GOVERNMENT OF INDIA
WATER RESOURCES, RIVER DEVELOPMENT AND GANAGA REJUVENATION
LOK SABHA

STARRED QUESTION NO:73
ANSWERED ON:03.12.2015
Flood Forecasting Stations
Thakur Shri Anurag Singh

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

(a) whether the Central Water Commission has set up or plans to set up Flood Forecast Stations and if so, the details thereof, river basin/location-wise;

(b) whether the Government proposes to set up such stations in various States including Himachal Pradesh;

(c) if so, the details thereof and if not, the reasons therefor;

(d) whether adequate technological advancements have been made for effective forecasting of floods, if so, the details thereof; and

(e) whether the Government plans to increase the reach of these forecast stations and if so, the details thereof?

Answer

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

(SUSHRI UMA BHARTI)

(a) to (e) A Statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (e) OF STARRED QUESTION No.*73 FOR ANSWER ON 03.12.2015 REGARDING "FLOOD FORECASTING STATIONS".

(a) to (c) Central Water Commission (CWC) has, inter-alia, been entrusted with flood forecasting activities in India. For this purpose, a network of 878 stations on major rivers and their tributaries has been set up. Presently, flood forecasts are issued for 176 stations (148 level forecast and 28 inflow forecast) using hydrological data from its own network and Quantitative Precipitation Forecast (QPF) received from Flood Metrological Organisation (FMO) of India Metrological Department (IMD). The existing flood forecasting network of CWC covers 19 states/UTs/NCT, 10 major river basins and 72 sub-basins.
In addition to above, CWC has planned to include 100 more forecasting stations (38 level and 62 inflow) in its network during the current Plan,to cover the uncovered areasin 25 States / UTs including the State of Himachal Pradesh.
The state-wise and river-wise details of existing and planned flood forecasting stations are given at Annexure-I & II respectively.

(d) The modernization of network includes installation of automatic sensor based data collection and satellite based data transmission systems for near real time flood forecasting and development of medium range hydrologic and hydraulic models with a warning time of upto 72 hours using one dimensional mathematical modeling tools, for effective flood forecasting.
So far, 445 stations have been modernized with automatic data collection and transmission systems. Mathematical models on rivers Jhelum, Alaknanda, Bhagirathi, Ganga, Brahmaputra, Yamuna, Chambal, Baitarani, Vamsadhara, Subarnarekha, Mahanadi, Tapi, Godavari and Krishna have been developed. The forecast is disseminated using the email, SMS and website facilities.

(e) The Ministry had launched new flood forecasting website e-Surface Water Information System ("e-SWIS") during the flood season of 2014, which has facilitated timely forecast dissemination through email/SMS. The trends of river water levels at the forecasting stations of the network during the last 72 hours are also made available to the general public at the web portal (http://india-water.gov.in//ffs).In addition, flood-warning messages are also disseminated using Common Alerting Protocol (CAP) of Google to make the warning more effective.

Annexure-I

ANNEXURE REFERRED TO IN REPLY TO PARTS (a) to (c) OF STARRED QUESTION No. 73 FORANSWER ON 03.12.2015 REGARDING"FLOOD FORECASTING STATIONS".
State-wise Distribution of Existing and Proposed Flood Forecasting Stations of CWC

Sl. No. Name of State/UT Existing

flood forecasting Stations Proposed Flood Forecasting Stations during XII Plan
Level Inflow Total Level Inflow Total
1 Andhra Pradesh 5 3 8 4 5 9
2 Arunachal Pradesh 0 0 0 2 1 3
3 Assam 24 0 24 5 0 5
4 Bihar 32 0 32 2 0 2
5 Chhattisgarh 1 0 1 0 0 0
6 Gujarat 6 5 11 0 1 1
7 Haryana 0 1 1 1 0 1
8 Himachal Pradesh 0 0 0 1 0 1
9 Jammu & Kashmir 1 0 1 5 0 5
10 Jharkhand 1 4 5 1 14 15
11 Karnataka 1 3 4 0 4 4
12 Kerala 0 0 0 0 2 2
13 Madhya Pradesh 2 1 3 0 1 1
14 Maharashtra 7 2 9 0 1 1
15 Orissa 11 1 12 0 2 2
16 Rajasthan 0 0 0 2 10 12
17 Sikkim 0 0 0 3 5 8
18 Tamilnadu 0 0 0 5 9 14
19 Telangana 4 4 8 2 3 5
20 Tripura 2 0 2 0 0 0
21 Uttar Pradesh 34 1 35 4 1 5
22 Uttarakhand 3 0 3 1 3 4
23 West Bengal 11 3 14 0 0 0
24 NCT of Delhi 2 0 2 0 0 0
25 Dadra & Nagar Haveli 1 0 1 0 0 0
Total 148 28 176 38 62 100

Annexure-II

ANNEXURE REFERRED TO IN REPLY TO PARTS (a) to (c) OF STARRED QUESTION No. 73 FORANSWER ON 03.12.2015 REGARDING"FLOOD FORECASTING STATIONS".
Basin-wise Existing Flood Forecasting Stations

Sl. No. Name of River-systems Number of flood forecasting Stations
Level Inflow Total
1 Ganga & Tributaries 77 10 87
2 Brahmaputra & Tributaries 27 - 27
3 Barak-System 05 - 05
4 Eastern-Rivers 08 01 9
5 Mahanadi 03 01 04
6 Godavari 14 04 18
7 Krishna 03 06 09
8 West flowing Rivers 09 06 15
9 Pennar 01 - 01
10 Indus (Jhelum) 01 - 01
Total 148 28 176

Note for possible supplementary for LokSabha Admitted Starred Dy No. 3052 (Admitted no. 73 Priority No. 13) for answer on 03.12.2015 regarding "Flood forecasting stations".

1.0 Causes of Floods
â€¢ Inadequate capacity within the banks of the rivers to contain the high flows brought down from the upper catchment due to heavy rainfall.

â€¢ Poor drainage characteristic get flooded by accumulation of water from heavy rainfall Flooding is accentuated by erosion and
â€¢ silting of the river beds resulting in reduction of carrying capacity of river channel,
â€¢ earthquakes and landslides leading to changes in river courses & obstructions to flow,
â€¢ synchronization of floods in the main and tributary rivers and retardation due to tidal effects.
â€¢ Some parts of the country mainly coastal areas of Andhra Pradesh, Assam, Orissa, Tamilnadu and West Bengal experience cyclones which often are accompanied by heavy rainfall leading to flooding.

2.0 Damages due to Floods in India

The Highlights of the flood damages from 1953-2014 are given below:

SN	Item	Unit	Average Annual Damage	Maximum Damage Extent	Year
1	2	3	4	5	6
1	Area affected	mha.	7.079	17.50	1978
2	Population affected	million	31.625	70.45	1978
3	Human lives lost	nos.	1645	11316	1977
4	Cattle lost	nos.	95225	618248	1979
5	Cropped area affected	mha.	3.772	12.299	2005
6	Damage to crops	Rscrore	1166.705	7307.230	2003
7	Houses damaged	nos.	1210455	3507542	1978
8	Damage to houses	Rscrore	558.041	10809.795	2009
9	Damage to public utilities	Rscrore	2065.285	17509.353	2009
10	Total Damage to crops, houses & public utilities	Rscrore	3864.26	32551.76	2009

3.0 Flood Management

Different measures are adopted to reduce the flood losses and protect the affected flood areas. Flood management measures are classified broadly:

â€¢ Engineering / Structural Measures
â€¢ Administrative / Non-Structural Measures

3.1 Engineering /Structural Measures

? The engineering measures for flood control which bring relief to the flood prone areas by reducing flood flows and thereby the flood levels are as under:

â€¢ Reservoir:an artificially created reservoir behind a dam across a river
â€¢ Detention basin:a natural depression suitably improved and regulated, if necessary or
â€¢ Diversion of Floods:by diversion of a part of the peak flow to another river or basin, where such diversion would not cause appreciable damage.
â€¢ Channelisation of Rivers:by constructing a parallel channel bye passing a particular town/reach of the river prone to flooding.

? The engineering methods of flood protection, which do not reduce the flood flow but reduce spilling, are:

â€¢ embankments which artificially raise the effective river bank and thereby prevent spilling and The Ministry has provided financial assistance of Rs.4500.72 crore to the States on their requests. Out of this an amount of Rs.3566 crore was released during XI Plan and Rs.934.72 crore in XII Plan, so far.

â€¢ channel and drainage improvement works, which artificially reduce the flood water level so as to keep the same, confined within the river banks and thus prevent spilling.

3.2 Administrative Methods

â€¢ Flood Forecasting & Warning system:Facilitating timely evacuation of the people and shifting of their movable property to safer grounds by having advance warning of incoming flood i.e. flood forecasting, flood warning in case of threatened inundation
â€¢ Flood Plain Zoning:Discouraging creation of valuable assets/settlement of the people in the areas subject to frequent flooding i.e. enforcing flood plain zoning regulation.

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