.	0	1	1
9	Jammu & Kashmir	1	4	5
10	Jharkhand	5	15	20
11	Karnataka	8	0	8
12	Kerala	0	2	2
13	Madhya Pradesh	3	1	4
14	Maharashtra	9	1	10
15	Manipur	0	0	0
16	Odisha	12	2	14
17	Rajasthan	0	12	12
18	Sikkim	0	8	8
19	Tamil Nadu	2	12	14
20	Telangana	8	5	13
21	Tripura	2	0	2
22	Uttar Pradesh	35	5	40
23	Uttarakhand	3	4	7
24	West Bengal	14	0	14
25	NCT Delhi	2	0	2
26	Dadra & Nagar Haveli	1	0	1
<b>Total</b>		<b>184</b>	<b>91</b>	<b>275</b>