GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION No. 251
TO BE ANSWERED ON WEDNESDAY, JULY 22, 2015

CYCLONES

251. SHRI ABHISHEK SINGH:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) the efforts being made by the Government for anticipating oceanic cyclones;
(b) whether the Government has conducted any survey of cyclone prone areas;
(c) if so, the details thereof and the cyclone prone areas in the country, location and State-wise;
(d) the preventive steps being taken by the Government in those States; and
(e) the details of losses of life and property suffered due to cyclones during the last year?

ANSWER
MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTRY OF EARTH SCIENCES
(SHRI Y. S. CHOWDARY)

(a) Earth System Science Organization–India Meteorological Department (ESSO-IMD) operates 24X7 monitoring of satellite and Doppler Weather Radar (DWR) based weather monitoring over the potential cyclogenic zones of the Bay of Bengal and Arabian Sea for detecting the cyclogenesis. The commissioning of the high performance computing (HPC) system has provided opportunity to assimilate satellite radiance, Doppler Weather Radar (DWR), OCEANSAT (scatterometer, total precipitable water content) data etc. of global oceans in to the global (22Km grid scale)/meso-scale(9Km grid scale) forecast systems. The performance evaluation of the updated global/meso-scale forecast systems in continuation with adoption of improved local forecast systems for the past 5-7 years have demonstrated enhanced forecast skill by about 18% quantitatively as far as the track and landfall forecasts of the tropical cyclones are concerned.

As and when the cyclone systems move in to the 500Km surveillance range of DWRs, identification of strong wind zones and pockets of heavy rainfall within the core cyclone area is carried out and their rapid changes are monitored on continuous basis. ESSO-IMD currently operates 5-Doppler Weather Radars (DWR) at Chennai, Machilipatnam, Visakhapatnam, Kolkata, Sriharikota on the east

coast, 679 Automatic Weather Stations (AWS) and 1292 Automatic Rain Gauges (ARG) covering all districts of India. With the commissioning of the state-of-the-art observing, monitoring/ early warning and data visualization/information processing and communication technologies, several manual operations have been fully automated.

(b) Yes Madam.

(c)&(d) ESSO-IMD has conducted a survey on cyclone prone area in the country. Ninety six districts including 72 districts touching the coast and 24 districts not touching the coast, but lying within 100 km from the coast have been classified based on their proneness in terms of frequency of total cyclones & severe cyclones crossing the district; strength of actual/estimated wind speed and wind strength affecting the district, probable maximum storm surge (PMSS) and daily probable maximum precipitation (PMP) over the district based on data of 1891-2010. Out of 96 districts, twelve are very highly prone, forty one are highly prone, thirty are moderately prone and remaining thirteen are less prone. Twelve very highly prone districts include south and north 24 Praganas, Medinipur and Kolkata of West Bengal, Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts of Odisha, Nellore, Krishna and east Godavari districts of Andhra Pradesh and Yanam of Puducherry. Details of the districts are shown in Annexure I.

ESSO council serves as a Monitoring and Advisory Committee to evaluate progress of various programmes every six months and suggests remedial measures. ESSO-IMD participates in the pre-cyclone exercise twice a year in the month of April and September to take stock the observational systems and plan for the ensuing cyclone season.

Effective emergency response mechanisms are institutionalized in all coastal states /districts to execute all necessary action related response and safe relocation of likely affected communities from all most vulnerable villages in a highly structured /organized manner so as to ensure the minimal loss of life. In order to facilitate such actions, all coastal villages are connected with all weather approach roads for executing safe relief operations.

24X7 control room of Ministry of Home Affairs executes and guides the states governments as per the directions and decisions of the Crisis management Committee headed by the Cabinet Secretary.

(e) Only The Very Severe Cyclonic Storm 'HUDHUD' crossed Indian cost last year. HUDHUD affected North Andhra Pradesh and adjoining south Odisha. Details of the damages in Andhra Pradesh are given in Annexure-II.

Annexure-I

Cyclone prone districts of India

State	Districts	Category of Proneness
Andhra Pradesh	Nellore	Very highly prone
Andhra Pradesh	East Godavari	Very highly prone
Andhra Pradesh	Krishna	Very highly prone
Odisha	Balasore	Very highly prone
Odisha	Kendrapara	Very highly prone
Odisha	Jagatsinghpur	Very highly prone
Odisha	Bhadrak	Very highly prone
Puducherry	Yanam	Very highly prone
West Bengal	South 24-Pragana	Very highly prone
West Bengal	Medinipur	Very highly prone
Andhra Pradesh	Srikakulam	Highly prone
Andhra Pradesh	Guntur	Highly prone
Andhra Pradesh	Visakhapatnam	Highly prone
Andhra Pradesh	West Godavari	Highly prone
Andhra Pradesh	Prakasam	Highly prone
Andhra Pradesh	Vizianagaram	Highly prone
Daman & Diu	Diu	Highly prone
Daman & Diu	Daman	Highly prone
Goa	North Goa	Highly prone
Goa	South Goa	Highly prone
Gujarat	Junagadh	Highly prone
Gujarat	Ahmedabad	Highly prone
Gujarat	Kachchh	Highly prone
Gujarat	Bhavnagar	Highly prone
Gujarat	Jamnagar	Highly prone
Gujarat	Anand	Highly prone
Gujarat	Navsari	Highly prone
Gujarat	Surat	Highly prone
Gujarat	Bharuch	Highly prone
Gujarat	Valsad	Highly prone
Gujarat	Rajkot	Highly prone
Gujarat	Porbandar	Highly prone
Lakshadweep	Lakshadweep	Highly prone
Maharashtra	Thane	Highly prone
Maharashtra	Mumbai suburban	Highly prone
Maharashtra	Raigarh	Highly prone
Odisha	Ganjam	Highly prone

Odisha	Puri	Highly prone
Odisha	Khordha	Highly prone
Puducherry	Karaikal	Highly prone
Puducherry	Puducherry	Highly prone
Tamil Nadu	Pudukkottai	Highly prone
Tamil Nadu	Cuddalore	Highly prone
Tamil Nadu	Kanchipuram	Highly prone
Tamil Nadu	Tiruvarur	Highly prone
Tamil Nadu	Nagappattinam	Highly prone
Tamil Nadu	Chennai	Highly prone
Tamil Nadu	Toothukudi	Highly prone
Tamil Nadu	Viluppuram	Highly prone
A&N Island	A & N Islands	Moderately prone
Gujarat	Vadodara	Moderately prone
Gujarat	Amreli	Moderately prone
Karnataka	Udupi	Moderately prone
Karnataka	Uttar Kannada	Moderately prone
Karnataka	Dakshin Kannada	Moderately prone
Kerala	Kozhikode	Moderately prone
Kerala	Malappuram	Moderately prone
Kerala	Thrissur	Moderately prone
Kerala	Kannur	Moderately prone
Kerala	Kollam	Moderately prone
Kerala	Alappuzha	Moderately prone
Kerala	Thiruvananthapuram	Moderately prone
Maharashtra	Ratnagiri	Moderately prone
Maharashtra	Sindhudurg	Moderately prone
Puducherry	Mahe	Moderately prone
Tamil Nadu	Ramanathapuram	Moderately prone
Tamil Nadu	Tirunelveli	Moderately prone
Tamil Nadu	Thanjavur	Moderately prone
Tamil Nadu	Tiruvallur	Moderately prone
Tamil Nadu	Kanyakumari	Moderately prone
Kerala	Kasargod	Less prone
Kerala	Ernakulam	Less prone

Annexure-II

Damages associated with VSCS Hudhud

S No.	ITEM	Quantity
1	Districts Affected	4
2	Block Affected (Nos.)	65
3	Village Affected(Nos.)	4484
4	Families affected	20,93,508
5	Persons evacuated	135262
6	Persons rescued	146
7.	Human Loss/Injured	
	(a) Number of Deaths(no.)	46
	(b) Number of injured (no.)	43
8.	Loss of livestock	
	Number of animal perished (no.)	2831
	poultry/duck	2443701
9.	Agriculture	237854 Hect.
	Expected production loss (tons)	
	(a) Food Grains & Cash crops	2214000 in Tons
	(b) Horticultural crops	6.89 Tons
10.	Housing	
	Number of Affected houses (no.)	41269
	kuchha	18886
	(ii) pucca	12264
	(iii) Hut	10119
11.	Infrastructure	
	(A) Roads	
	(a) Road length damaged (km)	
	(i)National highway	Not estimated
	(ii)state highway	2250.00
	(iii)P.R. Road	3176.7 km
	(iv)others(municipal Roads)	648.73 km
	(b) Villages disconnected to transportation facility	
	(i) Number	73
	(ii) Days	2
	(B) Water supply system	
	(a) pipe line	
	(i) Trunk (Fully/ Partially damaged no)	194 No /39.40 km
	(ii) Distribution (Fully/ Partially damaged no)	35

	(b) pumping station (no.)	102
	(c) overhead reservoirs(Fully damaged)	197
	(e) Drinking water (Tanks Partially damaged no.)	7
	(f) Drinking water wells Fully/ Partially damaged (no.)	33
	[E] IRRIGATION	
	(a) breach of canal damaged (No.)	55
	(b) breaches to dams(No.)	1847
	(d) irrigation wells damaged(No.)	16
	[F] Eletrctricity supply*	27041 poles
	(a) high tension lines damaged (km)	506 km
	(b) low tension lines damaged (km)	7500 km
	(c) transformers damaged (No.)	7300
	(d) substation damaged	1526
	[G] Building	455 Nos.
	(a) Primary schools (Partially/Fully)	80
	(b) Secondary schools (Partially/ully.)	237
	(c) Community Center (Partially)	23
	(e) Other Government Building (Partiall)	8
	(H) Shops and others commercial building damaged	
	(a) shops (Partially)	70
	(b) other commercial buildings(Partially)	73
	[I] Other utilities	
	(a) Land telephone disrupted(no. of days)	2
	(b) Mobile phones disrupted (no. of days)	1
	(c) villages disconnected to communication facilities	
	(i) Number	73
	(ii) days	2
12	Handlooms	
	Damaged looms	15
	Loss of raw materials/Goods in process/finished goods	32
13	Fisheries	
	Loss of Boat/missing	1110
	Catamaran	698
	Net	2129
14	Street vendors	10
	Loss of push carts(number)	85
15	Artisans’	70