



Government of Odisha

ANNUAL REPORT
ON
NATURAL CALAMITIES
2011-12

Revenue & Disaster Management Department

Special Relief Commissioner

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Chapter-I

Introduction

Odisha is vulnerable to multiple natural hazards. Due to its sub-tropical littoral location, the state is prone to tropical cyclones, storm surges and tsunamis. It has a 480 km coastline. There are eleven major river systems in Odisha such as the Subarnarekha, the Budhabalanga & Jambhira, the Baitarani, the Brahmani, the Mahanadi, the Rusikulya, the Vansadhara, the Nagabali, the Indravati, the Kolab, and the Bahuda. Its densely populated coastal plains are the alluvial deposits of its river systems. The rivers in these areas with heavy load of silt have very little carrying capacity, resulting in frequent floods, only to be compounded by breached embankments. About two-third of the total cultivated area being rain-dependent, drought poses a serious threat at regular intervals due to failure of Monsoon. Though a large part of the state comes under Earthquake Risk Zone-II (Low Damage Risk Zone), the Brahmani-Mahanadi graven and their deltaic areas come under Earthquake Risk Zone-III (Moderate Damage Risk Zone) covering 43 out of the 103 urban local bodies of the state. Although the coast of the State was not affected by the tsunami of December 2004, it remains a potential hazard for the State. Apart from these, loss of life due to lightning has remained the highest of all natural calamities over the last decade. Heat-wave conditions during summer months also lead to heat-stroke death and other suffering to the people. Fire accident is common in the State which occurs round the year.

Administratively, the State is divided into 30 districts, 58 sub-divisions, 314 blocks and 103 urban local bodies. While the entire Government machinery is switched to action for rendering assistance to the people at the time of widespread calamity, the Revenue & Disaster Management Department and the Special Relief Commissioner coordinate the work of all Departments and Heads of the Departments with regard to relief operations. Similarly, the Collectors are responsible for relief operations in their respective districts and the Sub-Collectors in sub-divisions. The Revenue Divisional Commissioners have the statutory responsibility to regulate and control relief operations undertaken by the Collectors.

Some general information considered useful are given in the table below:

❖ General	
Total Area (Sq. km.)	1,55,707
No. of Districts	30
No. of Sub-division	58

No. of Tahasils		316
No. of Blocks		314
No. of GPs		6,234
No. of Villages		51,349
No. of Municipalities & Corporations		36
No. of NACs		67
❖ Demography of the State (Census 2011)		
Total Population		4,19,47,358
Male		2,12,01,678
Female		2,07,45,680
Sex ratio (Female for '000 Male)		978
Rural Population		3,49,51,234
Urban Population		69,96,124
❖ Literacy in percent		
Male		82.40
Female		64.36
Total		73.45
❖ Land use pattern during 2009-10 (in lakh hectare)		
Total Cultivable Area		61.80
High		29.14
Medium		17.55
Low		15.11
❖ Irrigation Potential (Area in '000 hectare)		
Major and Medium-Kharif		1349.50
Major and Medium-Rabi		616.72
Minor (flow) - Kharif		561.81
Minor (flow) - Rabi		74.53
Minor (lift) - Kharif		507.55
Minor (lift) - Rabi		285.72
❖ Size of Operational Holdings as per Agricultural Census 2001 (No. in lakh / Area in lakh) hectare)		
Marginal	(Below 1 ha.)	22.94 / 11.55
Small	(1.0 to 2.0 ha.)	11.14 / 15.44
Semi Medium	(2.0 to 4.0 ha.)	5.01 / 13.44
Medium	(4.0 to 10.0 ha.)	1.45 / 8.17
Large	(10.0 ha. and above)	0.13 / 2.21
Total No. of Cultivators		40.67 / 50.81

(Data Sources: Directorate of Economics & Statistics, Odisha & Directorate of Agriculture & Food Production, Odisha)

Chapter- II

Rainfall

Administration of Rainfall Registration

Revenue & Disaster Management Department is the administrative department for rainfall registration. Special Relief Commissioner is the Head of the Department for rainfall registration and Additional Commissioner Relief is the Rainfall Registering Authority and Controlling Officer relating to rainfall registration and reporting.

Objectives:

Rainfall registration and reporting is necessary for -

- 1) Agriculture planning
- 2) Flood protection measures
- 3) Planning of relief measures

Normal rainfall:

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)
1	Angul	1401.9
2	Balasore	1592.0
3	Bargarh	1367.3
4	Bhadrak	1427.9
5	Bolangir	1289.8
6	Boudh	1623.1
7	Cuttack	1424.3
8	Deogarh	1582.5
9	Dhenkanal	1428.8
10	Gajapati	1403.3
11	Ganjam	1276.2
12	Jagatsinghpur	1514.6
13	Jajpur	1559.9
14	Jharsuguda	1362.8
15	Kalahandi	1330.5
16	Kandhamal	1427.9
17	Kendrapara	1556.0
18	Keonjhar	1487.7
19	Khordha	1408.4
20	Koraput	1567.2
21	Malkangiri	1667.6
22	Mayurbhanj	1600.6
23	Nawarangpur	1569.5
24	Nayagarh	1354.3
25	Nuapara	1286.4
26	Puri	1408.8
27	Rayagada	1285.9
28	Sambalpur	1495.7
29	Sonepur	1418.5
30	Sundargarh	1422.4
State Average:		1451.2

Heavy Rainfall:

As per explanation provided under the Odisha Relief Code, heavy rain would mean three days or more of uninterrupted rainfall, the total amounting to at least 3 times that month's average rainfall in the Block / Area. In absence of supporting materials, rain amount from 64.5 mm to 124.4 mm per day for continuous three days or more and / or 124.5 mm and above for more than one day may be treated as heavy rainfall.

District-wise rainfall for the year 2011

The district-wise monthly rainfall from January to December 2011 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	0.0	12.6	-100.0	24.5	27.1	-9.7	14.2	24.3	-41.5	46.5	27.2	71.1	86.3	52.9	63.0	206.5	225.1	-8.2	140.9	347.7	-59.5
2	Balasore	0.0	14.7	-100.0	16.0	31.8	-49.7	3.3	34.4	-90.3	32.7	62.2	-47.5	108.9	108.5	0.4	348.3	221.5	57.2	112.4	308.6	-63.6
3	Bargarh	0.0	12.5	-100.0	0.0	19.1	-100.0	0.0	22.0	-100.0	51.5	20.0	157.5	21.7	25.6	-15.4	94.8	205.6	-53.9	233.3	397.2	-41.3
4	Bhadrak	0.0	11.8	-100.0	10.2	29.6	-65.4	8.3	36.1	-77.0	92.6	51.2	80.9	144.4	91.4	58.0	382.0	198.2	92.7	133.7	293.6	-54.5
5	Bolangir	1.1	8.6	-86.7	8.4	13.2	-36.0	3.9	14.6	-73.3	38.5	13.4	187.5	19.1	27.8	-31.2	105.5	202.8	-48.0	198.9	360.5	-44.8
6	Boudh	0.0	17.0	-100.0	8.1	26.8	-69.9	0.0	22.4	-100.0	27.5	16.5	66.9	37.7	38.4	-1.7	115.5	233.8	-50.6	139.1	418.5	-66.8
7	Cuttack	23.1	9.9	133.1	48.2	28.6	68.6	3.7	24.7	-85.1	21.9	28.3	-22.5	132.0	71.5	84.6	274.5	210.0	30.7	227.0	308.3	-26.4
8	Deogarh	0.0	14.1	-100.0	4.4	27.0	-83.8	2.9	20.6	-85.8	40.4	21.3	89.8	55.0	41.9	31.2	133.6	242.4	-44.9	249.4	447.7	-44.3
9	Dhenkanal	11.6	10.5	10.7	32.5	21.9	48.4	0.3	33.7	-99.3	28.5	41.3	-31.0	115.9	69.6	66.5	274.3	225.7	21.5	167.2	317.9	-47.4
10	Gajapati	3.1	8.1	-61.9	35.3	23.0	53.4	0.0	41.3	-100.0	159.9	65.2	145.2	94.2	107.8	-12.7	185.5	199.7	-7.1	185.5	230.6	-19.6
11	Ganjam	2.2	9.4	-76.8	19.1	24.1	-20.6	0.2	32.6	-99.4	56.8	36.6	55.1	63.1	65.4	-3.5	112.8	168.3	-33.0	176.9	220.8	-19.9
12	Jagatsinghpur	0.9	14.5	-94.0	11.1	21.7	-48.7	1.8	35.5	-95.1	16.6	25.4	-34.5	155.3	78.0	99.0	281.1	202.3	39.0	245.1	277.3	-11.6
13	Jajpur	0.0	12.9	-100.0	17.2	25.1	-31.5	10.4	28.4	-63.6	54.6	46.1	18.3	102.8	93.7	9.7	383.5	238.5	60.8	136.3	350.9	-61.2
14	Jharsuguda	0.0	14.1	-100.0	0.0	22.9	-100.0	0.0	17.6	-100.0	3.2	15.1	-78.8	11.9	27.9	-57.5	160.3	218.8	-26.7	217.8	385.8	-43.6
15	Kalahandi	0.0	10.3	-100.0	15.3	14.4	6.3	0.0	23.7	-100.0	44.3	25.7	72.5	41.8	41.8	0.0	182.2	240.4	-24.2	148.7	327.7	-54.6
16	Kandhamal	13.6	10.6	28.1	14.3	29.7	-52.0	10.7	28.0	-61.9	87.4	35.7	144.7	68.6	67.8	1.1	228.4	207.9	9.8	202.8	325.1	-37.6
17	Kendrapara	0.0	10.6	-100.0	1.9	30.2	-93.7	20.9	35.0	-40.3	34.3	33.9	1.3	114.2	94.2	21.3	421.4	208.3	102.3	228.6	317.1	-27.9
18	Keonjhar	0.0	14.6	-100.0	29.8	33.8	-12.0	12.0	33.1	-63.6	87.8	42.1	108.7	163.1	94.8	72.0	358.8	241.4	48.6	264.5	318.0	-16.8
19	Khordha	0.0	12.4	-100.0	38.9	24.3	60.1	0.0	22.1	-100.0	36.6	28.0	30.7	129.9	60.7	113.9	176.2	196.2	-10.2	241.3	304.9	-20.9
20	Koraput	3.7	5.7	-34.8	5.3	8.6	-38.5	1.5	18.3	-91.7	72.5	55.2	31.4	51.8	81.9	-36.8	146.8	206.8	-29.0	224.2	375.6	-40.3
21	Malkangiri	0.0	2.7	-100.0	0.0	4.1	-100.0	0.0	8.9	-100.0	16.9	34.8	-51.4	12.4	49.1	-74.7	106.2	212.2	-49.9	242.7	465.7	-47.9
22	Mayurbhanj	3.3	10.3	-68.4	11.1	28.0	-60.4	23.3	40.2	-42.1	108.8	52.5	107.2	137.5	101.2	35.8	417.7	265.8	57.1	130.5	337.3	-61.3
23	Nawarangpur	0.0	6.7	-100.0	32.3	14.1	128.9	0.1	15.1	-99.3	90.0	34.1	163.8	59.0	66.1	-10.7	196.9	251.8	-21.8	207.7	356.6	-41.8
24	Nayagarh	0.0	11.7	-100.0	31.8	28.6	11.1	0.9	30.0	-97.0	84.8	39.9	112.5	93.2	58.8	58.4	167.1	203.5	-17.9	169.6	288.5	-41.2
25	Nuapara	0.0	12.0	-100.0	2.7	14.6	-81.5	0.2	19.7	-99.0	49.0	21.8	124.7	75.9	31.2	143.2	79.6	210.3	-62.2	178.7	347.1	-48.5
26	Puri	0.0	10.9	-100.0	1.4	25.4	-94.6	0.0	15.5	-100.0	8.4	18.5	-54.8	100.6	62.1	61.9	166.5	188.0	-11.4	237.5	292.0	-18.6
27	Rayagada	0.0	9.6	-100.0	29.2	22.9	27.7	1.0	38.0	-97.2	90.9	52.7	72.4	74.2	87.8	-15.5	200.5	195.3	2.7	155.8	259.5	-40.0
28	Sambalpur	37.5	14.8	153.4	8.5	24.5	-65.2	0.0	18.2	-100.0	17.9	16.5	8.3	42.2	32.3	30.5	185.7	221.0	-16.0	344.7	429.5	-19.8
29	Sonepur	0.0	12.5	-100.0	2.2	17.2	-87.4	4.5	15.7	-71.3	42.6	15.4	176.8	31.1	29.3	6.1	147.2	217.4	-32.3	242.3	399.6	-39.4
30	Sundargarh	6.8	15.1	-54.9	13.4	24.9	-46.3	4.0	16.0	-75.1	54.2	16.0	238.5	49.9	40.6	22.9	176.3	237.4	-25.7	270.5	386.4	-30.0
	Total	106.9			473.0			128.1			1597.5			2393.2			6415.5			6053.3		
	State Average	3.6	11.4	-68.8	15.8	22.9	-31.2	4.3	25.5	-83.3	53.3	33.1	60.9	79.8	63.3	26.0	213.9	216.5	-1.2	201.8	339.9	-40.6

Contd..

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	Antc. Normal	% of Dev.
1	Angul	314.1	357.5	-12.1	490.6	217.5	125.6	21.3	86.3	-75.3	0.0	20.4	-100.0	0.0	3.3	-100.0	833.0	1401.9	-40.6
2	Balasore	373.8	332.1	12.6	472.3	267.6	76.5	19.8	170.5	-88.4	0.0	34.6	-100.0	0.0	5.5	-100.0	995.4	1592.0	-37.5
3	Bargarh	290.3	374.4	-22.5	553.2	222.6	148.5	7.7	52.8	-85.5	0.0	10.4	-100.0	0.0	5.1	-100.0	691.4	1367.3	-49.4
4	Bhadrak	350.1	311.7	12.3	413.4	216.8	90.7	14.9	145.3	-89.8	0.0	37.3	-100.0	0.0	4.9	-100.0	1121.3	1427.9	-21.5
5	Bolangir	347.5	333.6	4.2	415.9	237.4	75.2	5.9	68.4	-91.4	0.0	7.2	-100.0	0.0	2.3	-100.0	723.0	1289.8	-43.9
6	Boudh	473.9	488.8	-3.0	444.4	244.8	81.5	0.0	90.5	-100.0	0.0	21.1	-100.0	0.0	4.4	-100.0	801.8	1623.1	-50.6
7	Cuttack	416.2	339.1	22.7	338.0	229.2	47.5	13.4	125.6	-89.3	0.0	45.0	-100.0	4.0	4.1	-2.4	1146.7	1424.3	-19.5
8	Deogarh	312.8	443.4	-29.5	513.5	228.2	125.0	42.1	84.4	-50.2	0.0	8.0	-100.0	0.0	3.5	-100.0	798.5	1582.5	-49.5
9	Dhenkanal	399.0	344.8	15.7	423.4	220.6	91.9	36.6	104.4	-64.9	0.0	36.2	-100.0	0.0	2.2	-100.0	1029.2	1428.8	-28.0
10	Gajapati	419.0	253.6	65.2	156.4	237.9	-34.3	53.9	168.6	-68.1	0.0	61.8	-100.0	0.5	5.7	-91.0	1082.4	1403.3	-22.9
11	Ganjam	298.9	246.8	21.1	150.0	216.3	-30.7	33.6	177.7	-81.1	0.0	71.1	-100.0	0.2	7.1	-96.8	730.0	1276.2	-42.8
12	Jagatsinghpur	265.1	379.1	-30.1	311.3	241.4	28.9	32.5	151.1	-78.5	0.0	80.4	-100.0	0.0	7.9	-100.0	976.9	1514.6	-35.5
13	Jajpur	448.8	341.2	31.5	462.0	238.0	94.1	29.8	140.2	-78.7	0.0	41.0	-100.0	0.0	3.9	-100.0	1153.4	1559.9	-26.1
14	Jharsuguda	296.5	382.9	-22.6	670.4	210.7	218.2	0.0	54.9	-100.0	0.0	7.7	-100.0	0.0	4.4	-100.0	689.6	1362.8	-49.4
15	Kalahandi	412.1	355.4	15.9	324.4	204.6	58.6	5.2	74.0	-92.9	0.0	10.9	-100.0	0.0	1.6	-100.0	844.4	1330.5	-36.5
16	Kandhamal	388.1	330.8	17.3	286.9	239.1	20.0	40.0	117.7	-66.0	0.1	31.0	-99.7	0.0	4.5	-100.0	1013.8	1427.9	-29.0
17	Kendrapara	293.8	333.3	-11.9	380.8	237.3	60.5	13.7	183.7	-92.6	0.0	67.2	-100.0	0.0	5.2	-100.0	1115.1	1556.0	-28.3
18	Keonjhar	385.1	343.6	12.1	567.0	241.1	135.2	41.6	101.3	-58.9	0.3	20.5	-98.5	0.0	3.4	-100.0	1301.2	1487.7	-12.5
19	Khordha	287.5	320.6	-10.3	241.0	234.5	2.8	23.2	149.3	-84.5	0.0	50.4	-100.0	0.0	5.0	-100.0	910.3	1408.4	-35.4
20	Koraput	308.3	393.6	-21.7	364.8	256.3	42.3	12.3	126.1	-90.3	0.6	32.6	-98.2	6.7	6.5	2.4	814.1	1567.2	-48.1
21	Malkanagiri	341.0	472.8	-27.9	350.5	281.2	24.6	27.2	109.5	-75.2	0.0	23.6	-100.0	0.0	3.0	-100.0	719.2	1667.6	-56.9
22	Mayurbhanj	369.7	359.9	2.7	449.8	262.0	71.7	17.7	114.1	-84.5	0.2	21.6	-99.3	0.0	7.3	-100.0	1201.6	1600.6	-24.9
23	Nawarangpur	511.6	407.5	25.6	334.5	225.6	48.3	0.7	168.6	-99.6	0.0	18.7	-100.0	0.0	4.6	-100.0	1097.6	1569.5	-30.1
24	Nayagarh	367.7	288.2	27.6	238.3	226.8	5.1	15.0	134.5	-88.8	0.0	39.0	-100.0	0.3	4.8	-94.8	915.0	1354.3	-32.4
25	Nuapara	393.9	327.8	20.2	342.4	214.5	59.6	0.0	68.9	-100.0	0.0	15.3	-100.0	0.0	3.2	-100.0	780.0	1286.4	-39.4
26	Puri	272.2	297.9	-8.6	261.2	243.2	7.4	4.0	181.6	-97.8	0.0	67.3	-100.0	0.0	6.4	-100.0	786.6	1408.8	-44.2
27	Rayagada	350.8	273.7	28.2	248.4	199.1	24.8	14.5	109.7	-86.7	0.0	32.9	-100.0	0.5	4.7	-88.4	902.4	1285.9	-29.8
28	Sambalpur	346.5	442.4	-21.7	674.8	224.7	200.3	19.1	54.7	-65.1	0.0	12.7	-100.0	0.0	4.4	-100.0	982.9	1495.7	-34.3
29	Sonepur	215.4	408.9	-47.3	314.3	228.0	37.8	2.8	59.8	-95.3	0.0	11.4	-100.0	0.0	3.3	-100.0	685.3	1418.5	-51.7
30	Sundargarh	379.9	393.9	-3.5	599.9	211.5	183.7	25.8	67.7	-61.9	0.0	8.7	-100.0	0.0	4.2	-100.0	955.0	1422.4	-32.9
Total		10629.8			11793.5			574.2			1.1			12.2			40178.4		
State Average		354.3	356.0	-0.5	393.1	231.9	69.5	19.1	114.7	-83.3	0.0	31.5	-99.9	0.4	4.5	-91.0	1339.3	1451.2	-7.7

Rainfall during Monsoon 2011 (1st June to 30th September)

The State experienced average deficient rainfall of 1.2 percent in June, 40.7 percent in July, 0.5 percent in August and surplus rainfall of 69.5 percent in September, 2011 compared to the long term average rainfall. The cumulative average rainfall of the State from June to September 2011 accounts for surplus of 1.6 percent.

Month	Normal	Rainfall in MM	
		Actual	Deficiency in %
June	216.5	214.0	-1.2
July	339.9	201.7	-40.7
August	356.0	354.3	-0.5
September	231.9	393.1	69.5

Block-wise analysis of the cumulative rainfall from 1st June to 30th September 2011 indicates that out of 314 Blocks in the State, 81 Blocks received surplus rainfall to the extent of 19% & more. 166 Blocks received rainfall of between surplus 19% to less than 19%, 51 Blocks received rainfall of less than 19% to 39%, 13 Blocks received rainfall less than 39% to 59% and 3 Blocks received rainfall less than 59% of the long-term average rainfall. Table below indicates district-wise position.

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	5	2	-	-
2	Balasore	5	7	-	-	-
3	Bargarh	3	8	-	1	-
4	Bhadrak	4	3	-	-	-
5	Bolangir	2	9	2	1	-
6	Boudh		2	1	-	-
7	Cuttack	4	9	-	-	-
8	Deogarh		2	-	1	-
9	Dhenkanal	3	5	-	-	-
10	Gajapati	2	5	1	-	-

11	Ganjam	2	9	10	-	1
12	Jagatsinghpur	2	4	2	-	-
13	Jajpur	5	4	1	-	-
14	Jharsuguda	2	3	-	-	-
15	Kalahandi	3	7	1	1	1
16	Kandhamal	2	6	3	1	-
17	Kendrapara	5	3	1	-	-
18	Keonjhar	6	6	1	-	-
19	Khordha	1	5	3	1	-
20	Koraput	3	2	6	2	1
21	Malkanagiri		2	3	2	-
22	Mayurbhanj	9	14	3	-	-
23	Nawarangpur	2	6	2	-	-
24	Nayagarh	1	4	3	-	-
25	Nuapara		4	1	-	-
26	Puri	2	7	-	2	-
27	Rayagada	1	9	1	-	-
28	Sambalpur	4	5	-	-	-
29	Sonepur		1	4	1	
30	Sundargarh	7	10	-	-	-
State		81	166	51	13	3
		<i>No. of dist.-25</i>	<i>No. of dist.-30</i>	<i>No. of dist.-20</i>	<i>No. of dist.-10</i>	<i>No. of dist.-03</i>

Chapter-III

Floods & Heavy Rain

The State faced four phases of floods during 2011 in which 21 districts were severely affected. The 1st and 2nd phases of flood occurred in the months June and August respectively and floods in both 3rd and 4th phases were experienced in the month of September, 2011.

Floods in June & August

Northern Odisha experienced heavy rainfall due to effect of low pressure area formed over Bay of Bengal during 15th – 19th of June 2011 that caused flooding in Subarnarekha and Jalaka Rivers. Again river Subarnarekha crossed the danger level on 14.08.11 as a result of heavy rainfall in its catchments in the 2nd week of August.

Highest water levels recorded in these rivers during the period are mentioned below.

River	Gauge station	Danger Level	Warning Level	Water Level in Metre	
				20 th June' 11	14 th August' 11
Subarnarekha	Rajghat	10.36	9.45	10.64	11.58
	Jamsholaghat	49.15	48.10	49.20	
Jalaka	Basta	5.50		18th June'11	
				6.72	

In addition to the above, flash flooding also occurred in some part of Keonjhar and Sambalpur districts in the month of June and July respectively.

Floods in September

The State faced severe floods in two phases during the month of September 2011. The flood in 1st and 2nd week of September 2011 in the Mahanadi River System was triggered mostly by enormous precipitation in its upper catchment in Chhattisgarh. The inflow into the Hirakud reservoir was almost twice the full reservoir. Normal life, livelihood and infrastructure were severely impacted and massive devastation took place in 19 affected districts. The magnitude of the flood and the severity of its impact are comparable to the high floods of 2001, 2003, 2006 & 2008. Besides the flood in the Mahanadi system, the State experienced severe floods during 3rd week of September 2011 in river Brahmani, Baitarani Budhabalanga and

Subarnarekha affecting 10 districts. Cumulatively, 21 districts were affected in both phases of flood in September 2011.

Tables below indicate the quantum of rainfall recorded at different stations in the Upper Mahanadi Catchment during 6th–10th of September, 2001:

Rainfall at Upper Mahanadi Basin (mm)

Sl	Place	06.09.11	07.09.11	08.09.11	09.09.11	10.09.11
1.	Ambabhona	11.20	140.0	235.0		0.0
2.	Ambikapur	5.8	33.5	31.5	71.0	81.7
3.	Andhiyakore	10.8	71.4	32.8	11.8	6.0
4.	Baikunthapur	12.0	17.2	6.2	66.6	74.8
5.	Bamandhi	31.0	40.8	40.8	48.6	10.4
6.	Bangodam	4.2	34.2	101.2	32.0	30.0
7.	Bargaon	21.0	23.2		39.0	
8.	Basantpur	17.2	33.8	48.2	46.6	9.2
9.	Bodanda	62.0	146.0	40.0	4.2	1.8
10.	Champa	30.0	37.4	63.6		10
11.	Deogan	130.0	241.0	125.0	74.8	43.6
12.	Dharmjaygarh	18.0	10.6	47.0	58.4	83.6
13.	Ghatora	18.6	42.8	62.2	29.8	13.6
14.	Ghorari	155.8	81.0	116.4		0.0
15.	Hemgiri	75.4	133.0		65.0	
16.	Jagadapur	5.3	8.7	10.8	5.2	1.1
17.	Jamadaripalli	61.8	55.8	26.8	74.8	4.2
18.	Jamankira	155.0		16.0	117.0	7.8
19.	Jharsuguda	55.9	171.1	170.4	41.9	22.2
20.	Kelo	36.8	66.2	485.2	68.0	55.6
21.	Lorba	24.2	65.0	244.8	66.0	25.2
22.	Kuchinda	81.6	144.2	57.8	51.6	24.6
23.	Kurbhatta	51.8	47.8	94.4	76.2	22.8
24.	Laikera	46.2	125.5	100.2	62.2	46.0
25.	Mamemdragarh	24.4	34.8	23.0	36.8	91.2
26.	Mahupali	56.0	130.8	43.4	42.6	55.6
27.	Nandaghat	24.0	96.2	17.6		9.0
28.	Nuapara	136.0		92.0	12.0	2.0
29.	Paramanpur	46.8	153.6	64.8	50.6	44.0
30.	Pendraroad	87.8	31.6	12.4	13.4	27.2
31.	Raipur	48.6	86.4	55.7	6.0	3.2
32.	Rajim	81.4	95.0	44.4	4.6	0.8

SI	Place	06.09.11	07.09.11	08.09.11	09.09.11	10.09.11
33.	Rampur	23.0	84.8	43.6	26.8	8.4
34.	Sankara	38.6	78.0	185.6	37.2	7.0
35	Saradihi	81.4	60.2	76.0		18.0
36.	Seorianarayan	23.2	55.0	39.2	29.8	8.0
37.	Sigma	32.8	51.8	55.8	8.2	4.2
38.	Sundargarh	44.6	7.2	4.8	38.0	36.8
39.	Surajgarh	61.8	38.4	224.6	132.6	9.0
40.	Tarapur	66.0	104.0	102.0		31.0
41.	Thettang	28.8	75.6	2.2	46.6	61.8

Hirakud Reservoir Position

On account of heavy rainfall for about 5 days in the upper catchments of River Mahanadi in the neighbouring Chhattisgarh State Commencing on 6th of September, 2011, the Hirakud reservoir started receiving more than 9 lakh cusecs of water from noon of 8th September, 2011 and the inflow into the reservoir dangerously exceeded 11 lakh cusecs on 09th September, 2011. As the reservoir level steadily approached the Full Reservoir Level (FRL) i.e. 630 feet, commensurate flood water had to be discharged from the reservoir. The outflow from Hirakud reservoir had to be balanced with the inflow keeping in view the safety of dam and also the flood situation in delta area. Adding to the outflow from the Reservoir, heavy downpour in the lower catchments also contributed to increased volume of flood water in the River in the downstream of Hirakud Reservoir. Thus, high discharge of flood water from Hirakud Reservoir due to huge inflow from the neighbouring Chhattisgarh State coupled with downstream flood water of Hirakud reservoir caused severe flooding in the Mahanadi basin. At the same time, retention of water in Hirakud Reservoir to its full capacity coupled with torrential rain caused flooding due to back water in upper basin of River Mahanadi especially in Bargarh and Jharsuguda districts.

The table below indicates the inflow and outflow of water of Hirakud reservoir during the period:

Date	Time	Water level (in ft.)	Inflow (lakh cusecs)	Outflow (lakh cusecs)	No. of gates opened
07.09.11	6AM	625.81	422038	320390	18
	9AM	626.12	529692	332744	21
	12Noon	626.31	543840	482907	18

	3PM	626.29	513012	612340	36
	6PM	626.15	584910	603853	36
	9PM	626.04	588263	612145	36
08.09.11	6AM	626.31	770868	612043	36
	9AM	626.89	750000	694004	41
	12Noon	627.27	950630	709215	42
	3PM	627.41	884208	795269	53
	6PM	627.54	965833	883242	53
	9PM	627.77	1032308	826188	53
09.09.11	6AM	628.45	1015093	888031	53
	9AM	628.50	1037000	974000	59
	12Noon	628.54	1051123	974888	59
	3PM	628.83	1107276	973129	59
	6PM	628.97	1061871	972928	59
	9PM	629.10	1056135	973544	59
10.09.11	6AM	629.15	1006109	974342	59
	9AM	629.25	989424	974014	59
	12Noon	629.27	994151	981446	59
	6PM	629.08	974414	974414	59
	9PM	629.00	920558	971382	59
11.09.11	6AM	628.56	795016	890312	53
	9AM	628.41	764127	859423	49
	12Noon	628.17	667955	795013	43
	3PM	628.08	634153	706704	41
	6PM	628.10	638139	625434	35
	9PM	628.15	597312	565545	29
12.09.11	6AM	628.52	470157	400271	23
	9AM	628.52	400840	400840	23
	12Noon	628.47	364919	396686	23
	3PM	628.43	305548	330958	16
	6PM	628.43	287378	287378	16
	9PM	628.41	246418	259127	10
13.09.11	6AM	628.60	158952	108128	5
	9AM	628.71	177865	107983	5
	12Noon	628.83	184133	107895	5
	3PM	628.93	171431	107902	5
	6PM	628.97	133513	108099	5
	9PM	629.04	152531	108059	5

Discharge to Coastal Plain

Against the safe carrying capacity of Mahanadi River System of around 9 lakh cusecs at delta head (Naraj / Mundali), the peak discharge went up to **13.67** lakh cusecs on **11th September 2011**.

The volume of water discharged at Khairmal, Barmul and Mundali in Mahanadi river system from 07.09.11 to 13.09.11 is given below:

Date	Time	Discharge in lakh cusec during Sept. 2011		
		Khairmal	Barmul	Mundali
07.09.11	6AM	614000	549750	582865
	9AM	654000	590000	568780
	12Noon	686000	622000	564000
	3PM	686000	640000	564085
	6PM	718000	658000	596950
	9PM	766000	679000	637585
08.09.11	6AM	1028000	745250	718000
	9AM	1044000	797500	748508
	12Noon	1044000	850000	766139
	3PM	1028000	914250	791184
	6PM	1036000	961000	820843
	9PM	1127000	991000	820843
09.09.11	6AM	1302000	1038250	925942
	9AM	1350000	1116500	948905
	12Noon	1366000	1152500	972013
	3PM	1382000	1250000	995120
	6PM	1390000	1357750	1018371
	9PM	1390000	1384000	1057604
10.09.11	6AM	1390000	1416500	1104970
	9AM	1270000	1439500	1250230
	12Noon	1246000	1439500	1291615
	3PM	1214000	1405000	1333000
	6PM	1198000	1384000	1333000
	9PM	1198000	1352500	1358266
11.09.11	6AM	1163000	1237500	1366688
	9AM	1154000	1175000	1366688
	12Noon	1127000	1170500	1349844
	3PM	1109000	1170500	1333000
	6PM	1068000	1170500	1308169
	9PM	984000	1152500	1291615
12.09.11	6AM	686000	1072250	1250230
	9AM	583000	1038250	1233962

Date	Time	Discharge in lakh cusec during Sept. 2011		
		Khairmal	Barmul	Mundali
	12Noon	520000	570000	1225828
	3PM	508000	897750	1209560
	6PM	502000	825000	1185158
	9PM	490000	734250	1144920
13.09.11	6AM	400000	578000	964310
	9AM	350000	554250	895708
	12Noon	268500	518250	828257
	3PM	228000	472000	772016
	6PM	198000	426000	730877
	9PM	186000	385000	690000

Floods in Branch Rivers

Due to heavy discharge at coastal plains in river Mahanadi, the water level of Mahanadi and its distributaries in coastal districts rose and crossed the danger level. The water level above danger level continued for 4 days. Gauge readings of different rivers taken during 9th – 12th are given below:

River	Gauge Station	Danger Level	Warning Level	Water Level in Mtrs			
				9 th Sept	10 th Sept	11 th Sept	12 th Sept
Mahanadi	Naraj	26.41	25.41	26.52	27.49	27.55	27.26
Devi	Alipingal	11.76	10.85	11.42	12.85	13.11	12.80
Kushabadra	Nimapada	10.76	9.85	10.22	11.18	11.20	11.14

Impact of Full Moon:

Due to full moon on 12.09.11 (Monday) and extremely turbulent sea, there was no discharge of flood water into sea resulting in submergence of delta area for three days. Further, heavy rainfall was experienced in these areas due to the effect of active monsoon & depression over Bay of Bengal. This rainfall multiplied the miseries to the affected people. About one-third area of Mahanadi delta remained inundated for more than a fortnight causing severe inconvenience to the people.

2nd phase floods in September

On 22.09.2011 a depression was formed over Northwest Bay of Bengal off North Odisha West Bengal Coast. Due to the effect of depression, heavy to very

heavy rain was experienced over Brahmani, Baitarani, Budhabalanga and Subarnarekha basins resulting in high floods in all these rivers of Northern Odisha. The rivers crossed and remained above danger level for nearly four days.

Rainfall in River Basins

1. River Brahmani

(Rain fall in M.M)

Upper Basin	Place	22 nd Sept.	23 rd Sept.
	Barkote	52.0	40.4
	Deogarh	63.5	66.0
	Lahunipada		134.4
	Pallahara	80.0	86.0
	Panposh	31.8	136.4
	Rajgangpur	62.8	135.0
	Reamal	46.0	28.0
	Rengali	75.0	60.0
Lower Basin	Altuma	38.2	53.6
	Anugul	23.4	20.4
	Chhendipada	42.2	37.0
	Dhankanal	31.0	68.0
	Hindol	32.0	22.0
	Jenapur	45.0	71.0
	Kamakhyanagar	37.0	48.0
	Naktideul	40.0	31.0
	Sukinda	86.0	
	Talcher	32.8	42.0

2. Baitarani Basin

Place	22 nd Sept.	23 rd Sept.
Akhuapada	90.0	47.2
Anandpur	83.0	41.4
Champua	121.2	17.4
Chandbali	89.1	12.8
Ghatgaon		106.0
Jajpur	66.0	
Joshiapur	115.0	69.0
Keonjhar	93.6	193.2
Rajkanika		13.0
Swampatna	117.8	98.4
Thakurmunda	149.8	53.8

3. Budhabalanga Basin

Place	22 nd Sept.	23 rd Sept.
Balasore	60.6	15.8
Balimundali	134.4	50.2

Bangirposhi	109.6	16.4
Baripada	100.0	34.0
Bonth	85.0	76.0
Chandanpur	87.4	17.0
Jaipur	92.0	12.4
NH5 Govindpur	70.0	5.0
Nilagiri	80.2	26.3
Soro		32.0
Udala	158.8	11.5

4. Subarnarekha Basin

Place	22 nd Sept.	23 rd Sept.
Bhograi	64.0	4.0
Fekoghat	122.8	11.2
Ghatsila	23.4	56.2
Jaleswar		8.0
Jamsedpur	30.6	47.7
Jamsolaghat	82.8	17.8
Rairangpur	42.4	38.6
Rajghat	44.2	9.0
Ranchi	20.4	88.6
Tiringi	46.0	66.0

Water Levels

River	Gauge Station	Danger level	Warning level	Water Levels in Meter				
				22.09.11	23.09.11	24.09.11	25.09.11	26.09.11
Brahmani	Jenapur	23.0	22.0	22.90	23.00	23.26	23.76	23.88
Baitarani	Anandpur	38.36	37.45	41.10	40.60	39.35	37.59	36.56
	Akhuapada	17.83		20.13	20.85	19.76	18.43	17.70
Budhabalanga	NH5	8.13	7.21	8.00	8.12	7.38	6.20	4.94
Subarnarekha	Jamsolaghat	49.45		47.70	51.70	51.24	49.04	48.00

Impact

Floods in June - August, 2011

Due to floods in the months of June, July and August, 1.23 lakh people of four districts namely Balasore, Sambalpur, Keonjhar, and Mayurbhanj were affected. 5 people lost their lives due to flash flooding. The district-wise details about the affected areas, population and damage to private houses are given below.

Sl.	District	Blocks affected	GPs affected	Villages affected	ULBs affected	Population affected	Human Casualty	House Damage
1	Balasore	4	31	114	-	121338	----	31
2	Mayurbhanj	1	2	5	-	1400		

3	Keonjhar (flash flood)	1	1	1	-	300	3	-
4	Sambalpur (flash flood)	-	-	-	1	700	2	-
Total		5	33	119	1	123738	5	31

Floods in September, 2011

During 1st phase of floods in September, 102 blocks of 19 districts were affected covering 4897 villages of 1067 GPs, with a population of 34.44 lakh.

During 2nd phase of floods in September, 71 blocks of 10 districts were affected covering 4060 villages of 890 GPs, with a population of 25.32 lakh. Cumulatively, 21 out of 30 Districts were affected due to two phases of floods in September, 2011.

Affected Districts

Sl. No.	1 st Phase Flood in Sept' 2011	2 nd Phase Flood in Sept' 2011
1	Angul	Angul
2	Balasore	Balasore
3	Baragarh	Bhadrak
4	Bhadrak	Deogarh
5	Boudh	Dhenkanal
6	Cuttack	Jajpur
7	Deogarh	Keonjhar
8	Dhenkanal	Kendrapara
9	Jagatsinghpur	Mayurbhanj
10	Jajpur	Sundargarh
11	Jharsuguda	--
12	Kendrapara	--
13	Khordha	--
14	Mayurbhanj	--
15	Nayagarh	--
16	Nuapada	--
17	Puri	--
18	Sambalpur	--
19	Subarnapur	--
Total	19 Districts	10 Districts

Extent of Damages due to floods in September, 2011

No. of Districts affected	21
Blocks affected	122
GPs affected	1,405
Villages affected	6,473
ULBs affected	26

Wards Affected	240
Population affected (in lakh)	60.00
Human lives lost	82
Livestock affected (in lakh)	15.04
Livestock lost	1,493
Houses damaged	1,76,980
Crop Area sand cast (in ha.)	3,916
Area under crop loss of >50% (in ha.)	2,60,256

House Damage

Sl.	District	Fully Damaged		Severely Damaged		Partially damaged	Huts damaged	Total
		Pucca	Kutcha	Pucca	Kutcha			
1	Angul	0	0	0	214	2208	66	2488
2	Balasore	0	38	0	188	1095	85	1406
3	Bargarh	0	860	0	2628	6270	378	10136
4	Bhadrak	0	978	1	3975	11627	1722	18303
5	Boudh	0	6	0	270	393	22	691
6	Cuttack	0	19	6	636	10746	1082	12489
7	Deogarh	0	57	0	85	3216	0	3358
8	Dhenkanal	0	28	0	181	424	16	649
9	Jagatsinghpur	0	66	2	308	1810	445	2631
10	Jajpur	7	1182	94	4416	28774	5442	39915
11	Jharsuguda	0	636	1	782	4154	358	5931
12	Kendrapara	7	829	10	7037	20845	4955	33683
13	Keonjhar	0	215	0	2816	8221	447	11699
14	Khurda	0	12	0	105	509	9	635
15	Mayurbhanj	0	3	0	6	190	112	311
16	Nayagarh	0	4	0	30	359	55	448
17	Nuapara	0	29	0	333	3130	0	3492
18	Puri	5	670	7	1879	11712	1711	15984
19	Sambalpur	3	516	0	1071	6767	213	8570
20	Subarnapur	5	649	35	623	1922	363	3597
21	Sundargarh	0	158	0	68	318	20	564
Total		27	6955	156	27651	124690	17501	176980

Crop Damage

About 260256.52 hectares of Kharif crop sustained crop loss of more than 50% due to floods.

Sl.	Districts	Area under crop loss of 50%& above [in Ha.]
1	Angul	1685.85
2	Balasore	2529.13
3	Bhadrak	36947.49
4	Boudh	3789.13

5	Cuttack	31696.41
6	Deogarh	35.47
7	Dhenkanal	3294.19
8	Jagatsinghpur	5163.04
9	Jajpur	58585.00
10	Jharsuguda	834.44
11	Kendrapada	39616.11
12	Keonjhar	4657.54
13	Khordha	14591.00
14	Nayagarh	5372.11
15	Puri	44630.78
16	Sambalpur	297.78
17	Subarnapur	6531.05
Total		260256.52

Sand Cast

Nearly 3916.28 hectares of agricultural land of were sand cast. The district-wise break-up is as follows:

SI.	District	Total Area under sand cast (in ha.)
1	Angul	5.5
2	Bargarh	0.87
3	Bhadrak	113.31
4	Boudh	503.39
5	Cuttack	62.724
6	Deogarh	70.08
7	Dhenkanal	212.13
8	Jagatsinghpur	742.02
9	Jajpur	1645.80
10	Jharsuguda	0.80
11	Kendrapada	265.50
12	Keonjhar	157.52
13	Khordha	25.656
14	Nayagarh	1.308
15	Nuapada	3.4
16	Puri	98.964
17	Sambalpur	7.31
Total		3916.28

Damage to Public Infrastructure

PWD Roads:

1st phase flood in September 2011

SI No.	Name of the District	No. of breaches	Length of road damaged (in km)	No. of culverts damaged	No of culverts washed away
1	Angul	0	7.05	0	0
2	Balasore	1	165.253	17	0
3	Baragarh	0	81.79	6	0

4	Bhadrak	0	118.6	42	0
5	Boudh	2	28.5	13	0
6	Cuttack	12	358	22	0
7	Deogarh	2	0.625	0	0
8	Dhenkanal	0	38.69	12	0
9	Jajpur	10	245.77	9	0
10	Jagatsinghpur	0	0.07	0	0
11	Kalahandi	0	212.9	80	0
12	Kendrapada	6	119.9	13	0
13	Khurda	0	66.39	15	0
14	Mayurbhanj	3	122.276	59	1
15	Nayagarh	0	15.12	8	0
16	Nuapada	0	81.63	7	0
17	Puri	9	108.8	6	0
18	Sambalpur	3	8.93	1	1
19	Subarnapur	3	66	56	0
20	Keonjhar	4	135.77	29	1
Total		55	1982.064	395	3

2nd phase flood in September 2011

SI No.	Name of the District	No. of breaches	Length of road damaged (in km)	No. of culverts damaged	No of culverts washed away
1	Angul	2	0.30	0	0
2	Balasore	0	0	0	0
3	Bhadrak	7	117.80	42	0
4	Deogarh	0	0	0	0
5	Dhenkanal	0	18.39	0	0
6	Jajpur	3	280.48	19	1
7	Keonjhar	13	174.28	46	4
8	Kendrapada	10	82.78	13	0
9	Mayurbhanj	0	72.09	49	0
10	Sundargarh	0	89.00	3	0
Total		35	835.12	172	5

Rural Roads
1st phase flood in September 2011

Sl. No.	Name of the District	No. of roads damaged	Length of road damaged (in km)	No of Breaches	Length of Breaches (in mtr.)	No of CD/ Bridge damaged
1	Angul	32	77.14	0	0	2
2	Balasore	14	9.65	28	310	0
3	Baragarh	33	23.59	39	272	8
4	Bhadrak	93	165.85	0	0	4
5	Boudh	29	115.50	0	0	31
6	Cuttack	198	255.15	94	643	53
7	Deogarh	10	20.00	0	0	2
8	Dhenkanal	3	3.30	0	0	0
9	Jajpur	64	382.62	28	206	54
10	Jagatsinghpur	107	242.09	50	793	78
11	Jharsuguda	11	43.00	15	60	24
12	Kendrapada	177	363.00	47	564	74
13	Khurda	127	286.90	17	105	54
14	Mayurbhanj	10	23.80	1	20	14
15	Nayagarh	33	60.65	0	0	17
16	Nuapada	13	28.00	0	0	0
17	Puri	210	390.29	249	2246	131
18	Sambalpur	9	22.04	0	0	25
19	Subarnapur	51	29.80	0	0	9
Total		1224	2542.37	568	5219	580

2nd phase flood in September 2011

Sl No.	Name of the District	No. of roads damaged	No. of breaches	No. of CDs/ bridges damaged
1	Angul	34	2	0
2	Balasore	156	30	48
3	Bhadrak	72	38	18
4	Deogarh	5	0	6

5	Dhenkanal	15	0	10
6	Jajpur	74	61	33
7	Keonjhar	83	75	54
8	Kendrapada	25	1	47
9	Mayurbhanj	36	10	23
10	Sundargarh	11	14	11
Total		511	231	250

Urban Roads

(i) 1st phase flood in September 2011

Road length of 415 km and 65.20 Kms of drains were damaged in urban areas. 31 culverts on these roads were also extensively damaged.

(ii) 2nd phase flood in September 2011

Road length of 87.45 km and 33.16 Kms of drains were damaged in urban areas. 70 culverts on these roads were also extensively damaged.

Panchayat Roads

1st phase flood in September 2011

SI	District	No. of culverts damaged	No. of roads damaged	Length of road damaged (in km)
1	Angul	0	0	39.5
2	Balasore	0	0	274.06
3	Baragarh	0	0	489.73
4	Bhadrak	85	1182	344.91
5	Boudh	0	0	87.389
6	Cuttack	23	0	669.47
7	Deogarh	0	0	0
8	Dhenkanal	0	0	5.6
9	Jagatsinghpur	0	0	91.49
10	Jajpur	0	0	440.00
11	Jharsuguda	0	0	4.3
12	Kendrapada	557	1654	588.82
13	Khurda	21	414	188.32

14	Mayurbhanj	3	0	2.50
15	Nayagarh	0	0	52.53
16	Nuapada	0	0	0.00
17	Puri	0	0	0.00
18	Sambalpur	0	0	183.00
19	Subarnapur	7	0	229.14
Total		696	3250	3690.759

2nd phase flood in September 2011

Sl. No.	District	No. of culverts damaged	No. of roads damaged	Length of road damaged (in km)
1	Angul	6	0	0
2	Balasore	29	1276	1249.22
3	Bhadrak	48	1282	391.21
4	Deogarh	0	33	5.279
5	Dhenkanal	16	83	86.80
6	Jajpur	348	3112	841.86
7	Keonjhar	444	893	1015.90
8	Kendrapada	296	600	369.90
9	Mayurbhanj	0	42	19.00
10	Sundargarh	0	136	47.00
Total		1187	7457	4026.169

Rural Water Supply:

1st phase flood in September 2011

Sl No.	Name of the District	No. of Tube wells affected	No of Platforms damaged	No of Rural Piped water supply system damaged
1	Angul	58	0	6
2	Balasore	370	100	0
3	Baragarh	56	30	13
4	Bhadrak	526	150	0

5	Boudh	284	70	19
6	Cuttack	2372	168	69
7	Deogarh	4	0	0
8	Dhenkanal	0	0	0
9	Jagatsinghpur	441	50	16
10	Jajpur	1062	0	12
11	Jharsuguda	43	0	0
12	Kendrapada	2270	700	37
13	Khurda	522	80	15
14	Mayurbhanj	68	0	0
15	Nayagarh	398	46	26
16	Nuapada	0	0	0
17	Puri	3181	200	54
18	Sambalpur	184	0	6
19	Subarnapur	332	312	28
Total		12171	1906	301

2nd phase flood in September 2011

8713 hand pump tube wells were affected by the 2nd phase flood in the. 1075 Platforms, 128 rural piped water supply projects were damaged during this flood.

Urban Water Supply

Urban water supply systems were damaged in affected ULBs.

River and Canal Embankments:

(i) 1st phase flood in September 2011

87 breaches occurred in river embankments of different rivers. Besides breaches, partial damage had been caused to 2562 nos. of sites in river embankments. Similarly, 472 breaches occurred in different canal embankments. 565 CADA canals were damaged by this flood. 3525 nos. of Minor Irrigation (Lift) Projects were damaged.

(ii) 2nd phase flood in September 2011

147 breaches occurred in river embankments of different rivers. Besides breaches, partial damage had been caused to 1129 nos. of sites in river embankments. Similarly, 550 breaches occurred in different canal embankments.

1723 nos. of Minor Irrigation (Lift) Projects were damaged. 3 CADA canals in Baitarani were damaged by this flood

Damage to Community Assets:

Community Assets	1st phase flood in September 2011	2nd phase flood in September 2011
Panchayat Ghars	741	332
PHC/CHC	111	129
Primary School Buildings	1868	160
Community Tanks	359	333

Damage to power supply:

Extensive damage occurred to energy distribution infrastructure like power transformers, distribution transformers, 33/11KV conductors, electric polls and other associated equipment by floods of September, 2011. Due to heavy flow of water in a flood situation, the HT & EHT lines were damaged, polls were uprooted, stay wires got disconnected and stay sets were damaged. Distribution Transformers & Power Transformers got submerged in water and did not stand due to insulation failure and contamination of oil with water. In 22/11KV S/S with its protection equipment like VCB, relay contracts became inoperative due to submergence in water. The cable trays were buried in mud; control cable & power cable got damaged. The earth pits also got damaged. The general contours of the switch-yards got damaged due to flow of water. The sand layer & gravel layers were washed. Compound walls of 33/11KV structure fell down & got damaged due to flow of water.

Flood Management

The State Government has promptly responded to the situation and took all measures required at the moment to alleviate the distress of the flood affected people.

(a) Rescue and Evacuation:

All ten units of ODRAF (Odisha Disaster Rapid Action Force) were deployed in Cuttack, Puri, Kendrapara, Jajpur & Jagatsinghpur districts for rescue and relief operation. NDRF battalion at Mundali was also mobilised with boats & emergency equipments for search and rescue operation.

2,80,320 people were evacuated to safer places and kept in temporary shelters during 1st phase flood. Similarly, 1,74,874 people were evacuated to safer places and kept in temporary shelters during 2nd phase flood.

(b) Deployment of Boats:

2,064 boats were engaged in rescue and relief operations.

(c) Free kitchen

Evacuated people were provided with adequate quantities of dry food and cooked food through free kitchen centres. 542 free kitchen centres were opened during 1st phase flood and 684 centres during 2nd phase flood.

(d) Emergent Relief

Emergent relief was sanctioned for a period of 7 to 15 days for the marooned people of the flood affected districts. Emergent relief in shape of rice, chuda and gud was distributed in the flood affected villages. In addition to dry food, candles, match-boxes, kerosene and other essential materials were distributed.

Children and infants in the marooned areas were provided with nutritious baby food for a period of 15 days as per CRF/SDRF Norms. 650MT of INDIAMIX (BABY FOOD) was distributed through Angan Wadi Centers. Q.2,24,931.935 rice, Q.30646.10 chuda, Q.2325.652 gur, 2,60,698 packets of biscuits, 29,341 packets of candles and 68,868 packets of match-boxes were distributed to flood affected people.

(e) Air-dropping

The helicopters of Indian Air Force, Indian Navy were requisitioned in order to facilitate the air-dropping of food packets in the marooned areas for flood victims. 23,272 food packets were air-dropped through four helicopters in 6 Districts. Similarly during 2nd phase flood in September, 38,789 food packets were air-dropped in the marooned areas in 4 districts.

Period	No. of Sorties	No. of packets air-dropped	Districts covered
11.09.2011 to 15.09.2011	56	23272	Kendrapara, Cuttack, Jagatsinghpur, Puri, Nayagarh and Boudh
24.09.2011 to 29.09.2011	82	38789	Jajpur, Kendrapada Bhadrak and Keonjhar

Quantity of Materials air-dropped

Chuda- 2383.39 Qtl.
Gur- 397.61 Qtl.
Salt- 72.00Qtl.
Candle-1,49,596 pcs.
Match Box- 82,500 pcs.
Biscuits-1,47,172 packets

(f) Temporary Shelter Materials

1,21,256 families and 37,784 families were provided with polythene sheets during 1st phase and 2nd phase floods respectively.

(g) Health & Sanitation

In order to prevent outbreak of epidemics, 138 medical mobile teams were deployed in the flood affected districts and 524 medical relief centres were opened. Medical officers and paramedics were also mobilised from medical colleges, training institutions and other districts. During the period from 01.09.11 to 02.10.11, additional stock of 19,62,890 packets of ORS, 3,23,70,000 Halazone tablets, 5,416 bags of bleaching power, 22,30,300 tablets of Norfloxacin, 40,58,500 tablets of Metronidazole and 10,810 nos. of Anti Snake Venum were supplied to the affected districts. 4,76,143 ORS packets, 1,32,44,507 Halogen tablets were distributed. 3,55,805 minor ailment were treated. There was no outbreak of epidemic reported from any of the flood affected districts.

(h) Drinking Water

Rural areas:

Water tankers deployed : 42
Mobile vans deployed : 154
Water Pouches distributed : 72,19,100

Urban areas:

Water Tanker Deployed : 876
Water pouches distributed : 3,41,900
Tube wells disinfected : 4,388

Dewatering of flood water was also done through pump sets in different urban areas.

(i) Disinfection of Drinking Water Sources

1st phase :

11,417 tube wells were disinfected.

1,518 bags (25 Kg each bag) of bleaching power were distributed in flood affected areas.

2nd phase :

10,672 tube wells were disinfected.

1,642 bags (25 Kg each bag) of bleaching power were distributed in flood affected areas.

(j) Animal Care

Affected animals were shifted to safer places. 160 Mobile veterinary teams were deployed in the flood affected areas. 640 health camps were organised and 3.24 lakh livestock were treated and vaccinated. 6276.49 MT of cattle feed of high quality was distributed. Besides this, NDDB supplied 1000 MT of cattle feed for the affected cattle.

(k) Repair/Restoration of Public Utilities

Immediate repair of damaged infrastructures were carried out as per SDRF/NDRF Norms. Damaged GP/PS roads were restored. All breaches on the roads, river & canal embankments were closed immediately for relief line clearance.

(l) Administrative Measures:

- The District Collectors and field functionaries were alerted.
- Collectors were instructed to provide additional 10 days relief to the BPL families affected by floods.
- NGO coordination meetings under the chairmanship of Hon'ble Minister, Revenue & Disaster Management were held on 13.09.11 and 28.09.11. Collectors were instructed to revive and reactivate the District & Block level NGO Coordination Committees for effective G.O.-N.G.O. coordination.
- Senior IAS & OAS officers were deployed to the affected Districts to assist the District Administration in relief operation.
- OAS Probationers were deployed to affected districts to assist in the flood relief operation.
- Mobile Health Teams were deployed to marooned areas by earmarked boats.
- Collectors were instructed to complete the post flood assessment and enumeration work in a time-frame.

- Senior officers not below the rank of Joint Secretary were deployed to affected districts to supervise, guide and coordinate the assessment/ enumeration work.
- Departments/ Collectors were instructed to keep evidence of damaged private /public properties through photography / videography.
- Instruction was issued the Collectors to conduct the enumeration of damages by composite teams in squad approach and to take special care of widow headed/ women headed families/ orphans, destitute and vulnerable groups at the time of enumeration/ assessment. The team (squad) were constituted with field functionaries of various Departments like Revenue & DM, Agriculture, Textiles & Handlooms, Veterinary, Fisheries, etc.
- It was also instructed to publish the beneficiary lists in the village/ GPs in order and to pay all kinds of financial assistance to the eligible beneficiaries through account payee cheques to maintain transparency. Zero balance accounts were opened by the banks for eligible beneficiaries.
- Photographic evidence of the beneficiary concerned along with the damaged house at the background were taken for record in order to maintain transparency.
- In view of the need for flood relief operations including damage/ loss assessment, distribution of assistance to the flood affected people and immediate flood restoration work, Puja Holidays from 2.10.11 to 11.10.11 for the officials involved in flood relief operation were cancelled.
- Due diligence were exercised while making assessment of crop loss of small & marginal farmers and actual cultivators.
- Collectors were instructed to calculate extent of damage caused to Agriculture, Horticultural, Sericulture Crops, Annual Plantation and Perennial Crops accurately and thereafter to display in villages.
- Agriculture Department took steps to arrange and distribute quality seeds in sufficient quantity for alternate cropping and to prevent pest epidemic, pest control operations.
- All line Departments were instructed to complete the repair/ restoration work of the damaged infrastructure strictly adhering to the norms and time-frame prescribed under the Items & Norms of assistance from SDRF/ NDRF.

- Review meetings on flood situations and the relief measures were taken at the level of Hon'ble Chief Minister almost on daily basis during high floods.
- Hon'ble Chief Minister took series of video conferencing with the Collectors of the affected districts to take stock of the situation and guide the District Administration.
- Hon'ble Chief Minister made aerial survey of the flood damages and also visited several districts to get first hand information on flood damages and the relief measures.
- Daily press briefings on flood situations and the relief measures were held at the State level.

Daily Situation Report on Floods to Government of India:

The daily situation reports on floods were communicated to Ministry of Home Affairs, Govt. of India daily.

Submission of Memorandum to Govt. of India

Two Memoranda were submitted to Govt. of India on 21.09.2011 and 29.09.2011 respectively requesting financial assistance of Rs.3265.38 (2120.92 + 1144.46) crore out of NDRF for completion the process of relief and restoration measures. The sector wise requirement of funds is mentioned below.

ABSTRACT OF ASSISTANCE SOUGHT FOR FROM GOVERNMENT OF INDIA

SI	Item	Amount required [Rs. in crore]		
		1 st phase flood in Sept.	2 nd phase flood in Sept.	Total
1	Ex-gratia for loss of life	0.45	0.42	0.87
2	Clothing & Utensils	4.31	14.38	18.69
3	GR in kind for dire need of sustenance	35.00	20.00	55.00
4	Supplementary Nutrition	5.04	3.83	8.87
5	Sand Cast Subsidy	0.48	0.45	0.93
6	Agriculture Input Subsidy-SMF	30.76	72.46	103.22
7	Agriculture Input Subsidy-other than SMF	1.59	1.49	3.08
8	Input subsidy-Sericulture Farmers	0.04	0	0.04
9	Replacement of Draught Animals	0.25	0.15	0.4
10	Provision of Fodder	32.67	30.21	62.88
11	Assistance to fisherman	1.22	0.56	1.78
12	Input subsidy-Fish farm	0.46	0	0.46

13	Assistance for Artisan-Traditional crafts	1.28	0.04	1.32
14	Assistance for Handloom weavers	0.61	0.18	0.79
15	HB Assistance	26.72	48.59	75.31
16	Emergence Supply of Drinking Water	1.20	0.20	1.40
17	Human Health Care	7.78	0	7.78
18	Cattle Health Care	1.25	0.92	2.17
19	Cost of Evacuation	1.47	0.95	2.42
20	Hiring of Boat	1.6	0.91	2.51
21	Temporary Accommodation	3.14	3.62	6.76
22	Temporary Shelter	12.13	5.86	17.99
23	Air-dropping	1.80	2.40	4.20
24	Repair of PWD Roads	226.07	59.82	285.89
25	Repair of Rural Roads	363.66	92.52	456.18
26	Repair of Urban Roads	43.00	17.80	60.80
27	Repair of Panchayat Roads	425	374.95	799.95
29	Repair of Rural Water Supply System	7.79	4.74	12.53
30	Repair of Urban Water Supply System	9.5	1.03	10.53
31	Repair of River/Canal embankments	617.17	305.45	922.62
32	Repair of CADA Canals	30.54	1.50	32.04
33	Repair of Minor Irrigation (Flow)	7.02	3.17	10.19
34	Repair of Minor Irrigation (Lift)	39.55	28.00	67.55
35	Clearance of Drainage channels	34.30	6.00	40.30
36	Repair of Panchayat Ghars	11.21	9.91	21.12
37	Repair of PHC/CHC	3.16	3.73	6.89
38	Repair of Primary School Buildings	86.01	3.13	89.14
39	Repair of Community Tanks/Other	6.05	11.15	17.20
40	Repair of Community Assets of ULBs	12.00	0	12.00
41	Restoration of Power Supply	15.56	9.34	24.9
42	Replacement of Damaged Medical Equipments	0.07	0.85	0.92
43	Operational cost of Ambulance Service	1.01	0	1.01
44	Draining of Flood Water	10.5	3.53	14.03
45	Cost of Search & Rescue Measure	0.50	0.22	0.72
Grand Total		2120.92	1144.46	3265.38

Visit of Central Team:

The Inter-Ministerial Central Teams led by Shri O.P.Mahey, Joint Secretary, Ministry of Home Affairs, Government of India visited the flood affected areas both the floods of the State from 26th to 30th September 2011.

Visit of Union Ministers:

- Shri Srikant Jena, Hon'ble Union Minister of State (Independent) for Statistics & Programme Implementation and Minister of State for Chemicals & Fertilisers, Govt. of India discussed with Central Team on 30.09.2011.
- Shri Harish Rawat, Hon'ble Minister of State for Agriculture, Food Processing, Industries & Parliament Affairs, Govt. of India visited the flood affected areas on 17.09.2011.

Assistance Received from Govt. of India:

The High Level Committee (HLC), in its meeting held on 15th December 2011, considering the memorandum, report of the Central Team, recommendation of the Inter-Ministerial Group (IMG) thereon and the extant items & norms of assistance from CRF/ SDRF and NDRF, approved the following assistance:-

- (a) Rs.908.30 crore from NDRF, subject to the adjustment of 75% of balance available in the SDRF account for the instant calamity,
- (b) Rs.10.00 Crore from Special Component of the National Rural Drinking Water Programme (NRDWP) for repair of damaged drinking water supply Works.
- (c) Payment of Air bills for air-dropping of essential supplies, based on actual.

Taking into account the SDRF instalments released during current financial year, based on the details of the expenditure from SDRF account for the year 2011-12 and opening balance as on 1st April 2011 received from Accountant General, Odisha, the availability of funds for instant calamities was calculated to be Rs. 306.198 crore. 75% of this amount works out Rs. 229.65 crore. Accordingly, the net receipt by the State Government from the NDRF for instant calamities works out to **(Rs.908.30–Rs.229.65=) Rs.678.65** crore.

Declaration of flood /heavy rain affected areas

Government in Revenue & Disaster Management has declared 6473 villages under 1405 GPs of 122 Blocks and 240 wards of 26 Urban Local Bodies (ULBs) in respect of 21 Districts as affected by Floods / heavy rain during 2011 vide Notification No. IVF-30/2011 51878/R&DM Dt.17.12.2011.

Chapter- IV

Drought 2011

As per the rainfall report received from the Collectors and compiled at the State level, during the period from 1st June to 16th August 2011 out of 314 Blocks in the State, 31 Blocks of 15 districts had received rainfall of less than 50% and moisture stress condition was noticed in the paddy crops. There was no chance of revival of crops in these Blocks. 113 Blocks had received rainfall between 50%-75% of the long-term average. Similarly, 98 Blocks had received rainfall of 75%-100%. Remaining 72 Blocks received more rainfall than the long-term average. The crop condition in rainfed areas particularly of paddy crop in interior Districts was not satisfactory.

As reported by Collectors, with persistent deficient rainfall during June, July and August (till 15th August) of the year 2011, there was adverse impact on standing kharif crop due to moisture stress. The National Remote Sensing Centre, Hyderabad in its Drought Monitoring Report for July 2011 prepared under National Agriculture Drought Assessment and Monitoring System (NADAMS) project kept 20 districts of Odisha namely Mayurbhanj, Balasore, Baragarh, Angul, Bhadrak, Dhenkanal, Jajpur, Nuapada, Bolangir, Boudh, Cuttack, Kandhamal, Nayagarh, Kalahandi, Ganjam, Nawarangpur, Rayagada, Gajapati, Koraput and Malkanagiri under "Alert" and 8 more districts namely Keonjhar, Jharsuguda, Deogarh, Subarnapur, Kendrapada, Khurda, Jagatsinghpur and Puri under "Watch".

Measures taken by the Government

The drought-like situation in the State was under close watch of the Collectors and other field functionaries. A high Level meeting under the chairmanship of Hon'ble Chief Minister was held on 17th August 2011 to review the situation. As per the decision taken in the High Level meeting, the Collectors were requested to furnish Eye Estimation Report on crop damage by 31st August 2011. Accordingly, the Collectors submitted their Eye Estimation Report wherein it was reported that about 12,046 villages of 1,796 Grampanchayats under 113 Blocks and 100 wards of 25 ULBs in 17 Districts during kharif 2011 had been affected to the extent of 50% and more due to moisture stress and were likely to sustain crop loss of 50% and above due to inadequate and uneven rainfall.

After receipt of the Eye Estimation Report from the Collectors, a meeting was held on 15.12.2011 under the chairmanship of Hon'ble Chief Minister on the drought situation and relief measures. Hon'ble Minister, Revenue and Disaster Management, Development Commissioner, Principal Secretary, Finance Department, Special Relief Commissioner, Commissioner-cum-Secretary, Revenue and Disaster Management Department, Commissioner-cum-Secretary, Cooperation Department, Commissioner-cum-Secretary, School & Mass Education Department were present in the meeting. As per the decision of the meeting the State Government took following measures to save the standing crops and raise the Rabi crops.

- (i) Revival of 1,300 defunct Lift Irrigation Points to provide irrigation for the Rabi Crop. Rs.65 Crore out of SDRF has been provided to the Water Resources Department for the purpose.
- (ii) Supply of 30,000 Diesel Pump Sets to the farmers on subsidized rate by the Agriculture Department.
- (iii) Construction of Cross Bundhs across flowing nallahs, streams in the drought affected areas for protective irrigation. Rs.3.15 crore has been provided out of SDRF to 6 districts for the above purpose.
- (iv) Supply of Pre-Rabi and Rabi seeds such as Mung, Biri, Mustard, Sunflower and Groundnut at 50% subsidized rates.

It was also decided in the meeting that on the basis of the final Crop Cutting Experiment Report, the following assistance would be provided by the Government to the farmers of the villages, where the crop loss is 50% and above.

1. Agriculture input subsidy will be provided to the small and marginal farmers who have sustained crop loss of 50% and above @ Rs.2000 per hectare of land in rainfed/ non-irrigated areas and Rs.4000 per hectare of land in areas under assured irrigation. Agriculture input subsidy will also be provided to farmers other than small and marginal farmers at the same rates subject to a ceiling of one hectare per farmer. In case of successive calamities, the subsidy shall be provided to farmers other than small & marginal farmers up to two hectares per farmer. For perennial crops the assistance shall be provided @ Rs.6000/- per hectare.
2. The assistance shall be provided to the Actual Cultivators.
3. Kharif short term loans will be converted to medium term loans in drought affected areas. The rate of interest of short term loans will be applicable for converted medium term loans.

4. 50% remission in respect of cess on land revenue will be given to farmers where the crop loss is 50% or more. Collection of the remaining amount will be deferred to the next financial year without levying any interest.
5. Tuition fees and examination fees in Government and aided Schools and Colleges in drought affected areas shall be waived.
6. Food assistance @ 1 kg per adult and 500 gram per child shall be provided to people in dire need of immediate sustenance up to 60 days, as assessed by the Collectors.

Declaration of Drought

After receipt of the Crop cutting Experiment Reports from the Collectors, the Government have declared 14,119 villages of 2,131 Grampanchayats under 136 Blocks and 156 wards of 34 ULBs in 21 Districts as drought affected having sustained crop loss of 50% and above during Kharif 2011 as per the following Government Notifications.

ABSTRACT OF VILLAGES HAVING CROP LOSS OF 50% AND ABOVE DUE TO DROUGHT DURING KHARIF 2011

Sl	District	No of Blocks affected	No of ULBs affected	No of GPs containing the affected villages	No of villages affected	No of wards affected	Total
1	Angul	2	1	26	268	13	281
2	Baragarh	9	1	158	797	1	798
3	Bhadrak	3	1	17	43	2	45
4	Bolangir	14	4	285	1770	13	1783
5	Boudh	3	0	47	631	0	613
6	Cuttack	1	0	7	31	0	31
7	Dhenkanal	2	0	8	10	0	10
8	Gajapati	5	0	76	738	0	738
9	Ganjam	22	16	474	3047	97	3144
10	Jharsuguda	5	1	37	132	3	135
11	Kalahandi	11	1	179	866	3	869
12	Khordha	5	0	29	304	0	304
13	Koraput	7	1	78	498	1	499
14	Malkanagiri	7	0	108	921	0	921
15	Nabarangapur	10	0	118	430	0	430
16	Nayagarh	8	2	172	1464	6	1470
17	Nuapada	5	2	90	493	3	496
18	Rayagada	11	2	160	1228	8	1236
19	Sambalpur	1	0	15	63	0	63
20	Subarnapur	4	2	45	378	6	384
21	Sundargarh	1	0	2	7	0	7
TOTAL		136	34	2131	14119	156	14275

Chapter - V

Fire Accident & Lightning

Fire Accident

District-wise loss of life & properties due to fire accidents during the year 2011-12 and house building assistance provided to the affected people are given in the table below.

[Rs. in lakh]

Sl. No.	Name of the District	No. of accident	No. of families affected	Approx. value of properties lost	No. of persons died	No. of cattle died	HBA provided
1	Angul	210	471	90.86	1	2	16.98
2	Balasore	627	627	285.80	-	-	35.28
3	Bargarh	72	119	14.97	-	-	2.98
4	Bhadrak	473	1213	261.64	-	-	24.56
5	Bolangir	48	64	13.06	-	-	0.77
6	Boudh	73	259	44.00	-	-	9.43
7	Cuttack	386	942	125.47	-	-	11.12
8	Deogarh	6	6	0.61	-	-	0.10
9	Dhenkanal	247	763	216.19	6	-	60.60
10	Gajapati	78	235	48.08	-	-	11.39
11	Ganjam	502	1559	281.11	-	-	54.64
12	Jagatsinghpur	227	520	147.38	-	11	19.79
13	Jajpur	379	459	132.29	-	-	14.11
14	Jharsuguda	15	15	5.76	-	-	0.03
15	Kalahandi	35	35	0.00	-	-	1.98
16	Kandhamal	202	202	48.01	-	-	6.89
17	Kendrapara	494	505	175.00	3	9	23.23
18	Keonjhar	149	149	34.58	-	-	2.83
19	Khordha	162	388	63.41	-	-	10.61
20	Koraput	92	139	16.16	-	-	3.01
21	Malkanagiri	7	7	1.10	-	-	0.10
22	Mayurbhanj	321	321	169.02	6	42	11.78
23	Nawarangpur	146	162	29.45	4	-	6.00
24	Nayagarh	155	600	12.05	1	24	12.81
25	Nuapara	20	20	4.67	-	-	0.42
26	Puri	343	577	127.76	-	16	14.57
27	Rayagada	55	116	25.28	-	-	2.31
28	Sambalpur	22	33	3.38	-	-	1.73
29	Subarnapur	97	227	37.82	-	-	7.18
30	Sundargarh	6	9	0.34	-	-	0
	Total	5,649	10,742	2415.25	21	104	367.23

Lightning

353 persons lost their lives due to lightning during the year 2011-12. Information on number of deaths occurred due to lightning in different districts are given below.

Sl. No	Name of the District	No. of death
1	Angul	19
2	Balasore	6
3	Bargarh	17
4	Bhadrak	8
5	Bolangir	13
6	Boudh	2
7	Cuttack	11
8	Deogarh	15
9	Dhenkanal	33
10	Gajapati	0
11	Ganjam	28
12	Jagatsinghpur	9
13	Jajpur	17
14	Jharsuguda	9
15	Kalahandi	10
16	Kandhamal	1
17	Kendrapara	12
18	Keonjhar	26
19	Khordha	20
20	Koraput	5
21	Malkanagiri	4
22	Mayurbhanj	21
23	Nawarangpur	7
24	Nayagarh	3
25	Nuapara	8
26	Puri	0
27	Rayagada	6
28	Sambalpur	15
29	Sonepur	5
30	Sundargarh	23
	TOTAL	353

Steps have been taken to provide financial assistance at the rate of Rs.50,000/- to the Next of Kins of the deceased.

Chapter – VI

Hailstorm

Due to hailstorms 12 districts were affected during the year 2011-12. The district-wise details of the damages occurred and funds provided towards various assistances for the affected people are given in the table below.

Hail Storm (2011-12)

Sl. No.	Districts	Date of Occurrence	No. of Blocks affected	No. of GPs affected	No. of villages / wards affected	Human Casualty
1	2	3	4	5	6	7
1	Jharsuguda	26.04.2011	1	1	3	-
		02.06.2011	1	1	1	-
2	Deogarh	17.04.2011, 25.05.2011, 26.05.2011	3	13	36	-
3	Keonjhar	19.05.2011	1	1	8	-
4	Subarnapur	19.05.2011	3	8	13	-
5	Mayurbhanj	19.05.2011, 30.05.2011	3 1	8 1	10 1	-
6	Khurda	19.05.2011	1	1	1	2
7	Balasore	19.05.2011	1	1	1	1
8	Dhenkanal	30.05.2011	1	1	1	2
9	Sambalpur	08.01.2012, 09.01.2012	2	3	5	-
10	Subarnapur	08.01.2012	2	8	23	-
11	Boudh	09.01.2012	1	1	8	-
12	Sambalpur	15.02.2012	1	3	9	-
	TOTAL		22	50	120	5

Contd..

Sl. No.	Districts	No. of House damaged					Relief Assistance Provided		
		Fully	Severely	Marginally	Huts damaged	Total	House Building Assistance	Ex-gratia Assistance	Total amount released
1	2	8	9	10	11	12	13	14	15
1	Jharsuguda	-	61	219	-	280	481000	-	481000
		-	14	7	-	21	45500	-	45500
2	Deogarh	16	-	255	-	271	542500	-	542500
3	Keonjhar	-	9	-	-	9	35000	-	35000
4	Subarnapur	9	144	67	-	220	555500	-	555500
5	Mayurbhanj	-	6	7	20	33	-	-	78000
6	Khurda	-	-	-	-	-	-	200000	200000
7	Balasore	-	-	-	-	-	-	100000	100000
8	Dhenkanal	-	-	-	-	-	-	200000	200000
9	Sambalpur		3	287	-	290	443000	-	443000
10	Subarnapur	1	39	324	-	364	593500	-	593500
11	Boudh			86		86	129000	-	129000
12	Sambalpur			176		176	334400	-	334400
	TOTAL	26	276	1428	20	1750	3159400	500000	3737400

Chapter – VII

Other Calamities

Heat Wave

In 2011 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:

1. The Collectors were instructed to take required precautionary measures for mitigating the heat-wave situation.
2. Meeting under the chairmanship of Hon'ble Chief Minister was held on 29th February 2012 to review the preparedness activities of the related departments.
3. The Collectors were instructed to hold District level meeting and take necessary measures to tackle the heat-wave situation.
4. Posters on safety tips relating to heat-wave were prepared and distributed by Health & Family Welfare Department and OSDMA for general awareness of the public. Advertisements on such safety tips were also given through local newspapers, radio and television channels.
5. All India Radio, Doordarshan and other Television channels organised discussion and other programmes for creating awareness.
6. Action plan for mitigating water scarcity problems in different towns and rural areas, where acute scarcity of drinking water is felt, was prepared. Required number of water tankers were deployed for supply of drinking water and defunct tube wells were replaced / repaired. Funds amounting to Rs.1341.78 lakh to H & U.D. Department and Rs.4336.00 lakh to R. D. Department were released in order to combat drinking water scarcity problem.
7. Essential medicines, saline and ORS packets were stored in the District Headquarters Hospitals, Community Health Centres and Primary Health Centres. Special arrangements were made and separate beds earmarked for treatment of heat-stroke patients in different Hospitals.
8. The working hour for daily labourers was re-scheduled i.e. from 6 a.m. to 11 a.m. and 3.30 pm to 6 pm. Orders were given to make provision of drinking water at the work site.

9. Plying of buses during peak hours i.e. between 11.00 AM to 3.30 PM was regulated. Orders were given to carry portable water and ORS in public transport vehicles.
10. Power distributing companies were instructed to ensure uninterrupted power supply during the summer.
11. The time table of the schools was re-scheduled from 6.30AM to 10.30 AM.

22 persons lost their lives due to heat-stroke related ailments during 2011.

The district-wise number of human casualties is given below:

Sl.	Name of the District	No. of persons died
1.	Angul	2
2.	Bargarh	2
3.	Dhenkanal	8
4.	Ganjam	1
5.	Jagatsinghapur	1
6.	Kendrapada	1
7.	Sambalpur	4
8.	Sundargarh	3
Total		22

Ex-gratia assistance @ Rs.10,000/- has been provided to the bereaved families of the sunstroke victims from the Chief Minister Relief Fund by the State Government.

Chapter – VIII

State Disaster Response Fund (SDRF)

Expenditure on account of different calamity mitigation measures are met out of SDRF at the State level. As per the procedures and norms prescribed by Govt. of India, the fund is administered by the State Executive Committee headed by the Chief Secretary. The fund is constituted by the sharing of Central Government and State Government at the ratio of 75:25.

When a calamity of rare severity occurs and the response requirements of disasters are beyond the coping capacity of the State, the Government of India sanctions funds out of NDRF for providing immediate relief to the victims.

The position of both SDRF and NDRF is shown below.

FUNDS POSITION 2011-12

(Rs. in lakh)

Category of Funds	Opening Balance	Receipt	Total	Expenditure	Balance
SDRF	2249.00	41116.00	43365.00	40008.00	3357.00
NDRF	0	103882.00	103882.00	78109.00	25773.00
Total	2249.00	144998.00	147247.00	118117.00	29130.00

An amount of Rs.360.17 crore was credited to the fund out of Rs.560.17 crore received from NDRF towards Drought and Un-Seasonal Cyclonic Rain relief measures. Rs.200.00 crore for NDRF had been credited to the fund during the year 2010-11.

UTILIZATION CERTIFICATE

Utilization Certificate amounting to Rs.442.39 crore has been sent to AG, Odisha during the year under report against the funds provided to various departments and districts from 1999-00 till 2011-12.

[Rs. in crore]

Fund	District	Department	Total
SDRF	150.48	174.55	325.03
NDRF	108.57	8.79	117.36
Grand Total	259.05	183.34	442.39

An amount of Rs.5721.28 crore has been received from 1999-2000 to 2011-12 under CRF/SDRF and NDRF/ NCCF, out of which utilization certificate to the tune of Rs.3442.43 crore has already been furnished to AG, Odisha till 31.03.2012. The table below indicates the details.

[Rs in crore]

Fund	Receipt 1999-2000 to 2011-12	UC Submitted 1999-2000 to 2011-12	Percentage
SDRF	3202.47	2108.47	65.84
NDRF	2518.81	1333.96	52.96
Total	5721.28	3442.43	60.17

Chapter – IX

Management Information System

Based on the verdict and observation of Supreme Court derived out of Writ Petition (Civil) No.196/2001, the Management Information System for Tracking Hunger and Malnutrition came into force from 2nd fortnight of January 2003 in the State. It is the prime and foremost duty of State Government to prevent death due to starvation or malnutrition and ensure food security to the needy people. Accordingly, Government of Odisha introduced a suitable policy for regular monitoring of malnutrition and hunger for ensuring Food security etc. with emphasis on following categories.

1. Employment Generation Work
2. Food for Work
3. For vulnerable population
4. In scarcity pockets
5. In epidemic prone areas
6. Of Individual with prolonged illness
7. For Mothers and children with malnutrition
8. Social Security Net

Keeping in view the guidelines and format issued on these aspects, district authorities of the State are submitting required information collecting from grass-root level (G.P. level) twice a month i.e. at the end of each fortnight to Special Relief Commissioner, Odisha. On receipt of the information from the Collectors of the Districts, compilation and analysis work are done at SRC level and evaluation of the data is made as per the prescribed indicators. As monitoring authority, advice and guidance are given to the concerned Departments of Government and all Collectors for making necessary interventions on the feedbacks from the field and submit regular compliance thereof. Thus, Management Information System has proved its utility for effective management of disaster.

