

GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES,
RIVER DEVELOPMENT & GANGA REJUVENATION
LOK SABHA
UNSTARRED QUESTION NO. †678
ANSWERED ON 13.12.2018

AGREEMENT WITH GOOGLE FOR FLOOD MANAGEMENT

†678. SHRI RAJAN VICHARE

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

- (a) the damage caused by floods across the country during the last three years, State-wise;
- (b) whether the Government has signed any agreement with Google company to make flood management more effective; and
- (c) if so, the details thereof?

ANSWER

THE MINISTER OF STATE FOR WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION & PARLIAMENTARY AFFAIRS

(SHRI ARJUN RAM MEGHWAL)

(a) The damage caused by floods across the country during the last three years, State- wise as per the data available with Central Water Commission is at **Annexure-1**.

(b) & (c) Yes, Central Water Commission (CWC) has signed a collaboration agreement with Google for improving flood prediction system. As per the agreement, CWC and Google will share technical expertise in the field of artificial intelligence, machine learning, geo-spatial mapping and analysis of hydrological observation data to collaborate on (i) improving flood prediction systems, which will help provide location-targeted, actionable flood warnings, (ii) high priority research project utilizing Google Earth Engine to help visualize and improve flood management and (iii) a cultural project to build online exhibitions on the Rivers of India. The term of agreement is for three years.

ANNEXURE-I

ANNEXURE REFERRED TO IN REPLY TO PART (a) OF UNSTARRED QUESTION NO. 678 TO BE ANSWERED IN LOK SABHA ON 13.12.2018 REGARDING “AGREEMENT WITH GOOGLE FOR FLOOD MANAGEMENT”

STATEMENT SHOWING STATE-WISE FLOOD DAMAGE DURING 2015*

* Tentative

Sl. No	Name of State	Area Affected (Mha)	Population Affected (Million)	Damages to Crops		Damage to Houses		Cattle Lost Nos.	Human Lives Lost Nos.	Damage to Public Utilities (Rs. Crore)	Total Damages Crops, Houses & Public Utilities (Rs. Crore)
				Area (Mha)	Value (Rs. Crore)	Nos.	Value (Rs. Crore)				
1	2	3	4	5	6	7	8	9	10	11	12
1	ANDHRA PRADESH	0.000	0.000	0.000	0.000	103	0.000	420	28	0.000	0.000
2	ARUNACHAL PRADESH	0.014	0.177	0.014	15.294	1702	16.946	848	29	1730.570	1762.810
3	ASSAM	0.002	0.018	0.002	0.000	16	0.000	0	0	3.318	3.318
4	BIHAR	0.000	0.279	0.000	0.000	518	0.694	1	27	62.000	62.694
5	CHATTISGARH	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
6	GOA	0	0	0	0	0	0	0	0	0	0
7	GUJARAT	0.000	4.000	0.000	0.000	0	0.000	0	98	0.000	0.000
8	HARYANA	0.097	0.160	0.094	437.200	24	0.025	1	0	0.000	437.225
9	HIMACHAL PRADESH	0.006	6.865	0.000	121.380	3264	6.690	686	133	2.550	130.620
10	JAMMU & KASHMIR	0.000	0.000	0.000	0.000	0	0.000	0	3	0.000	0.000
11	JHARKHAND	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
12	KARNATAKA	0.174	0.000	0.174	776.480	10427	12.020	430	128	75.490	863.990
13	KERALA	0.006	0.017	0.006	0.000	6705	0.000	4	74	6.507	6.507
14	MADHYA PRADESH	0.000	1.000	0.000	0.000	3442	0.000	54	19	69.010	69.010
15	MAHARASHTRA	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
16	MANIPUR	0.045	0.427	0.045	35.050	11607	43.000	29	16	396.640	474.690
17	MEGHALAYA	0.000	0.000	0.000	0.000	50	0.000	0	1	0.000	0.000
18	MIZORAM	0.189	0.000	0.189	0.386	4	0.200	0	0	0.050	0.636
19	NAGALAND	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
20	ORISSA	0.046	0.012	0.046	0.000	573	0.000	0	3	0.000	0.000
21	PUNJAB	0.037	0.032	0.037	63.860	462	2.680	23	11	98.000	164.540
22	RAJASTHAN	1.559	6.257	0.464	1122.246	70290	48.339	3607	54	234.445	1405.030
23	SIKKIM	0.600	0.000	0.600	0.000	0	0.000	303	0	0.000	0.000
24	TAMILNADU	0.383	3.042	0.383	2782.788	3015270	0.000	16215	421	23129.722	25912.510
25	TRIPURA	0.001	0.014	0.001	247.908	3255	20.735	21	1	42.120	310.763
26	UTTAR PRADESH	0.000	0.010	0.000	0.000	6	0.000	0	0	0.000	0.000
27	UTTARAKHAND	0.000	0.000	0.000	0.000	411	0.000	181	33	0.000	0.000
28	WEST BENGAL	1.300	10.840	1.300	11433.680	830245	7895.630	22774	338	6023.960	25353.270
29	ANDAMAN & NICOBAR ISLAND		0.002		0.477	149	0.010		0	0.000	0.503
30	CHANDIGARH	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
31	DADAR & NAGAR HAVELI	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
32	DAMAN & DIU	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
33	DELHI	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
34	LAKSHADWEEP	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
35	PUDUCHERRY	0.020	0.050	0.020	7.200	668	0.000	0	3	325.800	333.000
	Total	4.478	33.203	3.374	17043.948	3959191	8046.969	45597	1420	32200.182	57291.114

STATEMENT SHOWING STATE-WISE FLOOD DAMAGE DURING 2016*

* Tentative

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				Area (Mha)	Value (Rs. Crore)	Nos.	Value (Rs. Crore)				
1	2	3	4	5	6	7	8	9	10	11	12
1	ANDHRA PRADESH	0.003	0.386	0.003	0.000	0	0.000	4	3	0.000	0.000
2	ARUNACHAL PRADESH	0.000	0.000	0.000	0.000	354	0.000	15671	42	0.000	0.000
3	ASSAM	0.000	0.003	0.000	0.000	0	0.000	0	36	17.890	17.890
4	BIHAR	0.410	8.823	0.410	443.530	16717	44.262	246	254	40.970	528.762
5	CHATTISGARH	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
6	GOA	0	0	0	0	0	0	0	0	0	0
7	GUJARAT	0.000	0.012	0.000	0.000	128	0.000	322	99	0.000	0.000
8	HARYANA	0.004	0.000	0.004	518.235	49	4.212	1	2	0.000	522.447
9	HIMACHAL PRADESH	0.035	6.865	0.035	26.830	2283	15.270	136	40	3.020	45.120
10	JAMMU & KASHMIR	0.000	0.000	0.000	0.000	0	0.000	0	3	0.000	0.000
11	JHARKHAND	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
12	KARNATAKA	3.780	2.180	3.780	1771.260	21224	5.370	521	63	236.180	2012.810
13	KERALA	0.002	0.006	0.002	42.680	5809	0.000	56	66	0.000	42.680
14	MADHYA PRADESH	1.304	1.560	1.304	0.000	168267	0.000	2623	327	207.860	207.860
15	MAHARASHTRA	0.015	0.077	0.015	0.000	8164	0.000	1036	145	0.000	0.000
16	MANIPUR	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
17	MEGHALAYA	0.003	0.124	0.003	17.730	1412	15.477	0	4	29.322	62.529
18	MIZORAM	0.000	0.000	0.000	0.000	0	0.000	0	0	1.790	1.790
19	NAGALAND	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
20	ORISSA	0.009	0.015	0.000	0.000	9	0.050	0	3	31.245	31.295
21	PUNJAB	0.001	0.000	0.001	1.140	20	0.025	0	13	0.495	1.660
22	RAJASTHAN	0.884	4.381	0.796	1014.221	14494	20.378	635	129	164.514	1199.113
23	SIKKIM	0.000	0.000	0.000	0.000	6	0.000	0	0	0.000	0.000
24	TAMILNADU	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
25	TRIPURA	0.037	0.091	0.019	89.122	455	0.235	0	3	0.000	89.357
26	UTTAR PRADESH	0.569	2.032	0.277	123.776	35525	0.000	293	74	0.000	123.776
27	UTTARAKHAND	0.010	0.000	0.010	4.200	3324	9.397	823	114	774.640	788.237
28	WEST BENGAL	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
29	ANDAMAN & NICOBAR ISLAND	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
30	CHANDIGARH	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
31	DADAR & NAGAR HAVELI	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
32	DAMAN & DIU	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
33	DELHI	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
34	LAKSHADWEEP	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
35	PUDUCHERRY	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
	Total	7.065	26.555	6.658	4052.723	278240	114.676	22367	1420	1507.926	5675.325

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* Tentative

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				Area (Mha)	Value (Rs. Crore)	Nos.	Value (Rs. Crore)				
1	2	3	4	5	6	7	8	9	10	11	12
1	ANDHRA PRADESH	0.000	0.000	0.000	0.000	25	0.000	0	1	0.000	0.000
2	ARUNACHAL PRADESH	0.106	0.199	0.041	97.540	1463	5.550	1177	60	1471.590	1574.680
3	ASSAM	0.398	5.602	0.398	0.000	78287	0.000	0	160	0.000	0.000
4	BIHAR	0.810	17.164	0.810	0.000	118410	0.000	373	514	0.000	0.000
5	CHATTISGARH	0.000	0.000	0.000	0.000	929	0.000	0	52	0.000	0.000
6	GOA	0	0	0	0	64	0	0	1	0	0
7	GUJARAT	0.891	0.520	0.891	0.000	38796	0.000	0	284	0.000	0.000
8	HARYANA	0.001	0.000	0.001	17.960	8	0.047	0	0	0.000	18.007
9	HIMACHAL PRADESH	0.006	6.865	0.003	34.607	2195	13.300	199	75	3.460	51.367
10	JAMMU & KASHMIR	0.000	0.000	0.000	0.000	92	0.000	0	7	0.000	0.000
11	JHARKHAND	0.000	0.010	0.000	0.000	2668	0.000	0	12	0.000	0.000
12	KARNATAKA	0.000	0.000	0.000	0.000	1910	0.000	0	84	0.000	0.000
13	KERALA	0.000	0.000	0.000	0.000	3836		0	66	0.000	0.000
14	MADHYA PRADESH	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
15	MAHARASHTRA	0.000	0.000	0.000	0.000	0	0.000	0	148	0.000	0.000
16	MANIPUR	0.089	0.000	0.089	0.000	18989	0.000	0	21	0.000	0.000
17	MEGHALAYA	0.000	0.000	0.000	0.000	148	0.000	0	3	0.000	0.000
18	MIZORAM	0.046	0.000	0.046	0.000	5437	0.000	0	11	0.000	0.000
19	NAGALAND	0.568	0.667	0.568	9.300	4200	18.200	2515	29	524.090	551.590
20	ODISHA	0.658	0.697	0.021	0.000	5610	0.000	1316	3	334.315	334.315
21	PUNJAB	0.006	0.000	0.006	18.230	130	0.410	6	5	0.000	18.640
22	RAJASTHAN	1.087	3.586	0.739	1333.221	57290	30.450	5536	101	513.186	1876.857
23	SIKKIM	0.002	0.033	0.001	5.000	810	9.270	110	10	231.170	245.440
24	TAMILNADU	0.000	0.000	0.000	0.000	9	0.000	0	1	0.000	0.000
25	TRIPURA	0.004	0.000	0.004	0.000	4091	0.000	0	17	0.000	0.000
26	UTTAR PRADESH	0.437	2.923	0.396	308.053	26834	0.000	93	121	0.000	308.053
27	UTTARAKHAND	0.000	0.000	0.000	0.000	1410	0.000	0	59	0.000	0.000
28	WEST BENGAL	1.033	8.723	1.033	6914.500	826982	9158.280	2857	217	1655.160	17727.940
29	ANDAMAN & NICOBAR ISLAND	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
30	CHANDIGARH	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
31	DADAR & NAGAR HAVELI	0.000	0.000	0.000	0.000	0	0.000	0	0	0.100	0.100
32	DAMAN & DIU	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
33	DELHI	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
34	LAKSHADWEEP	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
35	PUDUCHERRY	0.000	0.000	0.000	0.000	0	0.000	0	0	0.000	0.000
	Total	6.140	46.988	5.046	8738.411	1200623	9235.507	14182	2062	4733.071	22706.989