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# Chapter-I

## Introduction

The unique geo-climatic conditions of the state of Odisha make it vulnerable to various frequent natural disasters like flood, cyclone, fire, hailstorm, drought and even earthquake. The river Mahanadi, Baitarani, Brahmani, Subarnarekha, Rushikulya and the other river systems and their tributaries usually cause major floods every year. Cyclones associated with heavy rain fall inundate vast areas of land along the coastal Odisha. A high percentage of land area comes under the seismic vulnerability zone. Recurrent natural calamities pose a major stumbling block in the path of socio-economic development of the State. In the face of such daunting odds, the people of Odisha have exhibited remarkable resilience.

The State experiences four main seasons of which, the summer and the Rainy are the most crucial. An extended summer followed by scanty or erratic rainfall results in drought situation. Excessive precipitation causes floods. Depressions in the Bay of Bengal mostly towards the end of the monsoon in the month of October result in cyclonic storms.

The land surface of the State slopes from west to east. The rivers originating from the hills of Odisha, Chhatisgarh and Jharkhand run eastward and flow through the State before falling into the Bay of Bengal. Some of the rivers also flow through the neighbouring states of West Bengal or Andhra Pradesh. Floods not only occur frequently, but also cause devastating effects. Almost 80% of the annual rainfall is concentrated over a short monsoon period of 3 months. Recent experience shows intermittent formation of depressions during the period of July to October. It is worthwhile to mention here that there were as many as 10 depressions during the year 2013-14. This combined with factors like flow of water from the western part of the State, upper catchment areas of the neighbouring states of Chhattisgarh and Jharkhand, flat coastal belts with poor drainage, high degree of siltation of rivers, lack of systematic treatment of upper catchments, regular breaching and spilling over of embankments cause severe floods in river basins and delta areas. Further, heavy and intensive rains in hilly

areas cause flash floods while the coastal areas are inundated by tidal surges during cyclones. Severe Damages are caused due to floods mainly by the Mahanadi, the Brahmani and the Baitarani as they are having common delta, where flood water intermingle and when in spate simultaneously, wreak considerable havoc. Besides, the rivers like Subarnarekha, Vansadhara, Rushikulya and Budhabalang also cause severe floods. It is noteworthy that the state of Odisha faced major floods during the years 2001, 2003, 2006, 2008, 2011 & 2013.

Hazards like lightning occur frequently throughout the year. A considerable number of people succumb to death due to lightning every year. Similarly, fire accidents bring untold miseries to the poor & vulnerable sections of the society.

### **Natural Calamities**

Usually, 8 categories of natural calamities occur in the state. They are –

1. Flood / Heavy rain
2. Cyclone
3. Drought
4. Fire accident /Lightning
5. Boat accident
6. Hailstorm and whirlwind
7. Heat wave
8. Tsunami

### **Month of occurrence –**

<b>Sl.</b>	<b>Calamities</b>	<b>Period / duration</b>
1.	Flood / Heavy rain	June, July & August
2.	Very Cyclonic storms	September & October
3.	Landslide	July & August
4.	Heat Wave	March to June
5.	Fire Accidents	Round the year
6.	Lightning	Round the year
7.	Hail Storms / Whirlwind	March to June

During the year 2013-14, the State encountered the following calamities:

1.	Flood / Heavy rain	June, July & August ( <i>six times</i> )
2.	Very Cyclonic storm Cyclonic Storm "Phailin	12th October 2013
3	Floods subsequent to cyclone Phailin in two phases	1 <sup>st</sup> Phase from 14-16 <sup>th</sup> Oct. 2013 2 <sup>nd</sup> Phase from 21-26 <sup>th</sup> Oct. 2013
4.	Landslide in Malkangiri	11-12 <sup>th</sup> July 2013
5.	Heat Wave	March to June
6.	Fire Accidents	Round the year
7.	Lightning	Round the year
8.	Hail Storms / Whirlwind	March to June

**The viciousness of the Very severe cyclonic storm "Phailin", which hit the Odisha coast on the 12th October, 2013 and caused extensive devastation attracting the global attention, are depicted in Chapter-IV.**

However, the State was spared with drought like situation during the year.

### **Major disasters occurred in the State**

The table below indicates the incidents of major disasters in the State during the last 21 years.

<b>Year</b>	<b>Calamity</b>	<b>No. of districts affected</b>
1993	Floods	27
1994	Floods Drought	5 10
1995	Floods & Cyclone	23
1996	Drought	28
1997	Drought	16
1998	Drought, Heat wave	26
1999	Super Cyclone	14
2000	Drought	29

2001	Floods	24
2002	Drought	29
2003	Floods	23
2004	Floods	05
2005	Floods	15
2006	Floods	27
2007	Floods (July)	12
2007	Floods (Aug & Sept)	15
2008	Floods(June & September )	21
2009	Flood & Heavy rain	17
	Drought / Pest Attack	18
2010	Flood & Heavy rain	06
	Drought	17
	Unseasonal Cyclonic Rain	24
2011	Drought	21
	Flood	21
2012	Drought	4
	Flood	5
2013	Very severe cyclone Phailin / Flood	19

## Chapter- II

### Rainfall

#### Normal rainfall (Long Term Average):

The long term average rainfall in respect of different Blocks, Districts and the State for different months of year is fixed by IMD, Pune taking into account the rainfall data for preceding 30 years. Such long term average rainfall popularly called 'Normal Rainfall' has been last fixed during 2006 for different districts and the State as follows:

Sl. No.	District	Annual Normal Rainfall (in mm)	Sl. No.	District	Annual Normal Rainfall (in mm)
1	Angul	1401.9	17	Kendrapara	1556.0
2	Balasore	1592.0	18	Keonjhar	1487.7
3	Bargarh	1367.3	19	Khordha	1408.4
4	Bhadrak	1427.9	20	Koraput	1567.2
5	Bolangir	1289.8	21	Malkanagiri	1667.6
6	Boudh	1623.1	22	Mayurbhanj	1600.6
7	Cuttack	1424.3	23	Nawarangpur	1569.5
8	Deogarh	1582.5	24	Nayagarh	1354.3
9	Dhenkanal	1428.8	25	Nuapara	1286.4
10	Gajapati	1403.3	26	Puri	1408.8
11	Ganjam	1276.2	27	Rayagada	1285.9
12	Jagatsinghpur	1514.6	28	Sambalpur	1495.7
13	Jajpur	1559.9	29	Sonepur	1418.5
14	Jharsuguda	1362.8	30	Sundargarh	1422.4
15	Kalahandi	1330.5			
16	Kandhamal	1427.9		<b>State Average</b>	<b>1451.2</b>

#### District-wise rainfall for the year 2013

The district-wise monthly rainfall from January to December 2013 with percentage of deviation is given in the table below.

Sl. No.	DISTRICT	JAN.			FEB.			MAR.			APRIL.			MAY			JUNE			JULY		
		Actual	Normal	% of Dev.	Actual	Normal	% of Dev.	Actual	Normal	% of Dev.	Actual	Normal	% of Dev.	Actual	Normal	% of Dev.	Actual	Normal	% of Dev.	Actual	Normal	% of Dev.
1	Angul	9.0	12.6	-28.6	8.6	27.1	-68.5	6.6	24.3	-72.8	23.8	27.2	-12.7	46.3	52.9	-12.5	258.2	225.1	14.7	371.9	347.7	6.9
2	Balasure	1.3	14.7	-90.9	2.3	31.8	-92.9	5.3	34.4	-84.5	49.8	62.2	-19.9	191.5	108.5	76.5	240.9	221.5	8.8	252.3	308.6	-18.2
3	Bargarh	5.5	12.5	-56.0	17.1	19.1	-10.6	0.0	22.0	-100.0	29.4	20.0	46.8	10.5	25.6	-59.0	198.2	205.6	-3.6	396.3	397.2	-0.2
4	Bhadrak	6.4	11.8	-45.9	4.6	29.6	-84.5	13.6	36.1	-62.4	67.9	51.2	32.7	163.1	91.4	78.5	150.8	198.2	-23.9	261.3	293.6	-11.0
5	Bolangir	1.5	8.6	-82.6	4.5	13.2	-66.0	1.2	14.6	-91.7	43.8	13.4	226.7	29.2	27.8	5.0	218.3	202.8	7.7	490.2	360.5	36.0
6	Boudh	0.0	17.0	-100.0	0.0	26.8	-100.0	0.0	22.4	-100.0	5.0	16.5	-69.7	14.3	38.4	-62.7	274.0	233.8	17.2	266.2	418.5	-36.4
7	Cuttack	0.0	9.9	-100.0	2.8	28.6	-90.3	0.3	24.7	-98.8	31.5	28.3	11.2	77.2	71.5	7.9	187.1	210.0	-10.9	308.8	308.3	0.2
8	Deogarh	7.5	14.1	-46.6	7.7	27.0	-71.6	0.7	20.6	-96.4	21.8	21.3	2.3	12.4	41.9	-70.5	190.4	242.4	-21.5	399.7	447.7	-10.7
9	Dhenkanal	0.0	10.5	-100.0	0.0	21.9	-100.0	0.0	33.7	-100.0	37.6	41.3	-9.0	92.8	69.6	33.4	269.1	225.7	19.2	393.6	317.9	23.8
10	Gajapati	2.9	8.1	-64.8	3.2	23.0	-86.3	1.5	41.3	-96.5	112.1	65.2	72.0	79.3	107.8	-26.4	365.6	199.7	83.1	231.0	230.6	0.2
11	Ganjam	3.9	9.4	-58.9	4.0	24.1	-83.2	0.0	32.6	-100.0	56.9	36.6	55.6	33.6	65.4	-48.7	289.3	168.3	71.9	314.8	220.8	42.6
12	Jagatsinghpur	0.0	14.5	-100.0	0.5	21.7	-97.7	0.0	35.5	-100.0	17.6	25.4	-30.6	93.8	78.0	20.2	161.6	202.3	-20.1	205.9	277.3	-25.7
13	Jajpur	8.6	12.9	-33.3	7.0	25.1	-72.1	9.9	28.4	-65.1	59.5	46.1	29.1	164.4	93.7	75.5	226.1	238.5	-5.2	365.4	350.9	4.1
14	Jharsuguda	0.8	14.1	-94.2	5.0	22.9	-78.1	3.4	17.6	-80.5	28.5	15.1	89.0	18.4	27.9	-34.0	158.1	218.8	-27.7	432.6	385.8	12.1
15	Kalahandi	3.6	10.3	-64.9	3.4	14.4	-76.5	0.5	23.7	-97.7	27.8	25.7	8.4	69.2	41.8	65.6	594.2	240.4	147.2	440.2	327.7	34.3
16	Kandhamal	23.6	10.6	122.4	7.8	29.7	-73.8	1.6	28.0	-94.3	56.0	35.7	56.9	59.1	67.8	-12.8	276.1	207.9	32.8	448.0	325.1	37.8
17	Kendrapara	0.0	10.6	-100.0	0.0	30.2	-100.0	3.3	35.0	-90.5	77.9	33.9	129.8	100.6	94.2	6.7	229.9	208.3	10.4	273.2	317.1	-13.8
18	Keonjhar	5.5	14.6	-62.1	11.3	33.8	-66.6	10.9	33.1	-67.2	42.9	42.1	1.8	103.0	94.8	8.6	242.2	241.4	0.3	388.4	318.0	22.1
19	Khordha	9.2	12.4	-25.8	0.0	24.3	-100.0	0.0	22.1	-100.0	44.8	28.0	60.0	61.4	60.7	1.2	248.6	196.2	26.7	312.3	304.9	2.4
20	Koraput	16.7	5.7	192.2	2.3	8.6	-73.6	1.2	18.3	-93.4	81.8	55.2	48.3	25.2	81.9	-69.2	532.5	206.8	157.5	349.2	375.6	-7.0
21	Malkangiri	0.0	2.7	-100.0	0.0	4.1	-100.0	0.0	8.9	-100.0	69.7	34.8	100.4	72.7	49.1	48.0	317.6	212.2	49.7	588.1	465.7	26.3
22	Mayurbhanj	1.6	10.3	-85.0	9.8	28.0	-65.1	5.6	40.2	-86.1	82.1	52.5	56.4	205.2	101.2	102.7	228.7	265.8	-14.0	436.1	337.3	29.3
23	Nawarangpur	0.0	6.7	-100.0	0.0	14.1	-100.0	0.0	15.1	-100.0	84.4	34.1	147.5	102.1	66.1	54.5	636.8	251.8	152.9	409.5	356.6	14.8
24	Nayagarh	1.8	11.7	-85.0	9.0	28.6	-68.4	0.0	30.0	-100.0	94.2	39.9	136.0	56.4	58.8	-4.2	310.9	203.5	52.8	444.9	288.5	54.2
25	Nuapara	0.0	12.0	-100.0	14.9	14.6	2.2	4.0	19.7	-79.7	10.2	21.8	-53.1	19.4	31.2	-37.8	231.9	210.3	10.3	518.2	347.1	49.3
26	Puri	0.0	10.9	-100.0	0.7	25.4	-97.1	0.0	15.5	-100.0	22.3	18.5	20.3	54.1	62.1	-12.9	224.7	188.0	19.5	329.6	292.0	12.9
27	Rayagada	2.5	9.6	-73.8	4.4	22.9	-80.6	4.5	38.0	-88.0	58.2	52.7	10.5	73.6	87.8	-16.2	417.2	195.3	113.6	248.4	259.5	-4.3
28	Sambalpur	6.8	14.8	-54.2	7.6	24.5	-69.2	0.0	18.2	-100.0	27.6	16.5	67.4	14.5	32.3	-55.1	192.7	221.0	-12.8	501.8	429.5	16.8
29	Sonepur	7.3	12.5	-41.3	5.8	17.2	-66.1	1.3	15.7	-91.5	42.0	15.4	172.7	13.7	29.3	-53.4	189.0	217.4	-13.1	473.0	399.6	18.4
30	Sundargarh	13.3	15.1	-12.0	2.2	24.9	-91.3	2.5	16.0	-84.2	50.0	16.0	212.6	15.8	40.6	-61.0	177.9	237.4	-25.1	417.8	386.4	8.1
<b>Total</b>		<b>139.2</b>			<b>146.3</b>			<b>78.1</b>			<b>1457.2</b>			<b>2072.5</b>			<b>8238.6</b>			<b>11269.0</b>		
<b>State Average</b>		<b>4.6</b>	<b>11.4</b>	<b>-59.3</b>	<b>4.9</b>	<b>22.9</b>	<b>-78.7</b>	<b>2.6</b>	<b>25.5</b>	<b>-89.8</b>	<b>48.6</b>	<b>33.1</b>	<b>46.7</b>	<b>69.1</b>	<b>63.3</b>	<b>9.1</b>	<b>274.6</b>	<b>216.5</b>	<b>26.8</b>	<b>375.6</b>	<b>339.9</b>	<b>10.5</b>

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Sl. No.	DISTRICT	AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER			Annual		
		Actual	Normal	% of Dev.	Actual	Normal	% of Dev.	Actual	Normal	% of Dev.	Actual	Normal	% of Dev.	Actual	Normal	% of Dev.	Actual	Normal	% of Dev.
1	Angul	189.2	357.5	-47.1	189.7	217.5	-12.8	341.2	86.3	295.4	0.0	20.4	-100.0	0.0	3.3	-100.0	1444.3	1401.9	3.0
2	Balasore	308.1	332.1	-7.2	345.9	267.6	29.3	696.5	170.5	308.5	0.0	34.6	-100.0	0.0	5.5	-100.0	2094.1	1592.0	31.5
3	Bargarh	221.6	374.4	-40.8	177.8	222.6	-20.1	186.2	52.8	252.6	0.0	10.4	-100.0	0.0	5.1	-100.0	1242.5	1367.3	-9.1
4	Bhadrak	217.6	311.7	-30.2	280.3	216.8	29.3	628.3	145.3	332.4	0.0	37.3	-100.0	0.0	4.9	-100.0	1794.0	1427.9	25.6
5	Bolangir	258.3	333.6	-22.6	171.6	237.4	-27.7	204.3	68.4	198.6	0.0	7.2	-100.0	0.0	2.3	-100.0	1422.8	1289.8	10.3
6	Boudh	185.0	488.8	-62.1	147.9	244.8	-39.6	277.6	90.5	206.8	0.0	21.1	-100.0	0.0	4.4	-100.0	1170.2	1623.0	-27.9
7	Cuttack	100.1	339.1	-70.5	196.6	229.2	-14.2	587.1	125.6	367.4	0.0	45.0	-100.0	0.0	4.1	-100.0	1491.4	1424.3	4.7
8	Deogarh	407.0	443.4	-8.2	142.3	228.2	-37.6	276.6	84.4	227.7	0.0	8.0	-100.0	0.0	3.5	-100.0	1466.1	1582.5	-7.4
9	Dhenkanal	127.1	344.8	-63.1	238.9	220.6	8.3	480.7	104.4	360.4	0.0	36.2	-100.0	0.0	2.2	-100.0	1639.6	1428.8	14.8
10	Gajapati	174.5	253.6	-31.2	238.7	237.9	0.3	559.9	168.6	232.1	12.5	61.8	-79.8	0.4	5.7	-93.0	1781.3	1403.3	26.9
11	Ganjam	159.4	246.8	-35.4	274.5	216.3	26.9	834.2	177.7	369.4	1.5	71.1	-97.9	0.0	7.1	-100.0	1972.2	1276.2	54.5
12	Jagatsinghpur	124.5	379.1	-67.2	140.0	241.4	-42.0	534.6	151.1	253.8	0.0	80.4	-100.0	0.0	7.9	-100.0	1278.6	1514.6	-15.6
13	Jajpur	149.1	341.2	-56.3	230.9	238.0	-3.0	677.1	140.2	383.0	0.0	41.0	-100.0	0.0	3.9	-100.0	1898.0	1559.9	21.7
14	Jharsuguda	249.8	382.9	-34.8	193.5	210.7	-8.2	201.7	54.9	267.4	0.0	7.7	-100.0	0.0	4.4	-100.0	1291.9	1362.8	-5.2
15	Kalahandi	280.5	355.4	-21.1	188.0	204.6	-8.1	248.1	74.0	235.2	0.0	10.9	-100.0	0.0	1.6	-100.0	1855.5	1330.5	39.5
16	Kandhamal	224.3	330.8	-32.2	199.8	239.1	-16.5	407.8	117.7	246.5	0.8	31.0	-97.3	0.0	4.5	-100.0	1704.8	1427.9	19.4
17	Kendrapara	217.8	333.3	-34.7	163.9	237.3	-30.9	647.0	183.7	252.2	0.0	67.2	-100.0	0.0	5.2	-100.0	1713.6	1556.0	10.1
18	Keonjhar	260.9	343.6	-24.1	217.9	241.1	-9.6	368.4	101.3	263.7	0.0	20.5	-100.0	0.0	3.4	-100.0	1651.4	1487.7	11.0
19	Khordha	200.9	320.6	-37.3	299.5	234.5	27.7	696.1	149.3	366.2	0.0	50.4	-100.0	0.0	5.0	-100.0	1872.8	1408.4	33.0
20	Koraput	311.7	393.6	-20.8	211.9	256.3	-17.3	292.6	126.1	132.1	6.0	32.6	-81.6	0.0	6.5	-100.0	1831.1	1567.2	16.8
21	Malkangiri	363.1	472.8	-23.2	199.9	281.2	-28.9	143.0	109.5	30.6	24.3	23.6	2.9	5.0	3.0	66.7	1783.3	1667.6	6.9
22	Mayurbhanj	379.3	359.9	5.4	323.0	262.0	23.3	574.8	114.1	403.8	0.0	21.6	-99.9	0.0	7.3	-100.0	2246.1	1600.2	40.4
23	Nawarangpur	285.0	407.5	-30.1	217.3	225.6	-3.7	263.7	168.6	56.4	0.0	18.7	-100.0	0.0	4.6	-100.0	1998.7	1569.5	27.3
24	Nayagarh	186.5	288.2	-35.3	213.4	226.8	-5.9	739.4	134.5	449.8	0.0	39.0	-100.0	0.0	4.8	-100.0	2056.5	1354.3	51.8
25	Nuapara	307.6	327.8	-6.2	197.8	214.5	-7.8	151.3	68.9	119.6	0.0	15.3	-100.0	0.0	3.2	-100.0	1455.2	1286.4	13.1
26	Puri	272.5	297.9	-8.5	206.7	243.2	-15.0	653.9	181.6	260.1	0.0	67.3	-100.0	0.0	6.4	-100.0	1764.5	1408.8	25.2
27	Rayagada	224.6	273.7	-17.9	183.0	199.1	-8.1	268.8	109.7	145.0	0.4	32.9	-98.9	0.0	4.7	-100.0	1485.7	1285.9	15.5
28	Sambalpur	259.5	442.4	-41.4	166.1	224.7	-26.1	247.3	54.7	352.2	0.0	12.7	-100.0	0.0	4.4	-100.0	1423.9	1495.7	-4.8
29	Sonepur	215.5	408.9	-47.3	148.7	228.0	-34.8	219.0	59.8	266.2	0.0	11.4	-100.0	0.0	3.3	-100.0	1315.3	1418.5	-7.3
30	Sundargarh	363.6	393.9	-7.7	195.8	211.5	-7.4	211.5	67.7	212.4	0.0	8.7	-100.0	0.0	4.2	-100.0	1450.5	1422.4	2.0
<b>Total</b>		<b>7224.3</b>			<b>6301.1</b>			<b>12618.6</b>			<b>45.5</b>			<b>5.4</b>			<b>49595.8</b>		
<b>State Average</b>		<b>240.8</b>	<b>356.0</b>	<b>-32.4</b>	<b>210.0</b>	<b>231.9</b>	<b>-9.4</b>	<b>420.6</b>	<b>114.7</b>	<b>266.7</b>	<b>1.5</b>	<b>31.5</b>	<b>-95.2</b>	<b>0.2</b>	<b>4.5</b>	<b>-96.0</b>	<b>1653.2</b>	<b>1451.2</b>	<b>13.9</b>

**Fig.1.1. District-wise Rainfall for the year 2013**

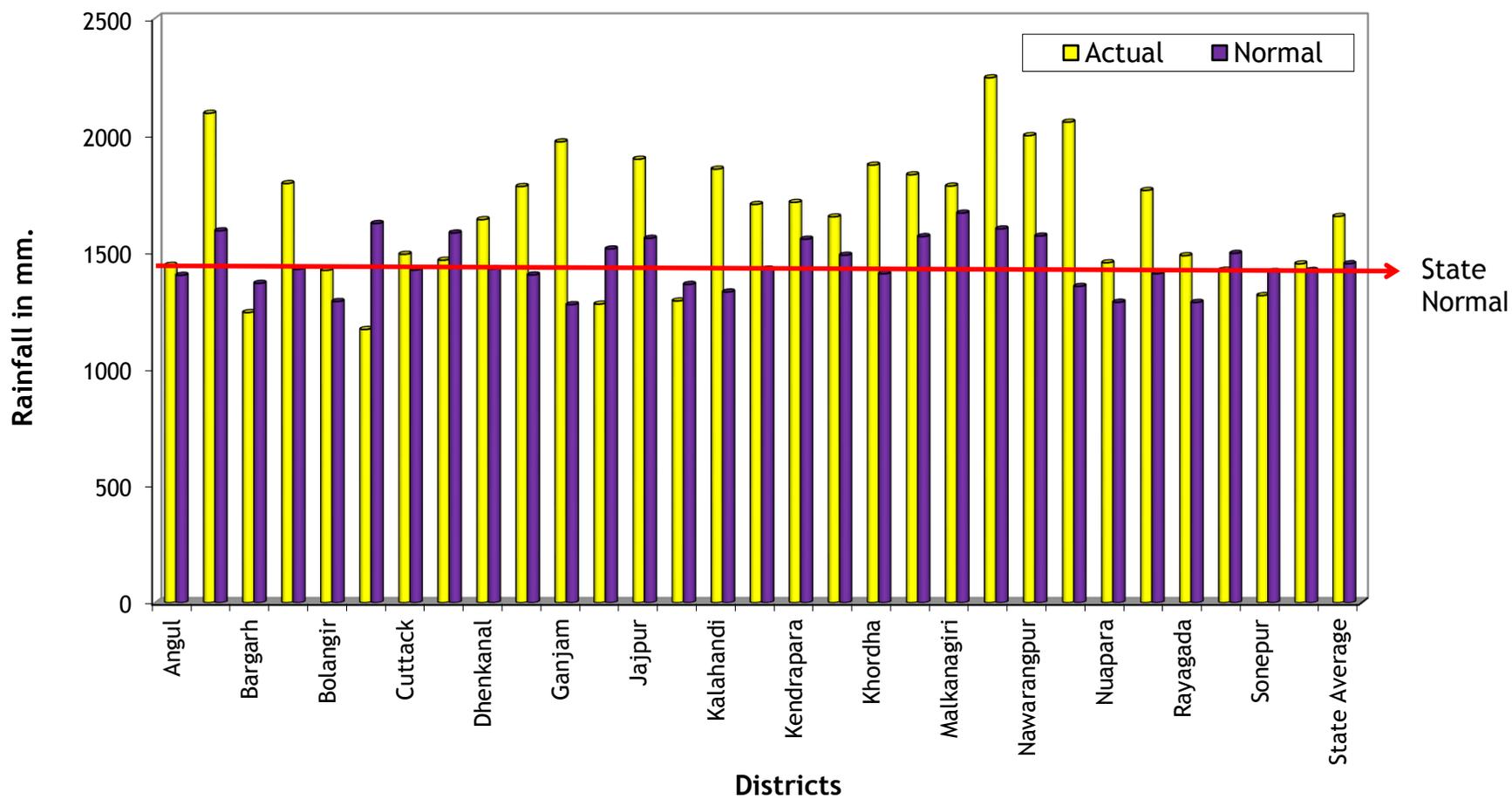


Fig.1.2. Month-wise Rainfall for the year 2013

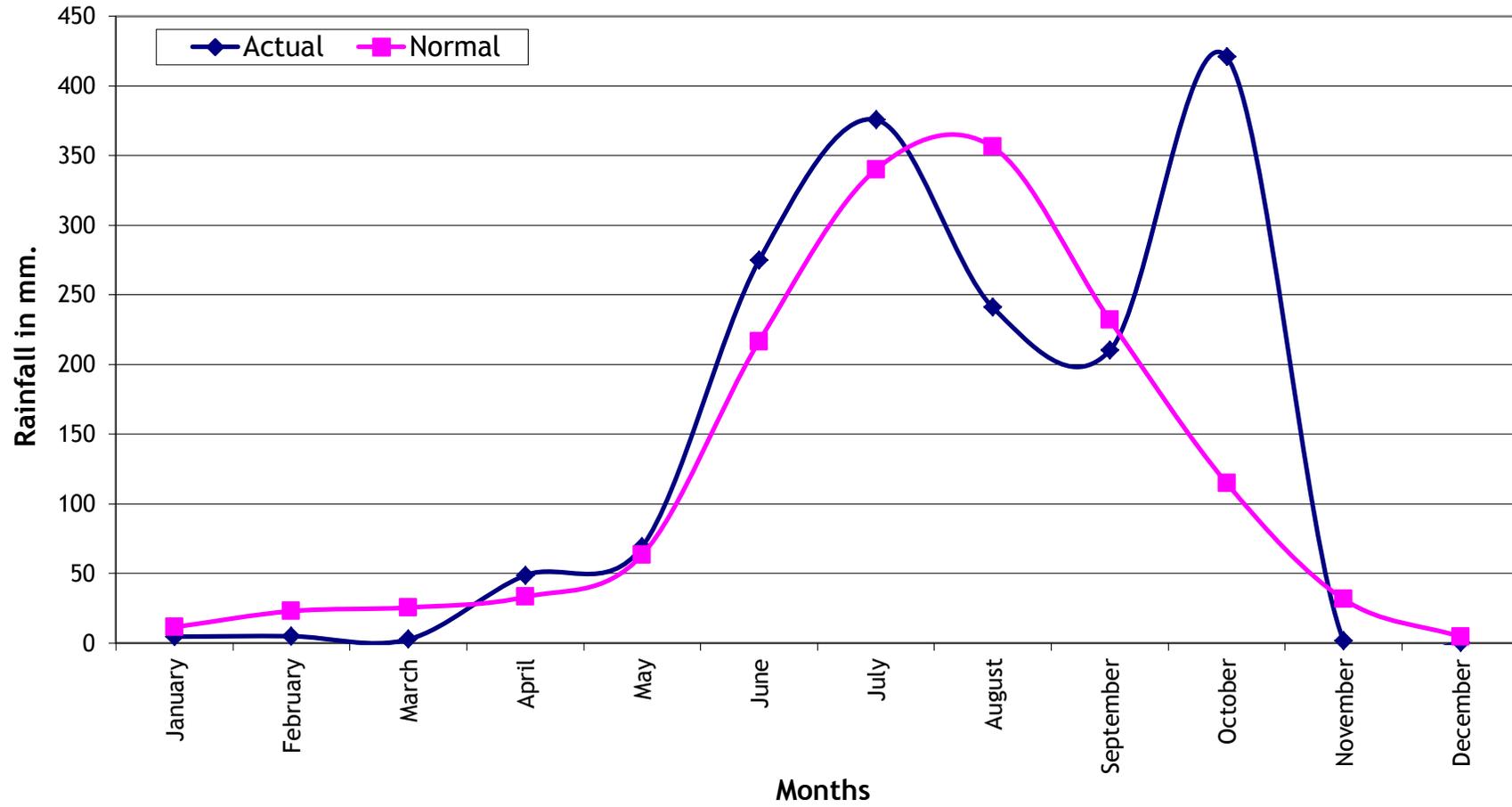
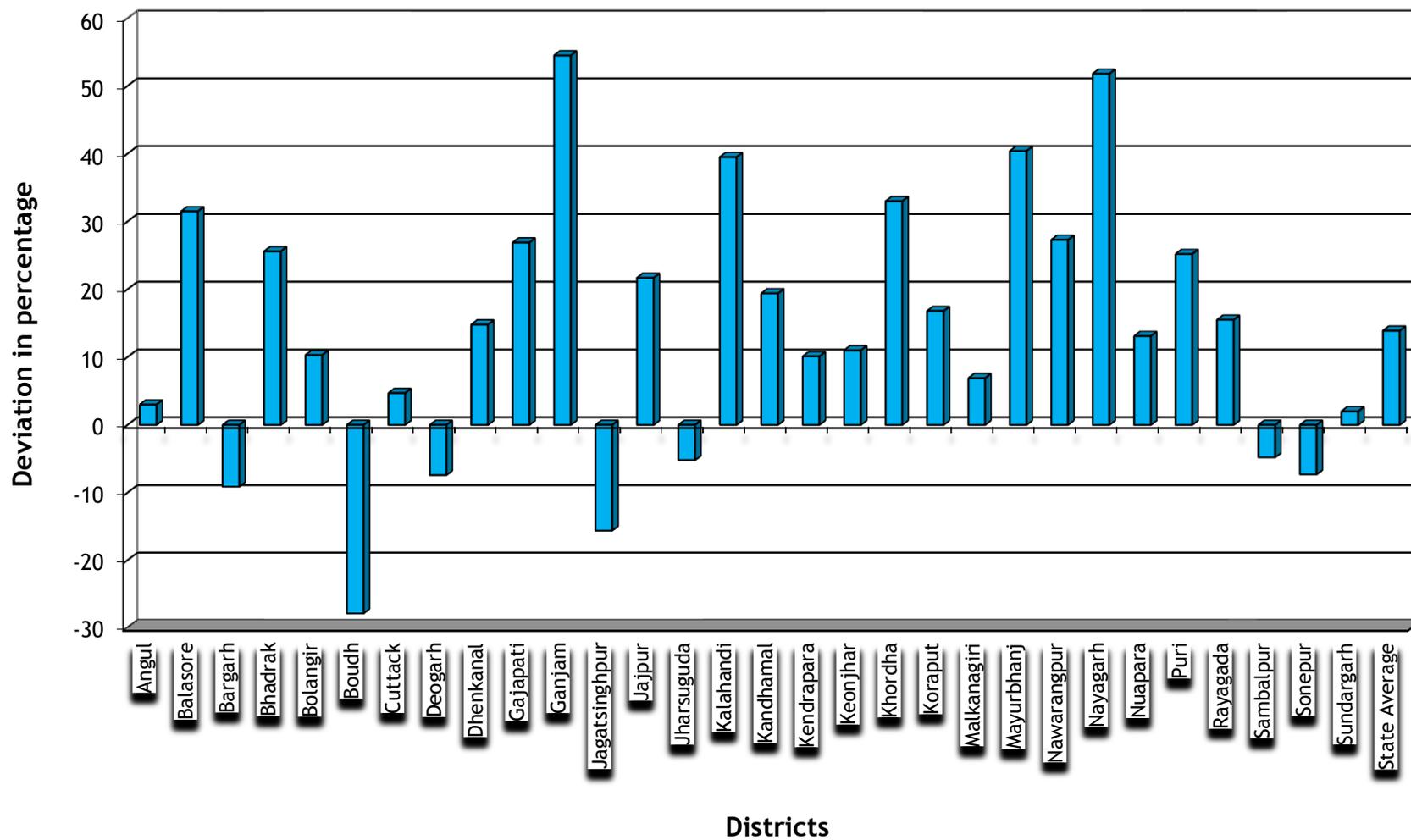


Fig.1.3. Rainfall Deviation of the Districts for the year 2013



## Rainfall during Monsoon 2013 (1<sup>st</sup> June to 30<sup>th</sup> September)

The State experienced average surplus rainfall of 26.8 percent in June, 10.5 percent in July, deficit rainfall of 32.4 percent in August and 9.4 percent in September, 2013 compared to the long term average rainfall. The cumulative average rainfall of the State from June to September 2013 accounts for deficit of 3.8 percent.

Month	Normal	Rainfall in MM	
		Actual	Deficiency in %
June	216.5	274.6	26.8
July	339.9	375.6	10.5
August	356.0	240.8	-32.4
September	231.9	210.0	-9.4

Block wise analysis of the cumulative rainfall from 1<sup>st</sup> June to 30<sup>th</sup> September 2013 indicates that out of 314 Blocks in the State, as many as 72 Blocks received surplus rainfall to the extent of 19% & more, 168 received rainfall of between surplus 19% to less than 19% which is considered as normal, 51 received rainfall of less than 19% to 39%, 18 received rainfall less than 39% to 59% and only 5 Blocks received rainfall less than 59% of the long-term average rainfall. Table below indicates the district-wise position of rainfall.

Sl. No.	DISTRICT	No. of Blocks having deviation of 19% & above) : EXCESS	No. of Blocks having deviation of +19% to -19%) : NORMAL	No. of Blocks having deviation of -19% to -39%) : DEFICIT	No. of Blocks having deviation of -39% to -59%) : SEVERE DEFICIT	No. of Blocks having deviation of -59% & above) : SCANTY
1	Angul	1	3	4		
2	Balasore	2	7	2	1	
3	Bargarh		5	6	1	
4	Bhadrak		5	2		
5	Bolangir	3	9	1		1
6	Boudh			2	1	
7	Cuttack	1	4	3	3	2
8	Deogarh		2		1	

9	Dhenkanal		6	2		
10	Gajapati	2	6			
11	Ganjam	12	10			
12	Jagatsinghpur			4	4	
13	Jajpur	1	4	3	2	
14	Jharsuguda	1	3	1		
15	Kalahandi	6	5	2		
16	Kandhamal	2	9	1		
17	Kendrapara		5	3		1
18	Keonjhar	3	7	2	1	
19	Khordha	4	5		1	
20	Koraput	6	5	2	1	
21	Malkangiri	2	4	1		
22	Mayurbhanj	6	18	2		
23	Nawarangpur	8	2			
24	Nayagarh	2	5	1		
25	Nuapara	2	3			
26	Puri	4	4	1	1	1
27	Rayagada	4	7			
28	Sambalpur		7	2		
29	Sonepur		4	1	1	
30	Sundargarh		14	3		
<b>State</b>		<b>72</b>	<b>168</b>	<b>51</b>	<b>18</b>	<b>5</b>
		<i>No. of Disrict.-20</i>	<i>No. of Disrict.-28</i>	<i>No. of Disrict.-23</i>	<i>No. of Disrict.-12</i>	<i>No. of Disrict.-4</i>

## CHAPTER – III Heavy Rain & Floods

Due to well marked low pressure area over Central parts of Odisha and neighbourhood, the State received heavy rain fall during the months of June, July, August and October and resultantly, encountered flash floods in 6(six) phases from June to August, 2013 and high floods during October in the aftermath of the very severe cyclonic storm Phailin. Phase-wise details during the months from June to August are as under:

Phase	Period	Districts Affected
<b>1<sup>st</sup> Phase</b>	12 <sup>th</sup> , 13 <sup>th</sup> & 14 <sup>th</sup> June	Kalahandi, Nabarangpur, Koraput, Gajapati and Rayagada
<b>2<sup>nd</sup> Phase</b>	24 <sup>th</sup> & 25 <sup>th</sup> June	Kalahandi and Nawarangpur
<b>3<sup>rd</sup> Phase</b>	11 <sup>th</sup> & 12 <sup>th</sup> July	Malkangiri
<b>4<sup>th</sup> Phase</b>	23 <sup>rd</sup> July	Kalahandi
<b>5<sup>th</sup> Phase</b>	26 <sup>th</sup> July	Mayurbhanj & Bhadrak
<b>6<sup>th</sup> Phase</b>	19 <sup>th</sup> to 21 <sup>st</sup> August	Mayurbhanj, Balasore, Keonjhar, Bhadrak, Jajpur & <u>Deogarh</u>

**1<sup>st</sup> phase** - Incessant rainfall for the three days i.e. 12<sup>th</sup>, 13<sup>th</sup> & 14<sup>th</sup> June particularly in five southern districts of the State; i.e. Kalahandi, Nabarangpur, Koraput, Gajapati and Rayagada had severely affected the normal life of the people.

**2<sup>nd</sup> Phase** - Due to heavy rainfall for two days i.e. 24<sup>th</sup> & 25<sup>th</sup> June, the district of Kalahandi and Nawarangpur encountered flash floods and water logging.

**3<sup>rd</sup> Phase** – Due to heavy rainfall for two days i.e. 11<sup>th</sup> & 12<sup>th</sup> July, the district of Malkangiri encountered flash floods and landslide.

**4<sup>TH</sup> Phase** - Due to heavy rainfall on 23<sup>rd</sup>, 24<sup>th</sup> & 25<sup>th</sup> July, floods occurred in river Hati in Kalahandi district. Flood water over topped the bridge at Junagarh around 8 PM on 23.07.13.

**5<sup>th</sup> Phase** - Due to incessant heavy rainfall on 26.07.2013, floods occurred in the Mayurbhanj district.

**6<sup>th</sup> Phase** – Under the influence of the depression formed over the Gangetic West Bengal and adjoining Northwest Bay of Bengal, North Odisha and Jharkhand, heavy rainfall was received for three days i.e. on 19<sup>th</sup>, 20<sup>th</sup> & 21<sup>st</sup> August, 2013 in the catchment area of the rivers of North Odisha leading to high floods in major rivers like the Budhabalang, the Subarnarekha and the Baitarani which crossed their danger level. Flood also occurred in the Jalaka and other small rivers and rivulets. Chandali Dam in Jharkhand released flood water amounting to 2.54 lakh cusec on 21.08.2013 at 9.00 AM which took travel time of 15hrs. and reached Jaleswar at 12.00 PM.

#### Extent of Damage:

Phase	No. of Affected Districts	No. of affected villages / ULB	No. of Population affected	No. of human lives lost	Area affected in ha.	No. of houses damaged
<b>1<sup>st</sup> Phase</b>	5	815	20182	3	21492.81	1568
<b>2<sup>nd</sup> Phase</b>	2	101	20350	2	10805.33	1730
<b>3<sup>rd</sup> Phase</b>	1	291	8217	9	1702	1895
<b>4<sup>th</sup> Phase</b>	1	1 ULB				
<b>5<sup>th</sup> Phase</b>	2	24 / 5 wards	2478	9	1964	254
<b>6<sup>th</sup> Phase</b>	6	827 / 6 wards	80049	14	9904	410

Besides, there was huge damage to different public infrastructure.

## Damage to Infrastructure :

**1<sup>st</sup> phase** - Road communications were interrupted due to heavy rain & flood between Borigumma and Nabaranghpur at Porli, Bhawanipatna and Nabarangpur at Lanjigarh and other roads. In Rayagada district 11KV/LT line at-Rama Talkies Jn. of Rayagada Town due was damaged due to falling of an old tree. 5 no. of transformers were burnt at Banapur L.I. Point, Kothapeta, Halua, Majhiguda, B. Allubadi.

**2<sup>nd</sup> phase** - The main right canal of Upper Indravati Project at Pandigaon breached and water entered into the Pandigaon village. State Highway from Junagarh to Kalampur was interrupted. In Kalahandi district 2 no. of embankments were washed out, 18 no. of river embankments were partially damaged, 20 no.of culverts were damaged, 66 no. of canals and structures were damaged, 12 no. of buildings were damaged, 295 no. of roads were damaged. 2 no. of bridges were completely washed away.

**3<sup>rd</sup> Phase** – Many houses in Oringi village of Khariput Block of Malkangiri district were damaged due to flash flood /heavy rain. Besides 2 villages namely Gangrajgumma of Mathili GP and Atalguda of Dungiaput GP were



marooned due to flash flood in Saptadhara River and Garia Nala respectively.



Due to landslide in Bonda Ghat, road communication to 2 GPs namely Mudulipada and Undrahal was cut off. Flood water overflowed at Poteru as well as at Kangrikunda bridge

(Kalimela block). Road from Gobindpalli to Jeypore was cut off as the approach road of Saptadhara bridge was washed away due to flood. 7 no. of school buildings were severely affected. Besides, 46 KM. of surface road was damaged.

**4<sup>th</sup> phase**– Road communication from Junagarh to Nawaranghpur i.e. NH-201 was interrupted due to heavy rain as flood water overtopped the bridge at Junagarh. Flood water receded to below bridge level only in the morning

### **Special package of assistance for affected farmers:**

The repeated floods had severely affected the livelihood of the people. In view of the extensive damage to the standing crops and harvested crops stacked on the paddy field and threshing floor and damage to private houses caused due to incessant rainfall during 12<sup>th</sup> to 14<sup>th</sup> of June 2013 and consequent floods in the southern districts, a special package of assistance for the affected people was announced and implemented by the State Government:

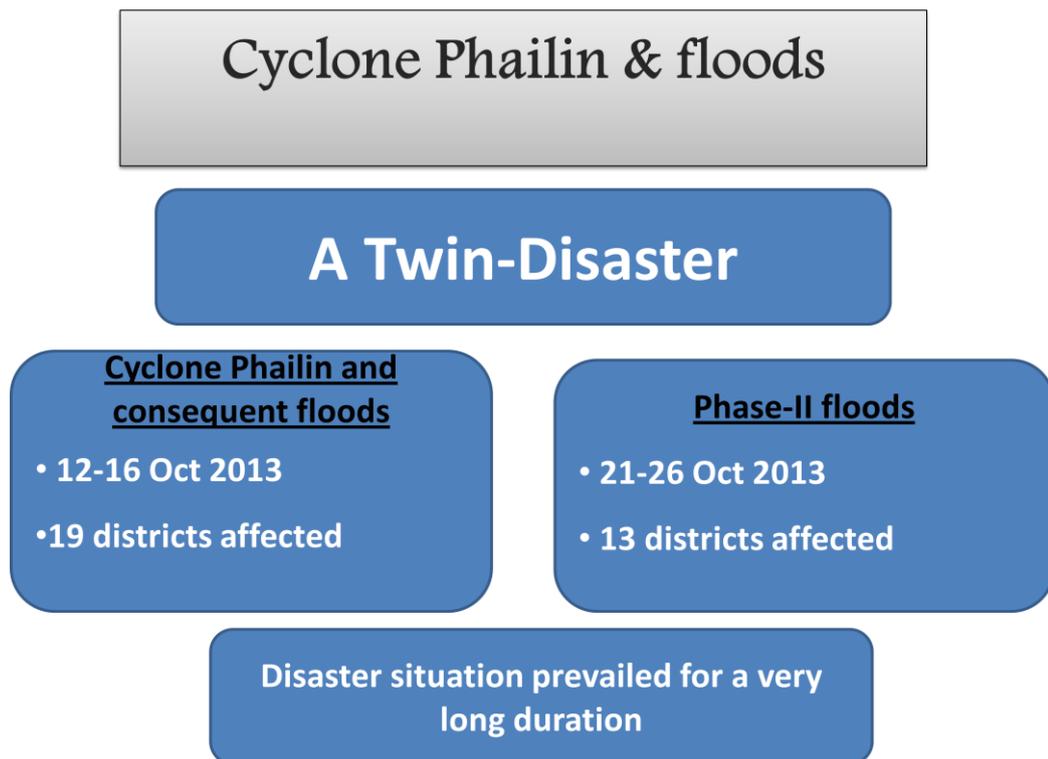
1. To pay ex-gratia assistance @ Rs.2,000/- per hectare over and above the agriculture input subsidy to the affected farmers, who had suffered crop loss of more than 50% due to heavy rain and consequent floods subject to the ceiling laid down in the norms of CRF/SDRF.
2. To pay agriculture input subsidy @ Rs.3,000/- per hectare for rain fed areas, Rs.6,000/- per hectare for irrigated areas and Rs.8,000/- per hectare for perennial crops to the affected farmers.
3. Minimum assistance by administering both ex-gratia assistance and agriculture input subsidy to any affected farmer was fixed at Rs.2000/-.
4. To pay the admissible amount to the actual cultivators who suffered crop loss to the extent of 50 percent or more.
5. To defer the recovery of crop loans from the affected farmers for a period of one year without any change in the rate of interest applicable to the existing crop loan availed of by them.
6. To provide crop loans to the affected farmers during the Kharif season without treating them as defaulters for non-repayment of the existing loan.
7. Agriculture Department to provide paddy seeds to the farmers, who had lost their sown seeds / seedlings due to heavy rain and consequent floods.

- 8 To request the Government of India for relaxation of FAQ norms for procurement of paddy in the affected areas.
- 9 To take immediate steps to lift the paddy available in the market yards/ mandis in the affected districts through a special drive and ensuring payment of minimum support price for the said procurement.
- 10 To construct threshing floors and sheds by RMCs in affected areas on priority basis.
- 11 To provide additional seed money of Rs.5000/-to the SHGs in the affected areas who had taken up cultivation and sustained crop loss.
- 12 To provide assistance to the affected families as per the Norms of SDRF/ NDRF for repair/ reconstruction of houses and for clothing and utensils to the affected families as per the Norms of SDRF/ NDRF.
- 13 To provide house under Indira Awas Yojana/ Mo Kudia to the families, whose houses were fully damaged.

## Chapter-IV

### Very Severe Cyclone “Phailin”

Generally, two cyclone seasons i.e. one during pre-monsoon period (April, May & June up to onset of monsoon) and another post monsoon (October to December) prevail for the coast of Odisha. Previously, in the year, 1999, the State had experienced two cyclones consecutively in the month of October causing unprecedented wide spread damage to lives and properties in 14 districts of the State. The first severe cyclone occurred on 17-18 October 1999 and the district of Ganjam was the worst affected. 11 days after on 29<sup>th</sup> October 1999, a Super Cyclone devastated the whole of Odisha Coast. During the current year the State encountered the Very severe Cyclonic Storm (VCS) “Phailin on 12<sup>th</sup> October 2013, which struck the eastern coast of India.



VSCS “Phailin” (1<sup>st</sup> Phase from 14-16<sup>th</sup> Oct. 2013)

#### Response

On receipt of the warning from the IMD, the following various immediate response measures were taken by the State Government:-

**08.10.2013:**

- As soon as the 1<sup>st</sup> cyclone warning was received on 8<sup>th</sup> October 2013, the Collectors of all the 14 vulnerable districts viz- Ganjam, Puri, Jagatsinghpur, Kendrapada, Bhadrak, Balasore, Mayurbhanj, Jajpur, Cuttack, Khordha, Nayagarh, Gajapati, Dhenkanal and Keonjhar were alerted through e-mail, fax & telephone.
- They were instructed to take immediate steps to ensure that the District Administration was fully prepared to face the possible disaster.
- The Collectors were advised to convene meeting of the District Disaster Management Authority to review the status of preparedness of all the Departments & organisations at the district level and below having a role in disaster management and give necessary directions to take further measures as may be necessary. They were also asked to review and ensure the preparedness of the local authorities in the district. Moreover, they were asked to cancel the leave of those, who were on leave and to recall them immediately to ensure that all the officers and staff were in position. The District EOCs were activated immediately started functioning round the clock with adequate manpower, essential equipment and logistics.
- All the Departments of the State Government were advised to take immediate steps to alert their field officers in the above districts to ensure necessary preparedness measures in consultation with the concerned Collectors to face any eventuality.
- Special DG of Police, HQRS in charge of ODRAF, Additional Director General of Police, Fire Services and Commandant, National Disaster Response Force (NDRF) located at Mundali in Odisha were kept on alert for eventual deployment of response forces for evacuation, search and rescue operations.
- Collectors were also asked to mobilize the district level officers and to alert local police, the telecom authorities and the police communication network.
- Odisha State Disaster Management (OSDMA) was advised to conduct mock response drill, to test-use the various equipments available in the cyclone shelters and to take immediate necessary steps for repair of the defective ones. The Ministry of Home Affairs, Government of India and the NDMA were also requested to make necessary advance arrangements to keep the concerned

authorities in readiness for deployment IAF helicopters/ additional NDRF on short notice, in case of requirement.

### **09.10.2013**

- 10.45 AM: The inter-departmental co-ordination meeting for cyclone preparedness was held under the Chairmanship of Hon'ble Minister, Revenue and Disaster Management and the following decisions were taken for implementation by different departments and organizations.
  - Dissemination of cyclone warning through various channels
  - Arrangement to keep the various communication systems operational,
  - Mock Response drill in each multi-purpose cyclone shelters/ flood shelters
  - Test checking of various equipment available in cyclone shelters including Generators, Water Pumps, Inflatable Tower Lights and mechanized tree Cutters besides taking immediate the steps for repair of defective ones
  - Identification of School/ College and other public buildings as cyclone shelters including arrangement of different facilities like light, drinking water supply and temporary toilets
  - Ensuring readiness of ODRAF, Fire Services, NDRF for search & rescue operation
  - Ensuring availability of adequate no. of boats for rescue & relief operation
  - Ensuring arrangement for requisition of vehicles at short notice for evacuation/ transportation of relief materials.
  - Ensuring control of vehicular traffic
  - Ensuring availability of stock of rice and other dry food materials, like chuda,gur and biscuits for immediate relief operation
  - Ensuring availability of kerosene in vulnerable districts/ areas
  - Ensuring pre-positioning of sufficient stock of fuel
  - Ensuring activation of Control rooms in different departments and the district offices to function round the clock.
  - Ensuring deployment of senior officers in Blocks likely to be affected to take stock of the situation.

- Ensuring social care to shift the old, infirm, physically challenged, pregnant women, nursing mothers and children to safer places and cyclone shelters much before the occurrence of the disaster
  - Ensuring stocking of required medicines and arrangements for deployment of mobile medical teams
  - Ensuring cattle health care and supply of cattle feed for the affected cattle population.
  - Immediate restoration of road communication for movement of relief materials to the affected areas and advance arrangements for JCB, Earth Removers at short notice to clear the road blockade.
  - Ensuring cancellation of Puja Holidays and keeping all Government offices opened
  - Ensuring the response forces in readiness
  - Ensuring co-ordination with Government of India for assistance of Defence forces and helicopters for rescue operation and air-dropping of food packets.
  - Ensuring depleting of the Reservoirs to manage the flood situation, if any.
  - Ensuring supply of satellite phones to Collectors.
  - Ensuring Restriction of use of unsafe buildings for accommodation of evacuated people.
  - Ensuring Closure of all Schools and Anganwadi Centres in view of the upcoming cyclone.
  - Ensuring return of the fishermen who were inside the sea and also restriction of everybody to go inside the sea.
  - All Ensuring all Concerned Departments to attend the Cyclone preparedness meeting at the scheduled time everyday to take stock of the situation till the cyclone emergency was over.
- At 11.30 AM: Hon'ble Chief Minister reviewed the preparedness measures with the Collectors through video conferencing.
  - The Ministry of Defence, Govt. of India was requested for deployment of 7-8 no. of MI-17 Helicopters at Bhubaneswar airport for air dropping operation in case of necessity.

## 10.10.2013

- 10.45 AM: The inter-departmental co-ordination meeting was held for cyclone preparedness under the chairmanship of Hon'ble Minister, Revenue and Disaster Management.
- It was decided to prepare one lakh food packets in advance for air dropping.
- ODRAF and NDRF teams were stationed/ deployed at strategic locations to carry out search & rescue operations without loss of time.
- Apart from deployment of the NDRF forces of 3<sup>rd</sup> Battalion, Mundali, 15 more NDRF teams were mobilized from other States.
- It was decided to divert manpower and materials of neighbouring unaffected districts to the affected districts on requisition of the concerned district administration in case of necessity.
- To ensure **ZERO casualty**, the Collectors of Ganjam, Gajapati, Nayagarh, Khordha, Puri, Jagatsinghpur and Kendrapada were directed to evacuate all the people living in low lying areas and in kutcha houses to the nearby cyclone/flood shelters or other identified buildings by morning of 12<sup>th</sup> October, 2013 and to ensure that no one stayed in a kutcha house in the night of 12<sup>th</sup> October, 2013 when the VCS was expected to make land fall.
- It was advised to take similar steps to shift the livestock to safer places.
- Appeal through electronic and print media was made to the people to go to safer places along with their domestic animals, food, valuables and important documents in polythene bags.
- It was also directed to evacuate the people unwilling to leave their houses with the help of Police force, if necessary.
- The Energy Department was directed to mobilize manpower and materials to the districts likely to be affected to ensure prompt restoration of power supply.
- All the Departments were advised to make their own power backup arrangement for their offices for safety reasons as power supply was likely to be disrupted during the cyclone.
- The Health and FW Department took steps to pre-position adequate quantity of medicines and form mobile medical teams.
- The F&ARD Department took similar steps to take care of the cattle health.

- The FS&CW Department pre-positioned food materials and made arrangements for procurement of dry food like chuda, gur, etc. for distribution among the affected people. The Department also ensured availability of sufficient quantity of POL in districts likely to be affected by the ensuing very severe cyclone.
- The H&UD Department and RD Department made necessary arrangements for supply of drinking water and disinfection/ restoration of water sources. H&UD Department also made necessary arrangement of water pumps for dewatering of rain/ flood water. Fuel reserves for at least 7 days were stored for the generators to operate the water supply systems during power failure.
- Works, RD and Panchayati Raj Departments made necessary arrangements for quick restoration of road communication.
- The chain saws of ODRAF units, Fire Service units and cyclone shelters were kept ready to for use in cutting the uprooted trees.
- The concerned authorities were alerted to deplete the water level of different reservoirs to accommodate the inflow on account of cyclonic rainfall.
- All the 14 cyclone-prone districts were provided with satellite phones for ensuring communication in case of failure of telephone/ cell phone.
- All Collectors were directed to activate Control Rooms round the clock at Blocks, Sub-divisions and Tahasils.
- The fishermen on sea were asked to immediately come back to the shore.
- BSNL authorities made necessary arrangements to ensure operation of the telephone/ cell phone with backup power system and pre-positioned adequate fuel for operation of generators at telephone exchange/ cell towers.
- Instructions were issued to ensure maintenance of law and order and check stealing/ looting of public properties and providing security for transportation of relief materials.
- 5.45 PM- Hon'ble Chief Minister reviewed the preparedness measures.

### **11.10.2013**

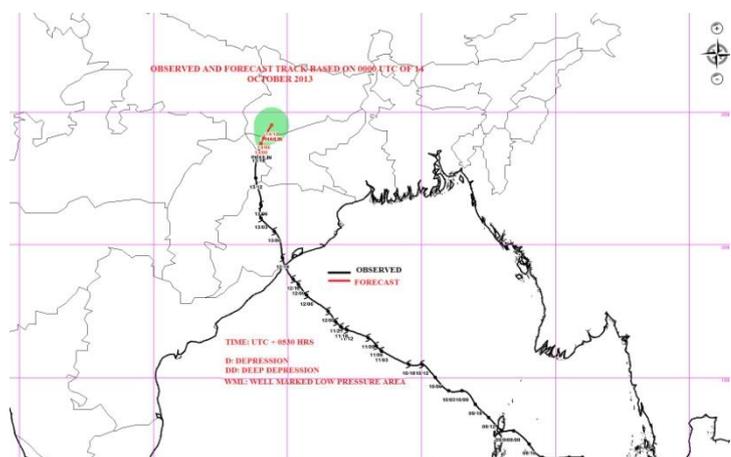
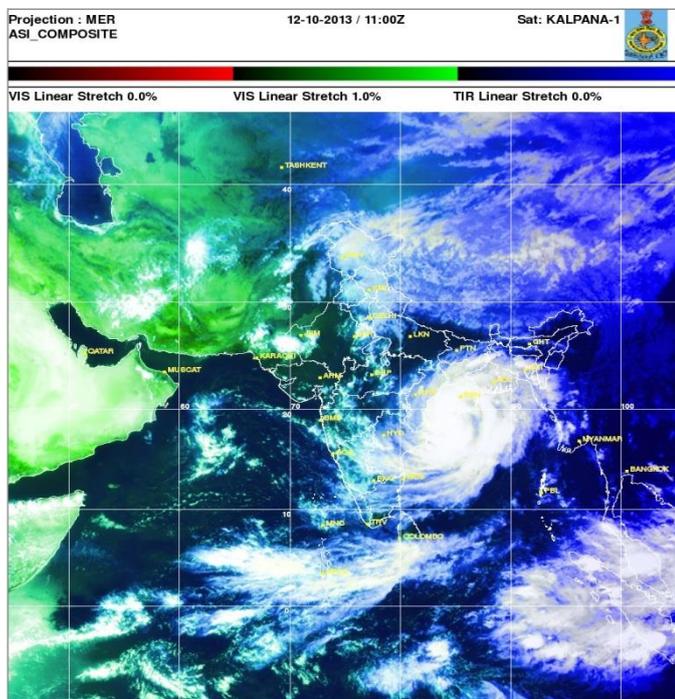
- The Collectors were directed specifically to ensure complete evacuation of all the people living in low lying areas and in kutcha houses to safer places by 11.10.2013 evening.

- Steps were also taken to evacuate the people living adjacent to rivers and creeks up to 20 km upstream from the mouth to safer places.
- About one million people were shifted in the 36 hours preceding the landfall of the cyclone.
- Free Kitchen centres were opened from the night of 11<sup>th</sup> October 2013 for the evacuated people.
- The cattle population was also shifted to safety and cattle feed/ fodder arrangements were made for them.
- 9.84 lakh people were evacuated. The district wise evacuation position is mentioned below:

**Overall tracking of the Very Severe Cyclonic Storm “PHAILIN” is as follows:**

Date	Time	Watch/Observation
08.10.2013	8.30 AM	Tracking of PHALIN started: IMD indicated about depression, at 1450 km east-southeast of Paradip
08.10.2013	11.30 AM	Depression, about 1350 km east-southeast of Paradip
08.10.2013	5.30 PM	Depression, about 1250 km east-southeast of Paradip
09.10.2013	5.30 AM	Depression, about 1100 km east-southeast of Paradip
09.10.2013	5.30 PM	Deep depression became 'cyclonic Storm' at about 950 km south-east of Paradip
10.10.2013	8.30 AM	Intensified into severe cyclonic storm 'PHAILIN' at 820 km south-east of Paradip coast
10.10.2013	8.30 PM	Intensified into very severe cyclonic storm 'PHAILIN' at 650 km south-east of Paradip coast & 700 km from Gopalpur
11.10.2013	5.30 AM	520 km south south-east of Paradip coast & 530 km south-east of Gopalpur
11.10.2013	11.30 AM	500 km south south-east of Paradip coast & 490 km south-east of Gopalpur
11.10.2013	5.30 PM	400 KM south south-east of Paradip coast & 400 km south-east of Gopalpur
11.10.2013	11.30PM	375 km south south-east of Paradip coast & 345 km south-east of Gopalpur
12.10.2013	2.30AM	355 km south south-east of Paradip coast & 320 km south-east of Gopalpur

12.10.2013	8.30 AM	200 km south-east of Gopalpur & 280 km from south south-east of Paradip coast
12.10.2013	11.30 AM	150 km south-east of Gopalpur & 260 km from south south-east of Paradip coast
12.10.2013	2.30PM	90 km south-east of Gopalpur
12.10.2013	8.30PM	LANDFALL PROCESS STATRED
12.10.2013	8.30 PM to 9.30 PM	LANDFALL NEAR GOPALPUR WITH WIND SPEED OF 200-220 KMPH



## **12.10.2013**

According to IMD's classification, the cyclonic storm which crossed Odisha coast near Gopalpur in the evening of 12<sup>th</sup> October 2013 is a very severe cyclonic storm. The intensity of the cyclone can be better represented by the maximum sustained wind speed experienced due to the cyclone.

The wind data (Speed) received from IMD during cyclone is mentioned below.

Sl.	Places	Date	Velocity of wind in kmph
1	Gopalpur	12.10.2013	214 kmph
2	Puri	12.10.2013	223 kmph
3	Paradeep	12.10.2013	121 kmph
4	Bhubaneswar	12.10.2013	112 kmph
5	Chandbali	13.10.2013	112 kmph
6	Balasore	12.10.2013	84 kmph

## **Rainfall during the cyclone period**

Due to the effect of cyclonic storm the State faced torrential rainfall from 9<sup>th</sup> to 14<sup>th</sup> October 2013. The cumulative amount of rainfall during this spell was as high as 241.1 mm in Ganjam district. The details of rainfall recorded at various stations are given below:

Sl. No.	District	DATE						Total [mm]
		9 <sup>th</sup>	10 <sup>th</sup>	11 <sup>th</sup>	12 <sup>th</sup>	13 <sup>th</sup>	14 <sup>th</sup>	
1	Angul	13.3	16.1	0.4	4.7	101.0	8.7	144.2
2	Balasore	32.5	18.5	0.0	25.4	125.4	34.9	236.7
3	Bhadrak	23.3	9.9	0.0	49.5	99.3	22.8	204.8
4	Bolangir	1.4	4.0	0.6	4.9	38.4	13.6	62.9
5	Cuttack	14.8	13.4	0.0	24.2	124.2	26.8	203.4
6	Gajapati	5.8	14.5	1.1	10.0	120.2	0.2	151.8

7	Ganjam	4.6	25.0	4.1	24.4	183.0	0.0	241.1
8	Jagatsinghpur	19.4	9.4	0.0	62.5	88.8	9.6	189.7
9	Jajpur	23.3	5.8	0.0	36.9	129.7	44.3	240.0
10	Kandhamal	16.8	9.0	0.8	9.3	153.2	9.0	198.1
11	Kendrapada	43.3	9.2	0.0	29.8	95.7	11.4	189.4
12	Keonjhar	24.0	19.8	0.0	13.1	125.4	33.4	215.7
13	Khurdha	12.8	28.8	0.0	42.2	185.2	4.3	273.3
14	Koraput	8.2	12.3	4.8	0.7	13.9	3.3	43.2
15	Mayurbhanj	25.9	10.8	0.1	15.8	159.8	55.9	268.3
16	Nayagarh	2.0	21.9	0.6	35.0	201.5	0.8	261.8
17	Puri	15.7	13.0	10.5	55.3	106.5	20.6	221.6
18	Deogarh	2.2	20.8	0.0	0.0	60.0	17.1	100.1
19	Dhenkanal	3.1	23.4	1.3	19.4	134.6	9.3	186.1
<i>(Note: The rainfall is recoded at 08.30 AM for the past 24 hours)</i>								

### Rivers flooding

Due to heavy rainfall from 12<sup>th</sup> to 14<sup>th</sup> October 2013, Baitarani, Budhabalanga, Rusikulya, Subarnarekha and Jalaka rivers witnessed floods/flash floods affecting the downstream areas of Bhadrak, Keonjhar, Balasore, Mayurbhanj, Ganjam and Jajpur districts. The water level of rivers is given below:

River	Forecast station	DL	WL	Water Level in Meter			
				12 <sup>th</sup>	13 <sup>th</sup>	14 <sup>th</sup>	15 <sup>th</sup>
Baitarani	Anandapur	38.36	37.45	35.86	40.72	39.74	37.14
	Akhuapada	17.83	16.83	17.22	19.57	19.85	19.80
Budhabalanga	N.H-5 (Govindpur)	8.13	7.21	5.46	9.21	9.15	8.20
Subarnarekha	Rajghat	10.36	9.45	8.25	11.50	12.40	12.38
	Jamsholaghat	49.15	48.10	46.94	54.02	54.04	50.04
Rushikulya	Purushottampur	16.83	15.83	15.16	18.65	17.10	16.21
Jalaka	Balasore (Mathani)	5.50		05.94	7.32	07.75	6.08

## Landfall

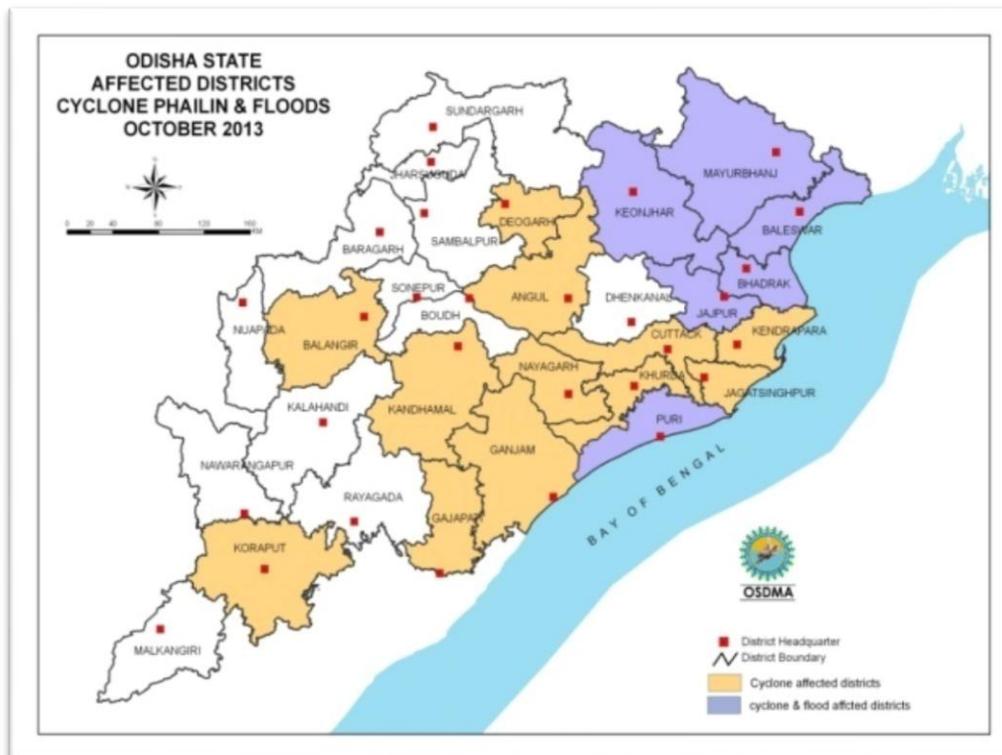
The Very Severe Cyclonic Storm (VSCS) “PHAILIN” hit Odisha coast on 12.10.2013 and the landfall point was Gopalpur in Ganjam District. The wind velocity was recorded to be 205-220 kmph. After hitting the Gopalpur coast, the cyclonic storm with tidal waves of 3.0 to 3.5 meter height severely affected the coastal districts of Ganjam, Puri, Khordha, Jagatsinghpur and Kendrapada. Apart from the coastal districts, the adjoining districts namely, Gajapati, Nayagarh, Keonjhar, Kandhamal, Koraput, Mayurbhanj, Bhadrak, Balasore, Jajpur, Cuttack, Bolangir and Angul were also devastated by this Very Severe Cyclonic Storm and the resultant flood. The cyclone was accompanied with torrential rains for 3 days, leading to floods in a number of major rivers. Incessant rains and flood with high wind also caused serious damage to other districts of the State.



In Ganjam district alone, 2812 villages were affected. Apart from loss of life, power supply, water supply system and communication system were totally disrupted and lakhs of people were rendered homeless. Public and private properties, agricultural crops and horticultural plantations suffered severe damage. All surface communication systems, telecommunication, power supply and water supply were totally disrupted. For the first time after the Super Cyclone of 1999, the State witnessed a **Very Severe Cyclonic Storm of rare severity.**

195 Blocks and 64 ULBs including Cuttack, Bhubaneswar & Berhampur Municipal Corporation were badly affected by the cyclone and floods in October 2013. About 132.36 lakh people were affected by cyclone PHAILIN and 61.30 lakh by subsequent floods.

Following the cyclone, due to heavy rainfall, Baitarani, Budhabalanga, Rusikulya, Subarnarekha and Jalaka rivers witnessed floods/ flash floods affecting the downstream areas of mainly, Mayurbhanj, Balasore, Bhadrak, Keonjhar, Jajpur and Ganjam districts.



## Search & Rescue

All 10 units of ODRAF, 28 units of NDRF, 12 units of CRPF and 10 platoons of OSAP were pre-positioned at strategic and vulnerable places for search & rescue operation. More than 350 teams consisting of mostly Fire Service personnel with some Home Guards and Civil Defence volunteers were formed to perform various tasks in the pre and post cyclone period. These response forces and teams were equipped with disaster response equipments like power saws, power boats, and inflatable tower lights, cutters, spreaders with power pack, etc. The teams assisted the local administration and police in evacuating people from low lying and unsafe buildings and moving them to cyclone shelters and relief camps. Post cyclone, the teams were engaged in cutting the fallen trees and clearing the roads to restore road and electricity connectivity.

Apart from the above, as many as 300 personnel of Indian Army divided into 4 groups were deployed in strategic locations of Ganjam, Puri and Cuttack districts for search, rescue & relief operation during cyclone.

## Free kitchen

People evacuated and housed in cyclone / flood shelters & other relief camps were provided with adequate quantities of dry food and cooked food through free

kitchen centres. People whose houses were damaged also took shelter in relief centres. **4203** free kitchen centres were opened covering **22,54,953** beneficiaries.

### **Emergent Relief**

In view of the extensive devastation, emergent relief was provided for a period of 7 to 15 days to the affected people of the cyclone & flood affected Districts. Emergent relief in shape of chuda & guda and rice was distributed to the people in dire need of sustenance in the cyclone & flood affected villages. In addition to dry food, candles, matchboxes, kerosene and other essential materials were also distributed.

### **Airdropping**

Dry food packets of a total quantity of 5.7 MT was dropped through 4 nos. helicopters of Indian Air Force requisitioned for airdropping in the inaccessible and marooned areas for cyclone and flood victims.

### **Temporary Shelter Materials**

**5.41 lakh** families were provided with polythene sheets for temporary shelter since their houses were damaged either fully or severely.

### **Clearance of Roads**

The Departments of Works, Rural Development, Panchayati Raj and Housing & Urban Development Department took immediate steps for cutting of the fallen trees and clear the roads to restore road connectivity. JCB and other heavy earth moving equipments were used to clear the roads. The Police, ODRAF, NDRF, and Fire Service units helped them in the work. Most of the roads up to Block level were cleared within 2 days. There was excellent inter-department coordination in this work.

### **Energy Infrastructure**

The energy infrastructure was the worst affected among all public properties. 1756 feeders, 38997 sub-stations, 36133.9 km of LT line, 4074 km length of EHT Line, 211014 electric poles and 93 EHT towers have been severely damaged due the cyclone and the floods thereafter. Restoration of power supply has been taken up on war footing. In the meantime, 1446 feeders, 19053 sub-stations, 23317.4 km of LT line, 3231 km length of EHT Line, 48549 electric poles and 9 EHT towers have been restored. Power supply to 24789 out of 45960 affected villages has been restored.

38.09 lakh consumers were affected due the cyclone and flood out of which power supply has been restored to the house of 27.55 lakh. Additional technical manpower (gangs) and materials were mobilized for restoration of electricity in all the affected villages.

### **Drinking Water**

Due to the effect of cyclone, the energy infrastructure was ravaged in many of the districts; the worst being the districts of Ganjam and Puri. On account of power breakdown, the piped water supply projects failed to function. In the circumstances, elaborate arrangements were made for supply of safe drinking water in the cyclone & flood affected areas. 234 water tankers and 345 mobile vans were deployed. 28,97,500 water pouches were distributed in rural areas. Restoration of power to water supply systems was given top priority. Besides, DG sets were hired to run the water supply systems. In the affected urban areas, 194 water tankers, 67 diesel generator sets and 33 diesel pump sets were deployed for supply of drinking water.

### **Disinfection of Drinking Water Sources**

The Heavy rainfall caused due to the effect of cyclonic storm resulting in floods very badly affected all drinking water sources like tube wells, open wells, ponds etc. **58100** tube wells were disinfected. **1661** bags of bleaching powder of 25 kg each were distributed. Similar steps were also been taken by the H&UD Department for disinfecting the water sources in the urban areas.

### **Health & Sanitation**

In order to restore the health services in the affected areas, **185** medical teams and 338 medical relief centres were opened. 47 medical officers, 132 paramedics were mobilized from medical colleges and unaffected areas to the districts like Puri, Balasore, Bhadrak, Jajpur, Kendrapada, Mayurbhanj and Ganjam. **1249670** ORS packets, **9655000** Halogen tablets and 16700 ASVs were supplied.

### **Cattle Care**

As many as 31,062 animals were shifted to safer places. **283** veterinary teams were deployed in the cyclone & flood affected areas. **89840** livestock were provided

with necessary treatment and 230400 cattle vaccinated. **849.25** MT of cattle feed of high quality was distributed among **29248** livestock in **1284** cattle camps.

## Impact & Damages

The damages caused by the cyclone were mainly due to gusting action of wind with unprecedented velocity of up to 220 kmph and torrential rainfall from 11<sup>th</sup> to 13<sup>th</sup> October 2013. Due to storm surge up to 3.5m, large areas were inundated in Ganjam, Puri, Jagatsinghpur, Bhadrak, Kendrapada, Khurdha and Balasore districts.

Baitarani, Subarnarekha, Budhabalanga, Rushikulya and Jalaka rivers experienced floods as a result of torrential down pour during 11<sup>th</sup> to 14<sup>th</sup> October 2013. Even the interior districts of Gajapati, Nayagarh, Bolangir, Keonjhar, Mayurbhanj, Sundargarh, Jharsuguda and Cuttack also reported to have received heavy rain fall and flash floods.

As per report received from Collectors, near about 134.5 lakh people in 195 Blocks, 64 Urban Local Bodies, 2164 GPs and 24470 villages in 19 Districts have been affected. 72 persons have lost their lives due to cyclone and the floods thereafter. The standing crops in 6.71 lakh hectares have been damaged. The fishing communities have been severely affected due to huge loss to their boats and nets. The poor artisans have lost their looms, equipment, accessories and raw materials. The farmers lost their livestock and sericulture farms. Some other districts also suffered from damage of houses and crop due to the wind and heavy rainfall due to the cyclone.

Massive and unprecedented damage was caused to public properties like canal / river embankments, roads, bridges, culverts, drains, water works, tube wells, LI points, electrical installations, telecommunications infrastructure, Government buildings etc.

## Extent of Damages

Abstract of extent of damages due to cyclone & floods is indicated below:

Sl.	Name of the districts	Blocks Affected (Nos.)	Villages Affected (Nos.)	ULB Affected (Nos.)	Population Affected (Nos.) due to flood & cyclone	Human Casualty due to cyclone	Human Casualty due to 1 <sup>st</sup> flood	Human Casualty due to 2 <sup>nd</sup> flood
1	2	3	5	6	7	8	9	9
1	Angul	8	790	3	25000	1	2	0

2	Balasore	12	2095	3	1140309	3	4	2
3	Bhadrak	7	1245	2	145000	1	5	0
4	Bolangir	5	72	-	896	1	0	0
5	Cuttack	14	1794	4	1553722	0	0	0
6	Deogarh	3	615	1	5016	0	0	0
7	Dhenkanal	8	507	0	214000	0	2	3
8	Gajapati	7	1429	2	480300	0	0	0
9	Ganjam	22	3148	18	1502000	10	10	0
10	Jagatsinghpur	8	1200	2	900000	1	4	0
11	Jajpur	10	1543	2	630000	0	2	0
12	Kandhamal	12	1175	2	13310	0	1	0
13	Kendrapara	9	1592	2	1445891	0	1	0
14	Keonjhar	13	1040	4	65123	0	1	0
15	Khurda	10	1552	5	2234706	1	2	1
16	Koraput	2	0	0	3860	0	0	0
17	Mayurbhanj	26	1269	4	326845	0	8	0
18	Nayagarh	8	1582	2	984000	0	2	0
19	Puri	11	1709	4	1814775	3	1	0
<b>TOTAL</b>		<b>195</b>	<b>24470</b>	<b>64</b>	<b>13449981</b>	<b>21</b>	<b>45</b>	<b>6</b>

**No. of People evacuated and shelter opened due to cyclone & subsequent floods**

Sl.	District	No. of people evacuated due to Cyclone	No. of people evacuated due to 1 <sup>st</sup> flood	No. of people evacuated due to 2 <sup>nd</sup> flood	No. of Shelters / free kitchen opened
1	Balasore	4185	31832	-	198
2	Bhadrak	48202	13709	4000	172
3	Cuttack	114306	82126	-	1247
4	Gajapati	36960	0	10672	491
5	Ganjam	180000	315919	95800	2191
6	Jagatsinghpur	101457	0	1865	473
7	Jajpur	91131	10095	2068	1102
8	Kandhamal	13310	0	-	149
9	Kendrapada	59550	9002	-	560
10	Keonjhar	11825	47962	-	307
11	Khurdha	185291	0	29600	641

12	Koraput	3860	0	-	14
13	Nayagarh	31565	57093	3856	791
14	Puri	102000	58377	22799	588
15	Mayurbhanj		114937	20650	624
16	Dhenkanal		39650	-	500
	<b>Total</b>	<b>983642</b>	<b>780702</b>	<b>191310</b>	<b>10048</b>

### House Damage

As many as 430 pucca houses and 121297 kutcha houses have been fully damaged due to the cyclone and the flood thereafter. Besides, 7175 pucca houses and 80623 kutcha houses have been severely damaged and 188490 houses (both pucca and kutcha) have been partially damaged. These apart, 52165 huts and 99155 cowshed attached to houses have been damaged. The district-wise details are given under Appendix-VII.

### Crop Damage

About 651490 hectare of agriculture horticulture and perennial crop area sustained crop-loss to the extent of more than 50% due to cyclonic storm & floods. The details are given under Appendix-IV & V.

### Livestock Affected

70.59 lakh livestock were affected due to cyclone & floods. The district-wise figures of affected livestock are given in following table.

Sl.	District	Livestock Affected			Total
		Large	Small	Poultry	
1	Balasore	301302	145018	0	446320
2	Bhadrak	170195	41530	72110	283835
3	Cuttack	525000	300000	325000	1150000
4	Dhenkanal	0	0	3000	3000
5	Gajapati	30000	12000	8000	50000
6	Ganjam	632000	253500	1110000	1995500
7	Jagatsinghpur	314256	117374	157987	589617
8	Jajpur	539827	196516	156652	892995
9	Kendrapada	20684	2378	32920	55982
10	Keonjhar	42247	18913	18359	79519
11	Khurdha	2693	624	30	3347

12	Mayubhanj	40205	54277	111992	206474
13	Nayagarh	191809	106718	372815	671342
14	Puri	440581	190180	0	630761
<b>Total</b>		<b>3250810</b>	<b>1439028</b>	<b>2368865</b>	<b>7058703</b>

### Loss of livelihood

Due to cyclone & flood, 3455 traditional craftsmen of 19 districts have been affected causing damage to their equipments and raw materials. 767 handloom weavers have been affected. Similarly, 11111 sericulture farmers have been affected.

### Damage to Nets and Boats of Fishermen

8198 boats and 31058 fishing nets have been damaged due to cyclone & floods.

### Damage to Sericulture Farmers

An area of 157 hectares of Tasar plantation, 308 hectares of standing mulberry crops, 196 hectares of Eri crops of 2536 nos. of farmers sustained loss 50% and above due to cyclone & floods.

### Damage to public properties

The damages to public properties are given below

Sector		Damage in physical terms
1		2
Roads & Bridges		Length of State Roads:1947.35 Km Length of District Roads:8099 Km Length of village Roads:17637.30 Km No of bridges/culverts damaged: 253 NH damaged : 790.939 km
Drinking water Supply works	Urban	
	Rural	PWS: 3040 nos. & Tube wells: 162170 nos.
Irrigation		Length of River embankments damaged: 874.48Km Length of canal embankment damaged: 765.81 Km No. of Minor Irrigation projects damaged: 1269

	No of Lift Irrigation projects damaged: 4848 No of deep bore wells damaged: 641 Length of drainage channels damaged: 700.67 Km
Power	No. of feeder:1756 No. of Substation: 38997 Length of conductor of LT line:36133.9 Km Length of EHT line: 4074 Km No. of Electric pole:211014 No. of EHT tower: 93
Primary education	No of School buildings damaged: 5825
Primary health Centres	No. of primary health Centres:539
Community assets in social sector owned by panchayats	No of community assets damaged: 5212
Higher Education	No of College/University building: 226
Other Govt. buildings	No. of buildings:5809

### Pre “Phailin” preparedness

- Keeping in view the possible situation, the Office of Special Relief Commissioner undertook the required preparedness measures to combat the crisis. Instructions were issued to the concerned District Collectors and the Departments to undertake necessary preparatory measures to encounter the situation. Accordingly, the Collectors of all the 14 cyclone prone districts such as Ganjam, Puri, Jagatsinghpur, Kendrapada, Bhadrak, Balasore, Mayurbhanj, Jajpur, Cuttack, Khordha, Nayagarh, Gajapati, Dhenkanal and Keonjhar convened the meeting of their respective District Disaster Management Authorities and undertook the required preparatory measures to effectively deal with the situation. The District Emergency Operation Centres were activated to operate round the clock. Hon’ble Chief Minister, Odisha visited the State Emergency Operation Centre functioning in the office of the Special Relief Commissioner and reviewed the pre-cyclone preparedness activities. He also advised to adhere to the principle “saving lives while managing disaster”. The Control Rooms at Blocks, Sub- divisions and Tahasils were also activated. The fishermen on sea were asked to immediately come back to the shore.
- Collectors of Ganjam, Gajapati, Nayagarh, Khordha, Puri, Jagatsinghpur and Kendrapada were directed to evacuate all people living in low lying areas and in kutcha houses to nearby cyclone/flood shelters or other identified buildings

by morning of 12<sup>th</sup> October 2013 and ensure that no one stays in a kutchha houses in the night of 12<sup>th</sup> October 2013 when the very severe cyclonic storm was expected to make land fall, so as **to ensure ZERO casualty**. Similar steps were also taken to shift the livestock to safer places.

- Mock drill was conducted in every cyclone shelter and flood shelter during which all the equipment available in such shelters including generator, water pump, inflatable tower light, mechanised cutter, etc. were test-checked to ensure that these were in working order. Fuel was stored for operation of the equipment. Collectors of all the 14 cyclone-prone districts were provided with satellite phones for ensuring communication in case of failure of telephone/cell phone. BSNL authorities also made necessary arrangements to ensure operation of the telephone/ cell phone with backup power system. They were requested to pre-position adequate fuel for at least 7 days for operation of generators at telephone exchange/ mobile towers.
- Puja vacation was cancelled and all the State Government offices remained open. Manpower and materials of neighbouring unaffected districts were also kept in readiness so that in case of necessity, they could be diverted to affected districts on requisition of the concerned district administration.
- Ministry of Defence, Govt. of India was requested by the Special Relief Commissioner, Government of Odisha for stationing of 7-8 nos. of MI-17 Helicopters for carrying out air dropping operation in case of necessity. One lakh food packets were prepared in advance for air dropping in cut off and marooned areas. ORMAS was assigned with the job of packaging.
- ODRAF and NDRF teams were stationed/ deployed at strategic locations to carry out search & rescue operations without loss of time. Apart from deployment of the NDRF forces of 3<sup>rd</sup> Battalion, Mundali, fifteen more NDRF teams were mobilised from Battalions located in other States.
- Keeping in view the possible danger on account of the cyclone, about 9.84 lakh people were evacuated and shifted to safe shelters as a result of which loss of many precious lives could be averted. About 1.71 lakh people were also evacuated on account of floods. Animal Resources were also shifted to shelter places in vulnerable areas. Free kitchen was opened for such people in cyclone shelters/ relief centres.
- The Energy Department mobilised manpower and materials to the districts likely to be affected to ensure prompt restoration of power supply. All the

Departments were advised to make their own power back-up arrangement for their offices as power supply was likely to be stopped during cyclone for safety reasons.

- Health and FW Department took steps to preposition adequate quantity of stock of medicines and formed mobile medical teams. Similar steps were also taken by F&ARD Department to take care of the cattle health. F&ARD Department also made necessary arrangements of cattle feed for supply to the districts likely to be affected.
- FS&CW Department took steps for pre-positioning of food materials and made arrangements to procure dry food like chuda, gur, etc. for distribution among the affected people. The Department also took steps for availability of sufficient POL in districts likely to be affected by the ensuing very severe cyclone.
- H&UD Department and RD Department made necessary arrangement for supply of drinking water and disinfection/ restoration of sources. H&UD Department also made necessary arrangement of water pumps for dewatering of rain/ flood water. Fuel reserve for at least 7 days was stored for the generators to operate the water supply systems during power failure. Works, RD and Panchayati Raj Departments made necessary arrangements for quick restoration of road communication. It was decided that the mechanised cutters available with ODRAF units, fire Service units and cyclone shelters shall also be used for cutting of uprooted trees. Steps were taken to deplete the water level of different reservoirs to accommodate the inflow on account of cyclonic rainfall.
- Home Department issued instruction for maintenance of law and order and check stealing/ loot of public properties and necessary security arrangement for transport of relief materials.
- Repeated announcements were made by the Special Relief Commissioner on radio and television about the cyclone and instructions the people needed to follow for their own safety.
- Review of the preparedness arrangements was taken up in a high level meeting chaired by Hon'ble Minister, Revenue & Disaster Management in presence of the Chief Secretary, Development Commissioner, Additional Chief Secretary, Revenue & DM Department, Additional Chief Secretary, Finance

Department and Secretaries of all concerned Departments on daily basis at 11.00 A.M. Hon'ble Chief Minister also reviewed the preparedness arrangements at 4.00 PM everyday and issued instructions for saving lives & properties and smooth management of the disaster.

- Everyday Special Relief Commissioner issued one press release in English and another in Odia mentioning steps taken to combat the cyclone in order to assuage fear of the public.

### **Post “Phailin” relief and rehabilitation**

Relief and restoration works began immediately after the cyclone. Cooked food was provided in the cyclone shelters and in schools and colleges, where evacuated people had taken shelter. After the cyclone was over, people started going back to their homes. They were provided with dry rations: 50 kg rice and Rs 500 in cash for dal for the very severely affected families and 25 kg rice and Rs 300 for dal for the severely affected families. Besides, each fisherman family was given 10 kg of rice. Those whose houses were damaged were provided tarpaulin for temporary shelter. Restoring the roads, electricity and water supply were the immediate priorities. Road network was completely restored by 16<sup>th</sup> Oct 2013. Electricity was also restored in many places by that time.

- As announced by the State Government, 50 kg rice with Rs.500 in lieu of dal and 25 kg rice with Rs.300 in lieu of dal was provided to each family towards emergent food assistance in very severely and severely affected areas respectively. Besides, emergent food assistance in shape of rice for 3 days as per the scale provided under the Odisha Relief Code was also provided to people affected by flood.
- 4.23 lakh polythene sheets were provided to families whose houses were damaged.
- 21 lakh old age, differentially abled, widow and destitute pensioners were provided with one month additional pension of Rs. 300/-
- The water supply system was highly affected by the cyclone and flood on account of power failure. Therefore, drinking water was provided through

tankers and water pouches. Besides, in absence of power, the water supply projects were operationalised through generators.

- Kerosene was provided to the people in the affected areas where the power restoration was likely to be delayed.
- The health services both for human and cattle were strengthened in the cyclone and flood affected areas for which there was no outbreak of epidemic.
  - All hospitals and dispensaries were made functional in record time
  - 140 medical teams were formed and 284 MRCs were opened in affected areas
  - All hospitals where power supply was not restored were operated with generators
  - Dist HQ hospital, Mayurbhanj which was submerged in 10 feet flood water was made functional within 24 hours
- The fallen trees obstructing the road communication were cleared and roads were opened for smooth relief operation in record time. 10 units of Odisha Disaster Rapid Action Force (ODRAF), 28 units of National Disaster Response Force (NDRF), 350 Fire Services teams, Home Guards and Civil Defence Volunteers were deployed for evacuation, search, rescue & relief operations and road clearance.
- Large scale house damage and crop damage have occurred due to cyclone and flood. Fishermen, rural artisans, handloom weavers have also lost their livelihood due to the calamity. Government have taken various steps to provide assistance to the affected people.
- Crop loss assessment is going on. After assessment of crop loss where more than 50% crop loss will be found, they will be provided Agriculture Input Subsidy as per the revised norms and guidelines.
- Twenty-one people have lost their lives due to cyclone PHAILIN and 49 others due to subsequent floods including house collapse. In addition to the ex-gratia assistance of Rs.1.50 lakh, Hon'ble Chief Minister has announced an assistance of RS.2.50 lakh out of Chief Minister's Relief Fund to the Next of kins of the deceased. Hon'ble Prime Minister has also announced an ex-gratia assistance of Rs.2.00 lakh out of Prime Minister's National Relief

Fund each to the Next of Kins of deceased and Rs.50, 000/- for the seriously injured persons.

- The Government have also announced various packages for the affected farmers, fishermen, handloom weavers, rural artisans and the students. Steps have been taken to provide all assistance to the affected people after due enquiry and enumeration.
- House Building Assistance and Assistance for clothing and utensils have already been provided to the affected persons.
- The Cyclone PHAILIN and Floods have caused large scale damages to other public properties also. The Government have taken steps for immediate restoration of the damaged infrastructure.

#### ABSTRACT OF ASSISTANCE SOUGHT FOR

(Rs. in lakh)

SI	Item	Amount required/spent
1	Ex-gratia for loss of life	66.00
4	Clothing & Utensils	5649.91
5	GR kind for dire need of sustenance	28134.49
7	Cost of search & Rescue measure	127.00
8	Cost of evacuation	115.00
10	Temporary accommodation	3946.78
11	Temporary shelter	8118.00
16	Emergence supply of drinking water	122.34
17	Clearance of debris	1000.00
19	Disposal of dead bodies/Carcasses	20.00
21	Agriculture input subsidy-SMF	34449.14
22	Agriculture input subsidy-other than SMF	4093.22
23	Input subsidy-Sericulture farmers	19.968
24	Replacement of Milch/ Draught animals	218.21
25	Provision of fodder	1124.00
26	Cattle Health Care	675.50
27	Assistance to fisherman	997.44
28	Input subsidy-Fish seed farm	607.61
29	Assistance for Artisan-Traditional crafts	172.65
30	Assistance for Handloom weavers	46.02
31	HB assistance	27488.249

39	Repair of Roads & Bridges	95571.00
43	Repair of Rural/Urban Water Supply System	3682.62
45	Repair of Irrigation works	43086.39
50	Repair of Community assets owned by Panchayat	24603.00
52	Repair of PHC/CHC	1485.17
53	Repair of Primary School Buildings	23858.61
55	Repair of community assets (college/university building)	4792.00
56	Restoration of Power supply	104814.00
57	Other govt. Buildings	5156.98
	<b>Grand Total</b>	<b>424241.297</b>

**or say Rs. 4242.41 crore**

## **2<sup>nd</sup> Flood**

The Severe Cyclonic Storm “PHAILIN” that struck the State from 12<sup>th</sup> of October 2013 caused extensive devastation in 19 out of 30 districts in Odisha. The incessant rainfall on the effect of this cyclonic storm also caused severe floods in northern Odisha. Before normalcy was restored, incessant rainfall from 21<sup>st</sup> October to 26<sup>th</sup> October 2013 due to the effect of low pressure triggered yet another crisis, creating flood situations in Rusikulya, Vansadhara, Baitarani, Budhabalanga, Subarnarekha and other rivers affecting 13 districts namely Ganjam, Gajapati, Puri, Nayagarh, Khordha, Cuttack, Jagatsinghpur, Kandhamal, Kendrapada, Jajpur, Bhadrak, Balasore and Mayurbhanj. Continued heavy rainfall also severely impacted the relief operation in the areas which were affected by the Severe Cyclonic Storm “PHAILIN” and floods following that. Lakhs of people were marooned and vast patches of agricultural land were inundated due to the fresh spell of heavy rain and floods. Agriculture lands have been sand cast due to floods/ flash floods. Due to continued rainfall, houses of people and public infrastructure especially roads and embankments have been severely damaged.

## **Rainfall**

Incessant heavy rainfall was experienced in different parts of the State during 21.10.2013 to 26.10.2013. The districts namely Ganjam, Puri, Gajapati, Khordha, Nayagarh, Kendrapada, Jajpur have experienced very to very heavy incessant rainfall during these days. The district wise rainfall during these days is at **Appendix - I**

## Impact

SI	District	Blocks Affected	Villages Affected	ULBs Affected
1	Balasore	11	1629	3
2	Bhadrak	7	1149	2
3	Cuttack	6	67	2
4	Gajapati	7	1528	2
5	Ganjam	22	384	1
6	Jagatsinghpur	7	463	1
7	Jajpur	10	1796	2
8	Kandhamal	2	25	0
9	Kendrapada	9	1592	0
10	Khordha	3	175	2
11	Mayurbhanj	8	147	1
12	Nayagarh	8	1582	2
13	Puri	5	185	1
<b>Total</b>		<b>105</b>	<b>10722</b>	<b>19</b>

## Damage

### 1. Clothing and utensils for families

About **2,20,277** families whose houses have been fully damaged or severely inundated are entitled to assistance for clothing and utensils as per the Norms of SDRF/ NDRF. The district-wise is given below:

(Rs. in lakh)

SI.	District	Clothing		Utensils	
		No. of family	Amount spent @ Rs.1300/- per family	No. of family	Amount spent @ Rs1400/- per family
1	Bhadrak	765	9.945	765	10.71
2	Cuttack	116	1.508	116	1.624
3	Gajapati	2554	33.202	2554	35.756
4	Ganjam	153049	1989.637	153049	2142.686
5	Jagatsinghpur	2243	29.159	2243	31.402

6	Jajpur	1270	16.51	1270	17.78
7	Kandhamal	175	2.275	175	2.45
8	Kendrapar	4255	55.315	4255	59.57
9	Khorda	45770	595.01	45770	640.78
10	Mayurbhanj	1368	17.784	1368	19.152
11	Nayagarh	1815	23.595	1815	25.41
12	Puri	6697	87.061	6697	93.758
<b>Total</b>		<b>220077</b>	<b>2861.001</b>	<b>220077</b>	<b>3081.078</b>

## 2. Cost of Search and Rescue measures: -

All 10 units of ODRAF, 12 Units of NDRF, and fire service personnel were engaged in search & rescue operation.

## 3 Gratuitous Relief for families in dire need of immediate sustenance after calamity:

The affected persons who were in dire need of immediate sustenance after the calamity were provided with Gratuitous Relief for 3 days @ Rs.40/- per adult per day and @Rs.30/- per child per day.

## 4. Assistance for repair / restoration of damaged houses:

**91955** houses have been fully damaged and **128391** houses have been severely damaged. **125253** Houses have been partially damaged. This apart, **26484** Huts and **43358** cowsheds have also been damaged.

SI	District	Fully Damaged		Severely Damaged		Partially Damaged	Hut Damaged	Cowshed Damaged	Total
		Pucca	Kutchha	Pucca	Kutchha				
1	Bhadrak	0	365	0	400	3700	270	10	<b>4745</b>
2	Cuttack	0	0	14	102	956	88	0	<b>1160</b>
3	Gajapati	0	224	0	2330	24453	170	0	<b>27177</b>
4	Ganjam	15	87634	4380	61020	7830	18326	32550	<b>211755</b>
5	Jagatsinghpur	0	38	0	2205	5242	476	6406	<b>14367</b>
6	Jajpur	0	237	0	1033	6386	873	860	<b>9389</b>
7	Kandhamal	0	34	0	141	99	0	0	<b>274</b>
8	Kendrapar	0	886	0	3369	16661	920	0	<b>21836</b>
9	Khorda	0	520	0	45250	24760	0	0	<b>70530</b>

10	Mayurbhanj	0	340	0	1028	2378	254	0	<b>4000</b>
11	Nayagarh	0	467	0	1348	20478	852	871	<b>24016</b>
12	Puri	0	1144	0	5553	4448	4251	2661	<b>18057</b>
13	Dhenkanal	-	51	1	217	7862	4	-	<b>8135</b>
	<b>Total</b>	<b>15</b>	<b>91940</b>	<b>4395</b>	<b>123996</b>	<b>125253</b>	<b>26484</b>	<b>43358</b>	<b>415441</b>

**5. Boat and net:**

4411 boats and 4233 nets of fishermen community have been fully damaged. Similarly 4227 boats and 5353 nets have been partially damaged due floods.

**6. Fish pond farms:**

**2716.25** hectares of fish pond have been damaged due to this flood.

**7. Replacement of draught animals:**

**271** nos. of large animals and **1878** small animals have perished due to floods.

**8. Handloom Weavers**

Loom equipment of 47 beneficiaries and raw materials of 52 have been damaged due to this flood and need replacement.

SI	District	Block	Total Weavers affected	Loom & accessories damaged		Raw Material & Finished product	
				No.	Amount	No.	Amount
1	Ganjam	Digapahandi	3	3	0.09	3	0.09
		Aska	42	37	1.11	42	1.26
		Buguda	7	7	0.21	7	0.21
<b>Total</b>			<b>52</b>	<b>47</b>	<b>1.41</b>	<b>52</b>	<b>1.56</b>

**9. Sericulture Sector**

**344** sericulture farmers of Cuttack, Mayurbhanj and Gajapati districts have been severely affected due to heavy rain / flood. 67 hectares of Tassar, 4.2 hectares of Mulberry and 7.0 hectares of Eri plantation have been severely damaged.

Sl.	District	No. of farmers affected	Extent of damage to plantation in hec.			Total area affected in hect.
			Tassar	Mulberry	Eri	
1	Cuttack	36	0	0	7	7
2	Mayurbhanj	23	20	1.2	0	21.2
3	Gajapati	285	47	3	0	50
<b>Total</b>		<b>344</b>	<b>67</b>	<b>4.2</b>	<b>7</b>	<b>78.2</b>

## 10. Crop damage/ loss due to heavy rain

1792 sericulture farmers of five districts have been sustained extensive damage to Tassar, Mulberry and Eri crops.

Sl	District	No. of farmers affected	Extent of damage to sericulture crop (in Dfls)			Extent of damage to sericulture crop (Rs. In lakh)		
			Tassar	Mul.	Eri	Tassar	Mul.	Eri
1	Jajpur	114	10330	0	640	0.6198	0	0.026
2	Cuttack	757	74650	2500	3600	4.479	0.15	0.144
3	Mayurbhanj	527	71600	200	0	4.296	0.012	0
4	Gajapati	300	0	7500	0	0	0.45	0
5	Kandhamal	94	0	1530	0	0	0.0918	0
<b>Total</b>		<b>1792</b>	<b>156580</b>	<b>11730</b>	<b>4240</b>	<b>9.3948</b>	<b>0.7038</b>	<b>0.17</b>

## Repair / restoration of immediate nature of the damaged infrastructure in eligible sectors

### i) Roads and Bridges

#### PWD Roads

226 nos. of PWD roads measuring 467.38 km along with 178 nos. CDs has been damaged due to the flood.

#### Rural Roads

Due to heavy rain & floods, 557 no of Rural Roads have been damaged. 1389 km of road was submerged in flood water. 329 breaches have occurred. 1094 CD works have been damaged severely due to floods.

SI No.	Name of the District	No. of Roads submerged	Submerged length ( in Km)	No of Breaches	No of CD/ Bridge damaged
1	Balasore	62	79.0	2	4
2	Bhadrak	11	11.0	5	10
3	Cuttack	20	91.00	2	180
4	Gajapati	13	100.0	10	0
5	Ganjam	96	324.0	177	755
6	Jagatsinghpur	60	50.0	0	0
7	Jajpur	79	175.0	7	19
8	KKandhamal	8	2.0	3	6
9	Kendrapada	12	19.0	42	49
10	Khurdha	86	268.0	40	35
11	Mayurbjanj	3	5.00	0	0
12	Nayagarh	96	205.0	30	11
13	Puri	11	60.00	11	15
<b>Total</b>		<b>557</b>	<b>1389.00</b>	<b>329</b>	<b>1094</b>

### Panchayat Roads

7025.77 km of Panchayat roads have been damaged due to the floods. 893 culverts have been severely damaged. These roads are extensively used in rural areas for carrying relief materials during disaster.

SI	District	Road Damaged in Kilometre	No. of Culverts Damaged
1	Angul	81.55	9
2	Balasore	70.00	3
3	Cuttack	1230.0	0
4	Gajapati	171.56	10
5	Ganjam	3531.00	673
6	Jagatsinghpur	40.00	0
7	Jajpur	1408.00	0
8	Khordha	7.50	0
9	Nayagarh	61.16	78.00
10	Puri	425.00	120
<b>Total</b>		<b>7025.77</b>	<b>893</b>

**ii) Rural Water Supply**

**(Repair/restoration of drinking water sources)**

Hand pump tube wells have been affected by the current flood. Platforms of rural piped water supply projects have been submerged / damaged during the flood.

**iii) Irrigation Sector**

142 breaches in river embankments and 240 breaches in canal embankments have occurred. Partial damages have also been caused to river and canal embankments. **447** Minor Irrigation projects have been damaged severely due to heavy rain and floods.

**River and Canal Embankments**

**(A) River Embankments**

Sl.	Name of the District	Restoration to River/ Saline Embankment		Restoration to Canals	
		Breaches	Partial damages	Breaches	Partial damages
1	<b>Ganjam</b>	129	241	232	152
2	Gajapati	0	5	0	0
3	Nayagarh	13	45	3	20
4	Khurda	0	18	5	5
	<b>G.Total:</b>	<b>142</b>	<b>309</b>	<b>240</b>	<b>177</b>

**(B) Minor Irrigation (Flow)**

Sl. No	District	No of Projects
1	Gajapati	36
2	Ganjam	249
3	Nayagarh	162
<b>Total</b>		<b>447</b>

**(iv) Community Assets**

**(A) Panchayat Ghars**

1527 Panchayat ghars have been damaged due to this flood.

SI	District	Number of Buildings damaged
1	Balasore	10
2	Cuttack	283
3	Gangam	612
4	Jagatsinghpur	1
5	Jajpur	256
6	Nayagarh	103
7	Puri	262
<b>Total</b>		<b>1527</b>

### (B) Rural Buildings

Extensive damage to govt. buildings in rural areas such as veterinary dispensary, RI offices, school buildings have occurred due to heavy rain & floods.

### (C) College Buildings

Torrential rain and floods have caused extensive damages to roofs, walls, class rooms, boundary walls, furniture of 49 colleges in 4 districts.

### Repair/replacement of medical equipments

This flood has also caused extensive damage to health institutions including drugs and equipment.

### ABSTRACT OF ASSISTANCE SOUGHT FOR

(Rs. in lakh)

SI	Item	Amount required/spent		Total Amount Required
		1 <sup>st</sup> phase (cyclone PHAILIN & Flood) From 12 <sup>th</sup> to 15 <sup>th</sup> Oct 2013	2 <sup>ND</sup> Spell flood/ Heavy rain(From 21 <sup>st</sup> to 26 <sup>th</sup> Oct. 2013)	
1	Ex-gratia for loss of life	66.00	22.50	88.50
2	Clothing & Utensils	5649.91	5942.079	11591.989
3	GR kind for dire need of sustenance	28134.49	4312.34	32446.83
4	Cost of search & Rescue measure	127.00	36.32	163.32
5	Cost of evacuation	115.00	46.351	161.351

6	Temporary accommodation	3946.78	200.00	4146.78
7	Temporary shelter	8118.00	0.00	8118
8	Emergence supply of drinking water	122.34	0.00	122.34
9	Clearance of debris	1000.00	0.00	1000.00
10	Disposal of dead bodies/Carcasses	20.00	0.00	20.00
11	Agriculture input subsidy-SMF	34449.14	6359.21	40808.35
12	Agriculture input subsidy-other than SMF	4093.22	683.55	4776.77
13	Input subsidy-Sericulture farmers	19.968	13.12	33.088
14	Replacement of Milch/ Draught animals	218.21	75.87	294.08
15	Provision of fodder	1124.00	0.00	1124.00
16	Cattle Health Care	675.50	0.00	675.50
17	Assistance to fisherman	997.44	594.186	1591.626
18	Input subsidy-Fish seed farm	607.61	220.016	827.626
19	Assistance for Artisan-Traditional crafts	172.65	0.00	172.65
20	Assistance for Handloom weavers	46.02	2.970	48.99
21	HB assistance	27488.249	21466.004	48954.253
22	Repair of Roads & Bridges	95571.00	88156.89	183727.89
23	Repair of Rural/Urban Water Supply System	3682.62	150.00	3832.62
24	Repair of Irrigation works	43086.39	11224.50	54310.89
25	Repair of Community assets owned by Panchayat	24603.00	18725.60	43328.60
26	Repair of PHC/ CHC, replacement of equipment	1485.17	38.00	1523.17
27	Repair of Primary School Buildings	23858.61	0.00	23858.61
28	Repair of community assets (college/ university building)	4792.00	740.00	5532.00
29	Restoration of Power supply	104814.00	0	104814.00
30	Other govt. Buildings	5156.98	0.00	5156.98
	<b>Grand Total</b>	<b>424241.297</b>	<b>159009.506</b>	<b>583250.803</b>

By the Memorandum, the State Government sought an additional Central Assistance of **Rs.1590.09 crore** out NDRF to complete the process of relief and restoration measures on account of heavy rain and flood during 21<sup>st</sup> to 26<sup>th</sup> of October, 2013.

## **Visit of Central Team:**

The Inter-Ministerial Central Teams led by Ms. Rashmi Goel, Joint Secretary(HR),, Ministry of Home Affairs, Government of India visited the cyclone affected areas and the floods of the State from 28<sup>th</sup> to 31<sup>st</sup> October 2014.

### **Team – A ( Balasore, Mayurbhanj & Puri)**

- 1 Team Leader : Ms. Rashmi Goel, Joint Secretary(HR), Ministry of Home Affairs, Govt. of India
- 2 Shri A.K. Rajput, Director, Central Electricity Authority, Sewa Bhavan, R.K.Puram, New Delhi
- 3 Shri Dina Nath, Deputy Director, Finance Commission Division, Department of Expenditure, Ministry of Finance, New Delhi
- 4 Dr. K.K.Tripathi, Director, Directorate of Rural Development, Krishi Bhawan, New Delhi
- 5 Dr. Chanda Chowdury, Director (SC), Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
- 6 Shri D.Rajasekhar, Deputy Advisor, Ministry of Drinking Water & Sanitation, Paryavaran Bhawan, New Delhi
- 7 Dr. K.S.Rao,Head,Crop Production Division,CRRI, Cuttack – to move by road

### **Team – B ( Ganjam & Puri)**

- 1 Shri Sanjaya Lohiya, Joint Secretary (Crops),Directorate of Agriculture & Co-operation, Krishi Bhawan, New Delhi
- 2 Dr. A. Chandrasekhar, Research Officer, Planning Commission,Yojana Bhavan, New Delhi.
- 3 Shri R.P. Panda, Superintending Engineer, Regional Office,Ministry of Road Transport & Highways, Bhubaneswar
- 4 Dr. S.S.C.Patnaik, Sr, Scientist, CRRI, Cuttack - to move by road

## **Declaration**

Revenue & Disaster Management (Special Relief) Department has declared 195 Blocks and 64 Urban Local Bodies (ULBs) in respect of 19 Districts as affected by very severe cyclonic storm “Phailin” and subsequent floods during 2013 vide

Notification No. 2832/R&DM(SR) Dt.13.11.2013 and No.3082/R&DM(SR) Dt.28.11.2013.

As per the guidelines developed by the National and International level organisations, early warning, preparedness, mitigation and efficient execution are the key factors in management of natural calamities, which was strictly adopted and evince the very successful management of the Disaster and obtained the outstanding achievement in management bestowing huge admiration and recognition upon the State Government. The dedicated effort put for such success was even highly applauded by the United Nations and several other national level organisations, who have adopted it as a model for successful Disaster Management.

## Chapter-V

### Fire Accidents & Lightning

#### FIRE ACCIDENT

As many as 27 persons lost their lives due to fire accidents during the year 2013-14. Steps have been taken to provide ex-gratia assistance @ Rs.1,50,000/- per deceased to next of the kins out of the SDRF. Besides, funds were provided to different Collectors for disbursement of house building assistance along with assistance for clothing and utensils as per the Norms of Assistance from SDRF.

#### Loss of Property due to Fire Accident and Account of Relief given during the year 2013-14

[In Rs. ]

Sl. No.	Name of the District	No. of accident	No. of villages affected	No. of families affected	approximate value of properties lost	No. of persons died	No. of cattle died	Relief provided towards HBA & Others
1	2	3	4	5	6	7	8	9
1	Angul	299	230	387	8285500	2		2222550
2	Balasore	287	189	287	10513200	1		1867500
3	Bargarh	46	43	54	1382530	3		61800
4	Bhadrak	626		624	27219700	2		3943550
5	Bolangir	58	45	57	827500			195350
6	Boudh	111	111	287	3718700			631800
7	Cuttack	863	402	709	37204000			2657850
8	Deogarh	37	17	37	551000			85900
9	Dhenkanal	210	146	354	11456686	2		2614010
10	Gajapati	66	58	102	2182500			522750
11	Ganjam	380	1096	1132	21067995			4368200
12	Jagatsinghpur	273		353	26033200	4	15	2911100
13	Jajpur	515	288	515	14676600	1	11	2916850
14	Jharsuguda	3		3	140000			5700
15	Kalahandi	17	15	17	529000	1		15200
16	Kandhamal	98	86	123	3586400	1		500600
17	Kendrapara	496	261	483	15634500		3	3418500
18	Keonjhar	204	125	204	5719000			487400
19	Khordha	169	85	351	7616500			761400
20	Koraput	85	64	115	1963100	4		187150

21	Malkanagiri	56	47	54	2050900		2	185600
22	Mayurbhanj	202	146	225	8552300	1		873350
23	Nawarangpur	80	80	128	2014000	1		206800
24	Nayagarh	129	120	272	5700000	1	1	608600
25	Nuapara	14		14	1030500	1		249300
26	Puri	344	275	491	8634900	1	17	1720700
27	Rayagada	51		138	8165700			622650
28	Sambalpur	21	19	25	865500			153900
29	Subarnapur	62	62	150	2131500	1		798800
30	Sundargarh	2	2	2	115000			3800
<b>Total</b>		<b>5804</b>	<b>4012</b>	<b>7693</b>	<b>239567911</b>	<b>27</b>	<b>49</b>	<b>35798660</b>

## LIGHTNING

375 persons lost their lives due to lightning in the State during the year 2013-14. Steps have been taken to provide ex-gratia assistance @ 1,50,000/- per deceased to next of the kins of the lightning victims from the Chief Minister's Relief Fund. The district-wise no. of death is as follows:

Sl. No	Name of the District	No. of death
1	Angul	17
2	Bolangir	23
3	Bargarh	11
4	Balasore	10
5	Bhadrak	6
6	Boudh	2
7	Cuttack	23
8	Deogarh	9
9	Dhenkanal	17
10	Ganjam	20
11	Gajapati	3
12	Jagatsinghpur	8
13	Jajpur	19
14	Jharsuguda	3

15	Kalahandi	2
16	Kandhamal	6
17	Kendrapara	12
18	Keonjhar	18
19	Khurda	13
20	Koraput	17
21	Malkanagiri	9
22	Mayurbhanj	48
23	Nawarangpur	12
24	Nayagarh	2
25	Nuapara	5
26	Puri	9
27	Rayagada	9
28	Sambalpur	11
29	Sonepur	4
30	Sundargarh	27
<b>TOTAL</b>		<b>375</b>

## **Chapter-VI**

### **Hailstorm**

3 persons died during the year 2013-14 due to hailstorm. The calamity accompanied by strong wind also caused damage to private houses, crops and other infrastructure. Rs.48.685 lakh has been provided out of State Disaster Response Fund to the Collectors of the affected Districts namely Bhadrak, Balasore, and Gajapati for disbursement of House Building Assistance, Clothing & Utensils, GR-in-Kind, Transport Charges, and replacement of Milch / Draught animal & birds & ex-gratia assistance.

## Chapter – VII

### Heat Wave

Heat wave condition prevailed in the State in the months from April to June. The State undertook a number of preparedness/ preventive activities for management of the heat wave situation like IEC activities through mass media for general awareness of the public, mitigating water scarcity problems, special arrangement of treatment of heat-stroke patients in Government Hospitals at different levels, rescheduling of working hour for labourers, provision of drinking water at works site, restriction on plying of buses during peak hours, re-scheduling of time table of the school, etc.

Despite the measures taken by the Government, 17 human lives were lost due to sunstroke during 2013. Ex-gratia assistance @ Rs.10,000/- has been provided to the bereaved families from the Chief Minister's Relief Fund. The district-wise number of human casualties is given below:

Sl.	Name of the District	No. of persons died
1.	Baragarh	5
2.	Cuttack	3
3.	Deogarh	1
4.	Ganjam	1
5.	Jajpur	1
6.	Jharsuguda	1
7.	Kendrapara	2
8.	Sambalpur	1
9.	Sundargarh	2
<b>Total</b>		<b>17</b>

#### Preparatory measures on Heat wave

In 2013 the conditions of heat-wave existed in the State in the months of April, May and June. The following important preparedness/ preventive measures were undertaken by the State Government:

**High Level Meeting:** Hon'ble Chief Minister reviewed the preparedness for heat wave situation in the State through video conferencing with the Collectors on 14<sup>th</sup> March, 2013.

**Instruction to Departments and Collectors:** All the Collectors and the Departments concerned have been instructed to take required preparedness measures to mitigate the possible heat wave situation and water scarcity problems during summer 2013

**Dissemination of Heat Wave Warning :**

- Awareness generation through Media & display of Heat wave safety tips,
- Broadcast / telecast in TV & Radio.

**Drinking Water Supply Arrangement :**

- Assess the water scarcity areas and designing intervention.
- Opening of Jal Chhatras at congregation points such as Bus stop, Bus stand, Schools, Market places, Work site by GPs, Urban Local Bodies and Voluntary Organisations.
- Provision of a cattle vat near tubewells.
- Provision of drinking water for the inhabitants in the Forests.
- To release water from the reservoirs through canals for use of human beings as well as animals during summer

**Health Measures :**

- Provision for a Heat stroke treatment cell in each hospital
- Provision of medicines, ice cubes, Saline in each PHCs / CHCs / Sub Centres and ANM workers.
- Organize Radio / TV talks on heat wave safety tips.
- Doctors to attend heat wave affected patients round the clock.
- ESI hospitals to treat general heat wave patients as well.
- Stockpiling of ORS and life saving medicines in PHCs, CHCs, District Headquarter Hospitals, etc.
- Special arrangement for treatment of Sun-stroke patients
- Ambulance service to convey the patients to hospitals
- IEC measures
- Immediate joint inquiry on reports of Sun-stroke deaths (Report within 36 hours)

**Veterinary Measures :**

- Provision of Medicines in each Veterinary Dispensaries and LI Centres.
- Provision of Water at LI Centres for live stock

- Storage of sufficient medicines in veterinary hospitals / L.I. Centres for treatment of livestock
- Provision of drinking water for stray animals
- Awareness measures
- Care of affected animals

### **Rescheduling of working hours for labourers and workmen**

- Rescheduling of working hours  
(No work during peak-hours from 11.00 AM to 03.30 PM)
- Provision of rest shed and drinking water/ ORS at work places
- ESI dispensaries alerted for treatment of heat-stroke patients
- Arrangement for enforcement

### **Rescheduling of timings in Educational Institutions & Completion of Annual Examination :**

- Rescheduling of timing of classes and examinations
- Provision of drinking water and First Aid in schools
- Constitution of squad for enforcement of school timing
- Awareness Generation through students

### **Rescheduling of Bus timing**

- Restrict plying of buses during pick hours.
- Avoid overcrowding & water pouches.
- Carry drinking water pots inside the buses.
- Supply of drinking water through Railway Tankers to Water scarcity areas.
- Provision of cold water at Bus terminal
- Provision of First Aid Box for heat stroke patients in each Buses.

**Uninterrupted power supply** : Provision of uninterrupted power supply and notification of telephone numbers and mobile call centres during summer.

## CHAPTER – VIII

### Relief Operation

#### Relief Expenditure

During this year 2013-14, Rs.1494.283 crore was available for expenditure on account of different approved Natural Calamities, as follows.

		(in crore Rs.)
Opening Balance	-	184.32
Corpus for the year 2013-14	-	453.31
Grant from NDRF	-	750.00
Advance from the Share of 2014-15	-	106.653
Total:		<b>1494.283</b>

Out of the above, an amount of Rs.1492.923 was released in favour of different Districts and Departments for management of different approved Natural Calamities including Phailin and subsequent floods.

#### Appendix-XII

#### Statement showing item-wise details of expenditure incurred as per approved items and norms of SDRF/NDRF

(Rupees in lakh)

Code No.	Items	Calamity											
		Avalanche	Cloud burst	Cyclone	Drought	Earthquake	Fire	Flood	Hailstorm	Landslide	Pest Attack	Tsunami	Cold wave/frost
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Gratuitous Relief												
(a)	Ex-gratia payment to families to deceased persons												
	(i) As per SDRF/NDRF norms	0	0	106.25	0	0	71.00	26.50	4.50	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total no. of beneficiaries	0	0		0	0				0	0	0	0

(b)	Ex-gratia payment for loss of a limb or eyes												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total no. of beneficiaries	0	0	0	0	0	0	0	0	0	0	0	0
(c)	Grievous injury requiring hospitalization												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total no. of beneficiaries	0	0	0	0	0	0	0	0	0	0	0	0
(d)	Relief for the old, infirm and destitute, children												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total no. of beneficiaries	0	0	0	0	0	0	0	0	0	0	0	0
(e)	Clothing and utensils/household goods for families whose houses have been washed away/fully damaged/severely inundated for more than a week due to a natural calamity												
	(i) As per SDRF/NDRF norms	0	0	276.88	0	0	49.36	20.527	2.079	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total no. of beneficiaries	0	0		0	0			0	0	0	0	0
(f)	Gratuitous relief for families in dire need of immediate sustenance after a calamity												
	(i) As per SDRF/NDRF norms	0	0	37960.687	0.0	0	2.403	34.21	7.015	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total no. of beneficiaries	0	0		0	0				0	0	0	0
2	Supplementary Nutrition												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total no. of beneficiaries	0	0	0	0	0	0	0	0	0	0	0	0

3	Assistance to Small and Marginal Farmers (SMF for												
(a)	Desilting of agriculture land												
	(i) As per SDRF/NDRF norms	0	0	8.182	0	0	0	407.821	0	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total eligible area (ha.)	0	0	0	0	0	0		0	0	0	0	0
	(iv) No. of S&M farmers												
(b)	Removal of debris on agricultural land in hilly areas												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total eligible area (ha.)	0	0		0	0	0	0	0	0	0	0	0
	(iv) No. of S&M farmers												
(c)	Desilting/Restoration/Repair of fish farms												
	(i) As per SDRF/NDRF norms	0	0	791.00	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total eligible area (ha.)	0	0		0	0	0	0	0	0	0	0	0
	(iv) No. of S&M farmers	0	0		0	0	0	0	0	0	0	0	0
(d)	Loss of substantial portion of land caused by landslide, avalanche, change of course of rivers												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	23.75	0	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Total eligible area (ha.)	0	0	0	0	0	0		0	0	0	0	0
	(iv) No. of S&M farmers	0	0	0	0	0	0		0	0	0	0	0
(e)	Agriculture input subsidy where crop loss was 50% and above												
	(i) As per SDRF/NDRF norms	0	0	2294.53	155.08	0	0	1654.29	0	0	0	0	0
	(ii) Outside the norms	0	0			0			0	0	0	0	0

	(iii) Total eligible area (ha.)												
	(iv) No. of S&M farmers												
4	Input Subsidy to farmers other than Small & Marginal Farmers												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total eligible area (ha.)												
	(iv) No. of S&M farmers												
5	Assistance to small and marginal sericulture farmers												
	(i) As per SDRF/NDRF norms	0	0	19.008	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total area (ha.)												
	(iv) No. of S&M farmers												
6	Employment Generation												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) No. of man days generated												
	(iv) Quantum of food grains distributed as part of wage component												
7	Animal Husbandry Assistance to small and marginal farmers/agricultural labourers												
(i)	Replacement of draught/milch animals or animals used for haulage												
	(i) As per SDRF/NDRF norms	0	0	714.00	0	0	0	4.124	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total no. of beneficiaries												
(ii)	Provisions of fodder/feed in cattle camps												
	(i) As per SDRF/NDRF	0	0	662.274	0	0	0	0	0	0	0	0	0

	norms												
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) No. of cattle camps												
	(iv) Number of cattle kept in camps												
	(v) Qty. of fodder(qtls.) supplied in camp												
(iii)	Water supply in Cattle Camps												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total no. of Tanker load												
	(iv) No. of cattle camps and cattle kept therein												
(iv)	Additional cost of medicines and vaccine ( calamity related requirements)												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
(v)	Supply of fodder outside Cattle Camps												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total qty. of fodder transported (Qtls)												
(vi)	Movement of useful cattle to other areas												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) No. of cattle moved												
8	Assistance to Fishermen												

(a)	For repair/replacement of boats, nets (damaged or lost)												
	(i) As per SDRF/NDRF norms	0	0	1617.00	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
(b)	Input Subsidy for fish seed farm												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total eligible area (ha.)												
	(iv) No. of fish farmers												
9	Assistance to artisans in handicrafts/handloom sectors by way of subsidy for repair/replacement of damaged equipments												
(a)	Traditional Crafts (Handicraft)												
(i)	For replacement of damaged tools / equipments												
	(i) As per SDRF/NDRF norms	0	0	125.086	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) No. of equipments												
	(iv) No. of beneficiaries												
(ii)	For loss of raw materials / goods in process/ finished goods												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Qty. of materials (Qtls.)												
	(iv) No. of beneficiaries												
(b)	For Handloom Weavers												
(i)	Repairs/replacement of loom equipments and accessories												
	(i) As per SDRF/NDRF norms	0	0	107.49	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) No. of equipments/ accessories												

	(iv) No. of beneficiaries												
(ii)	Purchase of yarn and other materials like dyes and chemicals and finished stocks												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Qty. of materials (Qtls.)												
	(iv) No. of beneficiaries												
10	Assistance for repair/ restoration of damaged houses												
(a)	Fully damaged/ destroyed Pucca houses												
	(i) As per SDRF/NDRF norms	0	0	4977.71	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Number												
(b)	Fully damaged/ destroyed Kutcha houses												
	(i) As per SDRF/NDRF norms	0	0	4252.15	0	0	220.12	74.223	35.176	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Number												
(c)	Severely damaged houses												
(i)	Severely damaged Pucca houses												
	(i) As per SDRF/NDRF norms	0	0	2218.19	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Number												
(ii)	Severely damaged Kutcha houses												
	(i) As per SDRF/NDRF norms	0	0	2315.25	0	0	0	67.936	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Number												
(d)	Partially damaged houses ( both pucca and kutcha)												

	(i) As per SDRF/NDRF norms	0	0	3115.18	0	0	100.13	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Number												
(e)	Huts damaged/ destroyed												
	(i) As per SDRF/NDRF norms	0	0	992.147	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Number												
11	Provision of emergency supply of drinking water in rural areas and urban areas												
	(i) As per SDRF/NDRF norms	0	0	679.672	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total Qty. of water supplied ( No. of Tankers load)												
12	(i) Provisions of medicines, disinfectants, insecticides for prevention of outbreak of epidemics	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) No. of beneficiaries												
13	(i) Medical care for cattle and poultry against epidemics as a sequel to a notified natural calamity												
	(ii) Total No. of cattle & poultry benefited												
14	(i) Evacuation of people affected/ likely to be affected	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) No. of people evacuated												
	(iii) Average cost/person												
15	Hiring of boats for carrying immediate relief and saving life												
	(i) No. of boat days	0	0	0	0	0	0	0	0	0	0	0	0

	(ii) Average hiring cost per boat/day												
16	Provisions for temporary accommodation, food, clothing, medical care etc. of people affected/ evacuated ( operation of relief camps)												
	(i) As per SDRF/NDRF norms	0	0	4000.00	0	0	0	2060.195	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) No. of persons provided shelters												
	(iv) No. of relief camps opened												
	(v) Average cost per person/per day												
17	Air dropping of essential supplies												
	(i) No. of sorties	0	0	0	0	0	0	619.00	0	0	0	0	0
	(ii) Quantity ( in MTs) dropped												
18	Repair/restoration of immediate nature of the damaged infrastructure in eligible sectors												
(a)	Roads & Bridges												
	(i) As per SDRF/NDRF norms	0	0	11439.45	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0	0	0	0	0	0	0	0	0	0	0
	(iii) Cumulative length of roads repaired												
(b)	Drinking water supply												
	(i) As per SDRF/NDRF norms	0	0	1595.00	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total no. of schemes												
(c)	Irrigation												
	(i) As per SDRF/NDRF norms	0	0	4076.00	0	0	0	3339.011	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total no. of schemes												

(d)	Power supply ( only limited to immediate restoration of electricity supply in the affected areas)												
	(i) As per SDRF/NDRF norms	0	0	18000.00	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0	0			0	0	0	0
(e)	Primary Education												
	(i) As per SDRF/NDRF norms	0	0	5000.00	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) No. of primary school buildings repaired												
(f)	Primary Health Centre												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) No. of Primary Health Centres buildings repaired												
(g)	Community assets owned by Panchayats												
	(i) As per SDRF/NDRF norms	0	0	26723.00	0	0	0	29.761	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) No. of community assets repaired												
19	Replacement of damaged medical equipments and lost medicines of Govt.Hospitals/ Health centres												
20	Operational cost ( of POL only) for Ambulance Service, Mobile Medical Teams and Temporary Dispensaries												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
21	Cost of clearance of debris												

	(i) As per SDRF/NDRF norms	0	0	1020.00	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
22	Draining off flood water in affected areas	0	0	157.13	0	0	0	0	0	0	0	0	0
23	Cost of search and rescue measures												
	(i) As per SDRF/NDRF norms	0	0	311.474	0	0	0	439.295	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
24	Disposal of dead bodies/ carcasses												
	(i) As per SDRF/NDRF norms	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) Outside the norms	0	0			0				0	0	0	0
	(iii) Total no. of dead bodies disposed												
	(iv) Total no. of carcasses disposed												
25	Training to specialist multi-disciplinary groups/ teams of the State personnel drawn from different cadres/ services/ personnel involved in management of disaster in the State												
	(i) No. of training organized	0	0	0	0	0	0	0	0	0	0	0	0
	(ii) No. of persons trained												
26	Procurement of essential Search, Rescue and Evacuation equipments including Communication equipments												
	Cost of equipments procured	0	0	49.87	0	0	0	205.868	0	0	0	0	0
	<b>GROSS TOTAL</b>			<b>135604.61</b>	<b>155.08</b>	<b>0.0</b>	<b>443.01</b>	<b>9006.51</b>	<b>48.77</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

**Notes :**

- i) Expenditure incurred by State Government on items outside the SDRF/NDRF norms will have to be borne by State Government & will not be included in the account for the purpose of "Statement of Expenditure from SDRF account of the State".
- ii) In case of any ambiguity whether any item is covered or not under the extent norms prior guidance of MHA should be obtained.
- iii) Expenditure Statements may be forwarded to Ministry of Finance/Ministry of Home Affairs, with due authentication of expenditure details by Accountant General (A.G.)
- iv) Accountant General is requested that while authenticating the expenditure details, the deviation noted in utilization of SDRF/NDRF grant may be pointed out clearly.

## CHAPTER – IX

### Status of Preparedness

As stated in Chapter-I the people of the State of Odisha are used to live with multiple disasters. In the same analogy, the State Government is quite experienced in successfully managing the various disasters. In order to encounter such disasters, the State Government have developed a number of institutions of its own as well as inconsonance with the provisions of Disaster Management Act, 2005.

From the long years of experience, the State Government has learnt that the art of Disaster Management is a continuous process and success can be achieved only from analysis of management shortcomings and effecting improvements thereto. In fact, vast experience was gathered from the Super Cyclone of 1999 which forced the State Government to develop the skill in preparedness, response and management of various disasters. Despite making various institutional as well as skill developments, there still remain certain shortcomings for further improvement in the following fields.

- Preparation of appropriate training manuals for workers at all levels engaged in disaster intervention,
- Adequate data base both for disaster management and related developmental activities,
- Improvement in providing long term rehabilitation security in addition to the present short term relief measures,
- Deep study of the local situations,
- Improvement in providing assistance to the private institutions damaged due to natural calamities,
- Developing certain policy to ensure proper coordination between the Government and non-Government Organizations,
- More attention for protection of animal population,
- Improvement of a policy for maintaining cohesion in eco-health relationship to prevent emergence of new diseases relating to both human and cattle population.
- Establishment of accurate and near real time weather forecast systems, especially in high risk prone areas.

Capacity building has to cover prevention, preparedness, mitigation, relief, rehabilitation, reconstruction and recovery aspects. A vital area requiring special attention is up-gradation of the efficacy of specialised emergency response capabilities through State Response Forces. This effort requires coordination with several stakeholders, including Government Departments, ULBs/ PRIs, NGOs, CBOs as well as the corporate sector. Capacity development has to deal with (a) appreciation and awareness of the causes and consequences of disasters, including native wisdom, (b) acquisition of skills and abilities to be able to act and cooperate in times of imminent or actual mass emergencies, (c) caring for the young, pregnant women, old and disabled at the time of cyclone.

As many as 10 units of Odisha Disaster Rapid Action Force (ODRAF) have been set up at Jharsuguda, Koraput, Cuttack, Chhatrapur, Balasore, Bhubaneswar, Paradip, Baripada, Bolangir and Rourkela for search and rescue operations during disasters. These units are equipped with modern machineries and equipments. Besides, as many as 282 State Fire service units have also been strengthened with various machineries and equipments for deployment in search and rescue operations. 6000 personnel are engaged in these units. As many as 139 boats, 630 saws, 639 tower lights and other emergency equipments like cutters, jacks etc. are available with the ODRAF units at 335 locations for handling emergency situations. Biju Patnaik State Police Academy is identified as State Training Institute for imparting necessary training to these Search and Rescue Teams.

As stated in the foregoing paragraphs, the State is vulnerable to regular multiple disasters. As such, after meeting the requirements of its own during a disaster, the State may be able to deploy the search and rescue team to other State. During the Hudhud disaster, search and rescue teams with adequate men and machineries were deployed in the State of Andhra Pradesh.

A Committee has been formed to look after regular updation of relief manual i.e. Odisha Relief Code (ORC).

State Emergency Operation Centre (SEOC) of Special Relief Commissioner and Odisha State Disaster Management Authority (OSDMA) has been organizing mock drills for various calamities to sensitize the relief machinery at different levels. Last time, mock drill on tsunami was conducted in the SEOC, DEOC, BEOC and Cyclone

Shelter level. Besides, one mock drill on chemical disaster conducted in Cuttack by OSDMA in coordination with NDRF.

As many as 356 no. of cyclone shelters and 77 no. of flood shelters have been constructed in the State for sheltering the evacuated people during the disasters. Shelter Management and Maintenance Committees (CSMMC) have been constituted comprising of the community members, village elders and local government officials for management and maintenance of the shelter buildings. The CSMMCs are chaired by Tahasildars. The Secretary of the CSMMC is a community member, who actually performs all coordination activities relating to management & maintenance of the shelter building and other activities relating to CSMMC.

As per the provisions under Section 23 of the Disaster Management Act, 2005, every State shall have a Plan for disaster management called State Disaster Management Plan and as per the provisions under Section 40 of the Disaster Management Act, 2005, every Department of the State Government, in conformity with the guidelines laid down by the State Authority, shall prepare a Disaster Management Plan. Similarly, as per the provisions under Section 31 of the Disaster Management Act, 2005, every District of the State shall have a Plan for Disaster Management, which shall be prepared by the District Authority in consultation with the local authorities and having regard to the National Plan and the State Plan to be approved by the State Authority.

Disaster Management Plan for the State was prepared by the Odisha State Disaster Management Authority (OSDMA) for the year 2014. During the year, District Disaster Management Plan (DDMP) was also prepared by all the districts of the State.

## Chapter -X

### Some snippets for effective Disaster Management in the State

Super Cyclone of 1999 taught many a lesson. There has been a paradigm shift in Disaster Management. The understanding has changed; the body language has changed and disaster management is a serious business now. Some new ways of doing things were tried during 2001 flood management and those methods were fine-tuned and validated again during 2003 and onwards calamities. These are some snippets:

- a. **Gate Way Districts:** When some districts are affected by a disaster (i.e. coastal districts) rest of the unaffected districts should gear up themselves to do the rescue act. Their men and materials should be deployed at once. When the magnitude of disaster is enormous the districts located on the state borders should become virtual gateways to mobilize materials and other supports. If the command structure is affected due to collapse of communication network the system of gateway districts and neighbouring district's rescue role should have an auto-trigger. There should not be any expectation for formal requests or instructions.
- b. **De-linking of mobilization from distribution:** The relief and rehabilitation are traditionally considered as an intra-district affair and the supervision as a non-participatory vertical line-up. Here, thematic divisions of relief and rehabilitation tasks are a felt need. If the Tehasildars, BDOs and for that matter even the Collectors are loaded with the responsibility of mobilization then there will be a compromise in the effectiveness in distribution front. Hence, the mobilizing hands of the administration have to be different from that of distributing hands. The mobilization and distribution should follow a method of relay-race.
- c. **Role of PSU's in Mobilization:** Purchase of relief and rehabilitation related materials in an emergency situation are a sensitive issue. The conflict between the need to deliver without any waste of time and the need to follow the purchase procedures pose a serious dilemma. When the disaster managers withdraw, the auditors take over. Hence, it is better to use some of the State PSU's in procuring materials. It makes sense also to broad base the purchase committees which will take collective decisions in the interest of Transparency.
- d. **Deputation of Senior Officers:** . Deputation of senior officers of Commissioners/Secretaries level to be stationed at the districts to co-ordinate the relief

works has helped us in many ways. This method is now a time tested one. The apprehensions that such deputations will undermine the authority of the collectors have been proved unfounded. However, there should be enough authority and delegation of power. Those officers should virtually represent the Government. Care should be taken to identify the right type of officials for this task. Their reputation should be good. Their earlier experience in disaster management and familiarity with a particular region or district will be an advantage.

- e. **All money relief money and all grain relief grain:** We found that it is not the non-availability of funds or food-grains that result in delay in kick starting massive relief operations, but, the lack of co-ordination. There is always adequate funds and food-grain under various schemes available at the district/block/GP levels. An 'all money-relief money; all grain-relief grain' approach saves the delay and fund/material thus used can always be recouped through subsequent allotment out of CRF. However, to ensure this approach is put to use some enabling circulars are needed which will spell out the approach in clear terms.
- f. **Material Handling:** Whether materials sent as gift/assistance from various sources are received at one central location or at various locations there is a need for an effective material management. A separate team (may be drawn from various offices or PSUs). The details of the materials received from various sources indicating the origin, date of receipt, type of materials, quantity etc should be maintained. Similarly, the dispatch details should also be maintained. Formation of separate teams to coordinate with the railway authorities and airport authorities is desirable.
- g. **NGO co-ordination:** A state-level agency should handle the NGO co-ordination. In Odisha, OSDMA handles the NGO co-ordination. There will be a daily meeting with NGO where various issues will be reviewed. Feedbacks from NGOs will be gathered for remedial measures. Detailing of various NGOs to various districts and various tasks will be discussed. The normal tendency is to send the NGO teams to various districts as per the felt need and leave the decision to the district authorities regarding exact location of deployment and method of use. It is better to have an NGO co-ordination cell at district level as well. The State level NGO co-coordinators should gather inputs regarding NGO participation in different districts in terms of number, type of involvement and so on. This will be handy while dealing with this issue in media briefings. In order to identify and fill up the critical gaps in handling the post-disaster scenario we may encourage info-volunteers who would provide inputs from the field for

follow up at the apex level. This would ensure a parallel feedback mechanism and ensures a sense of participation within NGO sector.

- h. Media Management:** In Odisha, we introduced the system of holding Daily Press Meets during major calamities.; Chief Secretary, assisted by SRC and other key secretaries presents the situation report with the details of relief and takes questions. These daily briefings are used to receive the feedbacks from the media and their feedbacks are verified and clarification if any is given during the next day briefings. If there is air-dropping programme we accommodate photo-journalists and electronic-media in rotation on board. Overall there is free flow of information and we learnt that where information stops rumors take over.
- i. Coordination with Army:** A senior officer is usually kept in charge of Army co-ordination & its deployment in, various worst affected areas. Intra service co-ordination is essentially a felt need to streamlining the operation by various services of Defense personnel. Accommodation and transport etc. for Army personnel are planned prior to their arrival to avoid inconvenience. District Magistrates are briefed to ensure optimal use of Defense force.
- j. Epidemic Control:** In post-disaster period, health monitoring is an important aspect of Disaster Management. We use a Rapid Assessment Format that helps to track key indicators such as incidence of diarrhea, dysentery etc.,. PHC wise. The day to day data thus collected are compared with the data for the corresponding period during previous (non-calamity years) to identify the abnormal variations and respond. Health teams from unaffected districts are mobilize in large numbers, the local doctors physical presence at their place of duty is strictly enforced. Issue of Halogen tablets etc is strictly ensured. Luckily, the Super Cyclone of 1999, major floods of 2001 and 2003 have been handled without any major epidemic.
- k. Involvement of Panchayati Raj Institution Members:** The involvement of Panchayati Raj Institutions (Sarpanches/ward members) from Gram Panchayat to Zilla Parisad. in all Stage of relief operation is ensured. It creates an accountability factor among the elected representatives at the grassroots level. AS PR Institutions have members from all political affiliations and simultaneously are not strictly on political level, this arrangement offers a level playing ground and helps to some extent to de-politicise the process. This has helped us in recent calamities.

- I. **Monitoring-Mechanism:** During calamities Chief Secretary holds a daily review at 10 AM with key officials. SRC flags the key issues/challenges and the responses are decided. SRC brings out 2 to 3 situation reports every day. Normally, CM is briefed by CS, SRC and other key official's every day evening at about 6 PM if he is not out on filed visits. A tradition has evolved in recent times that during the calamities the SRC's office or control room becomes the real-hub. The hierarchies vanish temporarily. Considering the pressure the Relief Commissioner undergoes during calamities the senior officials basically drop in the RC's office and in the control room to sort out issues rather than expecting the relief administration to run around. The paper works are brought to minimum and the post-facto approvals are obtained wherever needed.

## Appendix – X

### Profile of the State

Sl. No.	Name of the District	Total Land area (Sq.Km.)	Number of Villages	Population (in '000)	Literacy Rate (in per cent)	Gross cropped area (in '000 ha.)	Inter State rivers	Normal Annual rainfall (mm)
1	2	3	4	5	6	7	8	9
1	Angul	6375	1910	1274	77.5	307.42	Brahmani, Mahanadi	1401.9
2	Balasore	3806	2952	2321	79.8	302.40	Subarnarekha, Budhabalang, Jalaka, Swarna	1592.0
3	Baragarh	5837	1207	1481	74.6	445.43	Mahanadi, Zira, Anga	1367.3
4	Bhadrak	2505	1311	1505	82.8	222.88	Baitarani, Salandi	1427.9
5	Bolangir	6575	1794	1649	64.7	484.11	Hati, Suktel, Rahul	1289.8
6	Boudh	3098	1186	441	71.8	139.47	Mahanadi, Tel, Salanki, Bagh, Mehurni	1623.1
7	Cuttack	3932	1950	2624	85.5	314.29	Mahanadi, Devi, Kathajodi, Birupa, Kuakhai, Sidua, Luna,	1424.3
8	Deogarh	2940	875	313	72.6	109.86	Bramani	1582.5
9	Dhenkanal	4452	1215	1193	78.8	251.31	Bramani, Ramiyal	1428.8
10	Gajapati	4325	1619	578	53.5	147.58	Bansadhara	1403.3
11	Ganjam	8206	3212	3529	71.1	689.76	Rusikulya, Badanadi, Baghua, Dhanei, Loharakhandi, Ghodahada, Kokalaba, Bahuda	1276.2
12	Jagatsinghpur	1668	1288	1137	86.6	169.25	Biluakhai, Paika, Mahanadi, Devi, Hansua.	1514.6
13	Jajpur	2899	1778	1827	80.1	268.73	Baitarani, Brahmani, Budha, Kharasrota, Birupa	1559.9
14	Jharsuguda	2114	348	580	78.9	87.11	Ib, Veden	1362.8
15	Kalahandi	7920	2236	1577	59.2	608.06	Hati, Indravati, Tel, Reta, Vamsadhara, Chandola, Utei.	1330.5

16	Kandhamal	8021	2546	733	64.1	183.90	Rahul, Salunki,	1427.9
17	Kendrapara	2644	1540	1440	85.2	267.77	Brahmani, Hansua, Kharasrota, Luna, Chitrotpala, Paika, Karandia	1556.0
18	Keonjhar	8303	2122	1802	68.2	397.26	Baitarani	1487.7
19	Khurda	2813	1551	2252	86.9	189.66	Kusabhadra, Bhargavi, Daya	1408.4
20	Koraput	8807	2028	1380	49.2	397.65	Kolab, Ultajharan, Champabati, Jhanjabati	1567.2
21	Malkanagiri	5791	1045	613	48.5	231.52	Saberi, Sileru, Guru, Priya Kalam, Taptadhara	1667.6
22	Mayurbhanj	10418	3950	2520	63.2	462.94	Kala, Budhabalang	1600.6
23	Nawaranghpur	5291	901	1221	46.4	288.05	Indravati, Tel, Vaskel	1569.5
24	Nayagarh	3890	1695	963	80.4	239.74	Mahanadi, Brutanga, Kaligiri, Kusumi, Malaguni, Budha Budhari, Kuairia	1354.3
25	Nuapada	3852	663	610	57.3	270.76	Udanti, Jalka	1286.4
26	Puri	3479	1715	1699	84.7	273.56	Kadua, Dhanua, Bhadua, Ratnachira, Malaguni, Devi, Daya, Kusabhadra, Bhargavi, Prachi, Luna	1408.8
27	Rayagada	7073	2667	968	49.8	255.80	Bansadhara, Nagabali	1285.9
28	Sambalpur	6624	1322	1041	76.2	270.04	Mahanadi	1495.7
29	Subarnapur	2337	959	610	74.4	226.67	Mahanadi, Tel	1418.5
30	Sundargarh	9712	1764	2093	73.3	376.45	Brahmani, Ib,	1422.4
<b>Total (State)</b>		<b>155707</b>	<b>51349</b>	<b>41974</b>	<b>72.9</b>	<b>8879.03</b>		<b>1451.2</b>