

NIDM

Odisha

National Disaster Risk Reduction Portal



Map showing State boundary and road network¹

1. STATE PROFILE

1.1 General^{2, 3, 4}

Orissa is a state on the eastern seaboard of India, located between 17°49' and 22°36' North latitudes and between 81°36' and 87°18' East longitudes. It spreads over an area of 1,55,707 sq km. and is broadly divided into four geographical regions, i.e. Northern Plateau, Central River Basins, Eastern Hills and Coastal Plains. It has a 480 km coastline. Its population was 4,19,47,358 as per the 2011 census. Administratively, the state is divided into 30 districts, 58 sub-divisions, 314 blocks (administrative units in descending order of geographical area and population) and 103 urban local bodies. The average density of population comes to 269 per sq km. with significantly higher density in the coastal areas compared to the interior parts.

State at a glance^{3, 4}

Total Area (Sq. Km)	155,707
Total Population as per 2011 Census	4,19,47,358
Total Population - Male	21,201,678

Total Population - Female	20,745,680
Number of District as per 2011 census	30
Number of Sub-divisions as per 2011 census	58
Number of Tehasils as per 2011 census	316
Number of Grama Panchayats	6,234
Number of Blocks	314
Total Number of Villages, as per 2011 census	51,313
Number of Towns including Census Towns (includes ULBs and Industrial Towns)	223
Number of Municipal Corporations	03
Number of Municipalities	37
Number of Notified Area Councils	63
Number of Industrial Towns	02

1.2 Physiography ^{5, 6, 7, 8, 9}

It is surrounded by West Bengal in the North East, Bihar in North, Andhra Pradesh on the South East, Madhya Pradesh in the West and Bay of Bengal in the East. The area is divided into two natural divisions: The Coastal Plain & North Western Plateau. Mahanadi is a very large river crosses through the state and its big delta merges into the deltas formed by the Brahmani and the Baitarani. The deltas are fertile and are provided with irrigation facilities.

The state of Orissa located on the eastern coast of Indian peninsula is quite rich in natural resources and has several bio-diversity hot spot areas of the Indian subcontinent. It has varied and wide spread forests harbouring dry deciduous, moist deciduous forests as well as mangroves with several unique, endemic, rare and endangered floral and faunal species. Orissa is one of the richest bio-diversity regions in Southeast Asia. It has 7 major river deltas of varies sizes and shapes formed by the rivers Subarnarekha, Budhabalanga, Baitarani, Brahmani, Mahanadi, Rushikulya and Bahuda. This region has 5 major morphological zones – the coastal plains, the middle mountainous and highlands region, the central plateaus, the western rolling uplands and major flood plains. Bhitarkanika Wildlife Sanctuary (BKWS) has been designated a Ramsar site in 2002(2nd in the state). It was declared as Bhitarkanika National Park in 1988. It is located in Kendrapara district. The deltaic region is surrounded by the rivers Brahmani and Baitarani sea. The dominant vegetation type is mangrove.

The state is broadly divided into 4 Physiographic Zones namely Coastal Plains, Central Table Land, Northern Plateau and Eastern Ghats. These are further sub-divided into 10 Agroclimatic Zones namely North Western Plateau, North Central Plateau, North Eastern Coastal Plain, East and South Eastern Coastal Plain, North Eastern Ghat, Eastern Ghat High Land, South Eastern Ghat, Western Undulating Zone, Western Central Table Land and Mid Central Table Land. The state has different soil types ranging from fertile alluvial deltaic soils in the coastal plains, mixed

red and black soils in the Central Table Land, red and yellow soils with low fertility in the Northern Plateau and red, black & brown forest soil in Eastern Ghat region. The soil types differ widely from highly acidic to slightly alkaline and from light sandy to stiff clays. The soils are mainly acidic with the degree of acidity varying widely. About 4 lakh hectares are exposed to saline inundation, 3.54 lakh hectares to flooding and 0.75 hectares to water logging.

The Coastal Plains form an extensive alluvial tract lying between the Eastern Ghat hill ranges and the coast. It stretches for about 480 km and include parts of Balasore, Cuttack, Puri and Ganjam districts. The Chilka Lake, the widest lagoon in India, is a prominent coastal feature of Odisha.

The Central River Basin occurs between the Northern Plateau and the Eastern Ghat hill ranges and covers parts of Bolangir, Sambalpur, Dhenkanal and Cuttack districts. It comprises the catchment areas of the major rivers of the state, viz., Mahanadi, Brahmani, Tel and Baitarani rivers and their tributaries. Though largely a peneplain, the Central River Basin is occasionally marked by isolated hills, which rise abruptly from the plains.

The Northern plateau, covering the districts of Mayurbhanj, Keonjhar, Deogarh, Sundargarh and parts of Dhenkanal, Balasore and Sambalpur, is an undulating country having a general slope from north to south. The average elevation of the plateau in the central area, forming the watershed of the Brahmani and Baitarani rivers, is about 1000 m above M.S.L. Hill ranges mark the northeastern part of the plateau with elevations above 1000 m. Notable peaks are represented by Malaygiri (1188 m) in Dhenkanal district, Mankadanacha (1117 m) in Kendujhar district and Meghasani (1166 m) in Mayurbhanj district.

In the south and southwestern parts of the state, the Eastern Ghats hill ranges stretch for about 400 km in a NNE-SSW direction covering the districts of Koraput, Navrangpur, Malkanagiri, Ganjam, Kalahandi, Boudh, Phulbani and parts of Puri, Khurda, Cuttack, Dhenkanal and Bolangir districts. Most of this segment has a general elevation of ~ 900 m above M.S.L. and form the watershed of some rivers. Major hill ranges in the Eastern Ghats rise above 1500 m; the notable peaks being Deomali (1673 m) and Turiakonda (1599 m) in Koraput district and Mahendragiri (1531 m) in Ganjam district.

1.3 Climate ¹⁰

The climate of Odisha, an East Indian state that hugs the coast of the Bay of Bengal is represented by tropical monsoon weather. Searing hot summers with considerably high monsoon downpours and cool and pleasant winters mark the Odisha climate.

The climate of Odisha is distinctly related to the geography of Odisha. The weather of Odisha can be classified under three heads namely, summer, monsoon and winter. The state is also endowed with relatively short stints of the refreshing spring and the mellow autumn.

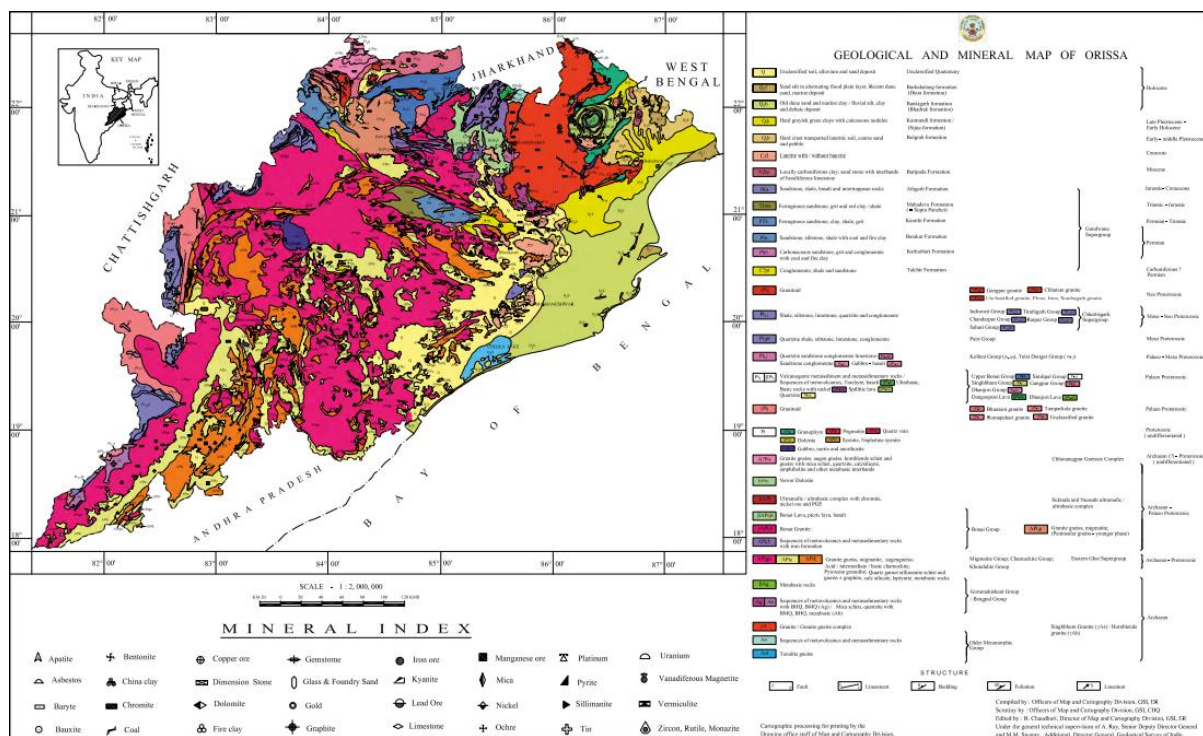
The scorching heat of the Odisha summer makes the mercury soars to unbearable heights. However, Monsoon soon creeps in to offer a welcome break. During monsoon, the cumulonimbus clouds unfold with driving rains that wash the terrains and unfold a rich blue sky. By early June, the southwest monsoon announces its arrival in the state and departs by the middle of October. Rainfall is the main source of water in Odisha that varies from 1200 mm to 1700 mm across the state. The average rainfall in Odisha is measured as 1482 mm. Odisha receives about 78% of rainfall between the months of June and September. Odisha receives the remaining 22% of the rainfall throughout the year. The rains also play a pivotal role in agriculture, the principal source of livelihood of the populace of Odisha.

1.4 Geology⁹

The state comprises dominantly of Pre-cambrian rocks (73%) ranging in age from Mesoarchaeon to Neoproterozoic. Phanerozoic rocks, represented by the Gondwana Supergroup (Late Palaeozoic – Middle/Late Mesozoic) and minor Tertiary patches, constituting about 8% of the state. The remaining 19% of the state is covered by Quaternary formations. The State of Odisha exposes rocks ranging in age from Meso archaean to Recent.

The geographic distributions of the major Precambrian litho-tectonic domains are:-

Eastern Indian Craton (North Odisha Craton) and Singhbhum-Gangpur Odisha Mobile Belt	Northern and Northwestern
Part of Bastar Craton	Western Odisha
Part of Eastern Ghats Mobile Belt(EGMB)	Central and Southern Odisha



Map showing geology of the State⁹

1.5 Soil¹¹

Soils of Orissa influenced by climate, topography and parent material are the most heterogeneous for which the average productivity of many crops is low. Identification of specific soil problems and their efficient management would accelerate the crop productivity. The soils of Odisha have been divided into 8 broad groups. Taxonomically these 8 broad groups of soil come under 4 orders of 10 sub orders and 18 great groups.

a) Red Soil

Red soil covers about 7.14 m. ha of lands and being the highest coverage of all soil groups of the state, extend to the districts of Koraput, Rayagada, Nawrangpur, Malkanagiri, Keonjhar, Ganjam, Kalahandi, Nuapada, Bolangir, Dhenkanal and Mayurbhanj. The soils are strongly to moderately acidic with low to medium organic matter status and poor water retentive capacity. These soils are deficient in nitrogen and phosphorus. Presence of excess amounts of oxides of iron imparts red colours to the soil.

Mixed red and Yellow Soil

These soils occupy 5.5m ha of lands being the second highest in area. These soils occur in the district of Sambalpur, Bargarh, Deogarh, and Sundargarh. Mixed red and yellow soils occur as a catenary associations in undulating and rolling terrains which differ in depth, texture, and colour. The soils are moderately shallow in depth and coarse-textured.

b) Black Soil

There are no regular occurrence of black soils in the state. These soils occur sporadically in the districts of Puri, Ganjam, Malkangiri, Kalahandi, Nuapada, Bolangir, Sonepur, Boudh, Sambalpur, Bargarh and Angul covering an area of 0.96 m. ha. of lands. The black colour of the soil is due to presence of titaniferous magnetite, humins, bitumins etc. These soils are formed due to weathering of basic rocks in the low lying areas.

c) Laterite Soil

Lateritic soils occupy 0.70m. ha of lands in the districts of Puri, Khurda, Nayagarh, Cuttack, Dhenkanal, Keonjhar, Mayurbhanja and Sambalpur. Lateritic soils are characterised by compact vesicular structure and rich in hydrated oxides of iron and aluminium with small amounts of manganese, titanium and quartz. These soils are loamy sand to sandy loam in the surface having hard clay pan in the subsoil, crusting is its problem in upland laterite.

d) Deltaic alluvial

Those soils cover 0.67m. ha of lands and occur in the deltaic regions of the rivers such as Mahanadi, Brahmani, Baitarani, Subarnarekha and Rushikullya in the districts of Balasore, Bhadrak, Jajpur, Kendrapara, Jagatsinghpur, Cuttack, Puri, Gajapati and Ganjam. Textural class of the soil varies from coarse sand to clay and is mostly dependent on geomorphology of the flood plain and the type of alluvial material carried by river water.

e) Coastal Saline and Alluvial Soil

These soils occur along the coastal belt of the state in a narrow strip extending 5-25 km inward. The salinity occurs due to littoral deposits of estuarial intrusion of brackish tidal water from sea through creeks. Nearly 0.254m ha. of saline soils are distributed in the districts of Balasore, Bhadrak Jagatsinghpur, Kendrapara, Puri, Khurda and Ganjam. Saline soils are rich in soluble salts of chloride and sulphate in conjunction with sodium and magnesium.

f) Brown Forest Soil

These soils being associated with forest areas are distributed in the districts of Phulbani, Kandhamal, Rayagada and parts of Ganjam and Nayagarh and cover about 0.17 m.ha. These are brown to gray brown in colour, light texture and acidic in reaction. Organic matter and nitrogen content of the soils are medium to high.

g) Mixed red and black soil

These soils occur as association of both red and black soil together in which black soil occurs in patches within the predominant red soil. The red and black soils are so intermixed that red soils are found in upper ridges whereas, black soils occur in lower ridges. The soil occupies about 0.16 m. ha of lands in the western districts of Sambalpur, Bargarh, Sonepur and Bolangir.

1.6 Agro-climatic zones ^{12, 13}

The state can be divided into ten agro-climatic zones on the basis of soil, weather and other relevant characteristics. Its land can be classified into three categories namely low, medium and up-lands.

Table showing Agro-climatic zone of the State ¹³

Sl_No	Agro-Climatic Zone	Climate	Mean Annual Rainfall (in mm)	Soil group
1.	North Western Plateau	Hot & Moist	1648	Red & Yellow
2.	North Central Plateau	Hot & Moist	1535	Red loamy
3.	North Eastern coastal plateau	Hot & moist sub-humid	1568	Alluvial
4.	East & South Eastern Plateau	Hot & humid	1449	Coastal alluvial saline
5.	North Eastern Ghat	Hot & moist Sub-humid	1597	Laterite and brown forest
6.	Eastern Ghat high land	Warm & humid	1522	Red
7.	South Eastern Ghat	Warm & humid	1522	Red, mixed red and yellow
8.	Western undulating	Warm & moist	1527	Black, mixed red & black
9.	West Central table land	Hot & moist	1527	Red, heavy textured colour
10.	Mid Central table land	Hot & dry sub-humid	1421	Red loamy, laterite mixed red & black



Map showing agro-climatic zones of the State¹⁴

1.7 Socio-Economic conditions^{8, 15}

Nearly 85% of its population live in rural areas and depend mostly on agriculture for their livelihood. The state has abundant mineral resources including precious and semi-precious stones. It has also plentiful water resources. The total cultivable land is nearly 65.59 lakh hectares.

Orissa is the tenth largest state in area and eleventh in population in the country, accounting for 5% of the geographical area and 4% of the population of the country. Cultivators and Agricultural labourers constitute 65% of the total workforce. Agriculture provides direct or indirect employment to 65% of the total work force and contributes 26% of the net state domestic product.

1.8 Agriculture^{8, 15}

The state has a cultivated area of 62 lakh hectares out of which 27 lakh hectares is high land, 19 lakh hectares medium and 16 lakh hectares low land. The paddy area during kharif is about 42 lakh & during Rabi 2.5 lakh hectares.

Kharif is the main cropping season and rice is the principal crop during kharif season. Cropping during Rabi season is mainly confined to irrigated areas and areas with residual moisture. Other important crops produced in the state are pulses (Arhar, Mung, Biri, Kulthi), Oil seeds

(Groundnut, Til, Mustard and Niger), Fibres (Jute, Mesta, Cotton), Sugarcane, Vegetables and Spices, Mango, Banana, Coconut & Cashew Nut are the main Horticultural crops of the state.

Due to frequent occurrence of these natural calamities there is always reduction in kharif rice production. Similarly in drought years there is considerable loss in production of pulses and oilseed crops during Rabi season and kharif season. Another problem in the state is operational household along with poverty line. The average size of the holding is only 1-3 hectares out of cultivable area of 65-99 lakh hectares, about 41% is under irrigated conditions. The total irrigation potential created so far from all sources is about 39.31 lakh hectares (kharif 26.65 lakh and rabi 12.66 lakh hectares). The gross irrigated cropped area is 27 lakh hectares.

Total geographical area of the state is 155.71 lakh hectares out of which 58.13 lakh hectares is forest area, 4.82 lakh hectares of miscellaneous tree & groves, 4.43 lakh hectares of permanent pasture, 3.92 lakh hectares culturable waste land and 8.43 lakh hectares barren & unculturable land. The State has a cultivated area of 62 lakh hectares out of which 27 lakh hectares is high land, 19 lakh hectares medium and 16 lakh hectares low land.

Socio-economic profile at a glance ^{3,4}

Total Population as per 2011 Census (crore)	4,19,47,358
Total Male	2,12,01,678
Total Female	2,07,45,680
Decadal growth rate 2001-2011	13.97%
Density of Population per sq. km. 2011 Census	269
Sex Ratio (Females per 1000 Males) 2011 Census	978
Rural Population (%): 2001 Census	85
Forest Area (Sq. Km)	58,136 (37% of Geog. Area)
Long Coast Line (km)	480
Net Irrigation Potential Created (Lakh ha)	28.56 (57.23% of Irrigable Area)
Total Literacy (%) as per 2011 census	73.45
Total Literacy (%) as per 2011 census - Male	64.36
Total Literacy (%) as per 2011 census - Female	82.40
Total Literate	2,71,12,376
Male Literate	1,53,26,036
Female Literate	1,17,86,340

2. DISASTER RISK PROFILE ^{16, 17, 18, 19}

2.1 Vulnerability of the State ^{16, 17, 18, 19}

Orissa is vulnerable to multiple disasters. Due to its sub-tropical littoral location, the state is prone to tropical cyclones, storm surges and tsunamis. 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. Though a large part of the state comes under Earthquake Risk Zone-II (Low Damage Risk Zone), the Brahmani Mahanadi graben 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. Besides these natural hazards, human-induced disasters such as accidents, stampede, fire, etc, vector borne disasters such as epidemics, animal diseases and pest attacks and industrial / chemical disasters add to human suffering.

The State Odisha has a history of recurring natural disasters. While the coastal districts of Odisha are exposed to floods and cyclones, western Odisha is prone to acute droughts; a large section of the State is also prone to earthquakes. In addition, the State is also affected by disasters like heat waves, epidemics, forest fire, road accidents etc. The history of disasters substantiates the fact that about 80% of the State is prone to one or more forms of natural disasters.

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With 80% of annual rainfall concentrated over 3 months, the State is highly vulnerable to floods. High population density, encroachment on the flood plains, poor socio-economic condition, weak infrastructure and mud houses increase the vulnerability. Out of total geographical area of 15.751 lakh hectares 1.40 lakh hectares are flood prone. There are 516 nos. of vulnerable points in Odisha. Floods are the most recurrent disasters in the State. In the last 25 years, floods have occurred 12 times with varying severity. Report says floods occurred in 27 districts in July-August 2006 with a loss of 90 human beings, 1656 livestock. 3.104 lakh hectares of crop and 120446 nos. of houses damaged.

Odisha is always vulnerable to cyclones in April-May and September-November. Once every few decades a super cyclone strikes Odisha. Recent Super Cyclone that hit Odisha in the last Century were in 1942, 1971 and 1999. The Super Cyclone of 1999 killed about 10,000 and traumatized millions who survived its wrath. Over 15 million people were affected. Throughout India's massive coastline, there are 250 cyclone-warning sets, of which 34 are in Odisha, covering 480 Km of coastline. Odisha Disaster Mitigation Authority (OSDMA) promotes Community Based Disaster Preparedness activities so that people can face emergencies in an organized manner. OSDMA was formed to coordinate and implement the reconstruction work

after the super cyclone, keeping in mind the need for disaster preparedness to face any future eventuality. During Super Cyclone of 1999, 97 nos. of blocks and 28 ULBs and about 12569000 population were affected. The total agricultural land affected was 1733000 hectares with 9885 nos. of human casualties.

2.2 Major Disaster profile

The pattern of drought in the State is of a varied one, sometimes affecting the entire state, sometimes a few regions, and sometimes a few districts. However, the contiguous patch consisting of the Subdivisions of Padampur, Bolangir, Titlagarh, Patnagarh, Nuapada, Khariar, Bhwanipatna and Phulbani comprising of 47 blocks have been identified as drought prone zone. More stress is being given on minor irrigation, crop diversification, soil & water conservation and rainwater harvesting.

In the State, 2000 people died due to heat wave during 1998. After 1998, the frequency of occurrence of heat wave decreased.

The seismic zoning of Odisha falls between zones I to II i.e. low damage risk zone and moderate damage risk zones. The parts of districts coming under moderate risk zones are: Sundergarh, Jharsuguda, Bargarh, Sambalpur, Deogarh, Angul, Dhenkanal, Jajpur, Cuttack. Khurda, Puri, Jagatsinghpur, Kendrapara, Bhadrak, Mayurbhanj & Balasore. While districts coming under low damage risk zones are Malkangiri, Koraput, Rayagada, Gajapati, Ganjam, Kandhamal, Nawarangpur, Kalahandi, Nuapada, Bolangir, Sonapur, Boudh, Nayagarh and Keonjhar. The entire districts of Jagatsinghpur comes under the moderate damage risk zone. In recent years, the earthquake in Deogarh-Bonaigarh area in 1995 caused substantial damage. Prior to this, earthquake tremors were felt in Talcher and Rengali Dam area. Current seismicity is related to activity along Gondwana Basin boundary faults and those associated with continent – oceanic crust transition zone in the Bay of Bengal.

After the Bhopal gas tragedy, 2 of the 20 recorded major chemical accidents in the country have occurred in Odisha. One in 1987 due to ammonia and methane gas leak and other one in 1989 due to chlorine leak. The major potential hazard areas in Odisha are: Paradeep, Rourkela, Ganjam, Cuttack, Angul-Talcher, Balasore, Jharsuguda-Belpahar and Rayagada.

There has been an alarming increase in the number of road accidents in the state in recent years. Poor road conditions, weak enforcement of laws, disregard for safety values, mechanical failures and lack of road awareness are the main causes of road accidents.

a) Cyclone ²⁰

Date/Year	Category of Cyclone	Landfall and loss
31 October, 1831	Very Severe Cyclonic Storm	Crossed Orissa Coast near Balasore, Loss of life-50,000
22 September, 1885	Super Cyclone	Crossed Orissa Coast at False

		Point, Loss of life- 5000
26-30 October, 1971	Very Severe Cyclonic Storm	Crossed Orissa Coast near Paradeep, Loss of life- 10,000

b) Flood ^{21, 22, 23, 24, 25}

The 482 km long of coastline of Orissa exposes the State to flood, cyclones and storm surges. Heavy rainfall during monsoon causes floods in the rivers. In Orissa, rivers such as the Mahanadi, Subarnarekha, Brahmani, Baitarani, Rushikulya, Vansadhara and their many tributaries and branches flowing through the State expose vast areas to floods. Damages are caused due to floods mainly in the Mahanadi, the Brahmani, and the Baitarani. These rivers have a common delta where flood waters intermingle, and when in spate simultaneously, wreak considerable havoc. This problem becomes even more acute when floods coincide with high tide. The entire coastal belt is prone to storm surges. The storms that produce tidal surges are usually accompanied by heavy rain fall making the coastal belt vulnerable to both floods and storm surges. People die; livestock perish; houses are washed away; paddy and other crops are lost and roads and bridges are damaged. The floods of 1980, 1982, 2001 and 2003 in the State were particularly severe; property worth crores of rupees was destroyed in the floods.

Due to flood/heavy rain in 2006, 245 Blocks, 3574 GPs, 18912 Villages, 67.39 lakh Population and 4.90 lakh hectare crop areas of the State was affected. 105 persons lost their lives due to flood/heavy rain. 28,327 hectares of crop area were under sand cast due to the floods.

Due to continuous heavy downpour over upper & lower catchments of river Subarnarekha, Jalaka, Baitarani, Budhabalanga and their tributaries from 4th to 6th July, 2007 flood brought havoc in five districts namely Balasore, Bhadrak, Jajpur, Keonjhar and Mayurbhanj in the first week of July. Storm surge and saline inundation affected parts of Kendrapara district during the said period.

The State of Orissa was ravaged by floods in June and September during the year 2008. The floods that occurred in June 2008 and in September 2008 are unprecedented. The floods of June and September 2008 were calamities of rare severity. The floods in June'08 brought havoc in districts namely Balasore, Bhadrak, Jajpur, Mayurbhanj and Keonjhar. The flood in September 2008 was due to heavy rainfall in the upper as well as in lower catchments of the Mahanadi River System resulting out of the effect of a deep depression in the Bay of Bengal from 16th to 21st September 2008. During September, 19 districts namely, Angul, Bargarh, Bhadrak, Bolangir, Boudh, Cuttack, Gajapati, Jagatsinghpur, Jajpur, Kalahandi, Kendrapara, Keonjhar, Khurda, Nayagarh, Puri, Rayagada, Sambalpur, Nuapara and Subarnapur had been seriously affected.

Flood 2009 affected 15 districts namely Balasore, Bhadrak, Cuttack, Ganjam, Jajpur, Kalahandi, Kandhamal, Kendrapada, Keonjhar, Khurda, Koraput, Nayagarh, Puri, Subarnapur & Sundergarh. About 56 people lost their lives in the flood.

c) Earthquake ²⁶

The first recorded earthquake of the State was 1676 AD in Balasore area and the first earthquake in which 11 fatalities informed was Berhampur Earthquake of 1897.

d) Heat Waves ²⁷

In the year 1998 the State of Orissa faced an unprecedented heat wave situation, as a result of which 2042 persons lost their lives.

e) Tsunami ²⁸

The destructive tsunami of Dec 26th, 2004 on the Indian Coast, in terms of its impact, seems to have occurred for the first time in the known history. As per the assessment made, 266 villages of different districts are vulnerable to Tsunami.

f) Lightning ²⁹

A good number of people, nearly 300 persons succumb to death due to lightning in the State every year.

3. INSTITUTIONAL SETUP

3.1 Orissa State Disaster Mitigation Authority (OSDMA) ^{30, 31}

Orissa State Disaster Mitigation Authority (OSDMA) was set up by the Government of Orissa as an autonomous organization vide Finance Department Resolution No. IFC- 74/99-51779/F dated the 28th December 1999 (in the intermediate aftermath of the Super-cyclone in 1999). It was registered under the Societies Registration Act, 1860 on 29.12.1999 as a non-profit making & charitable institution for the interest of the people of Orissa, with its headquarters at Bhubaneswar and jurisdiction over the whole State. The Department of Revenue is the administrative department of OSDMA vide Revenue Department Resolution No.39373/R dated 26th August 2000. Subsequently, the name of the Authority was changed from Orissa State Disaster Mitigation Authority to **Orissa State Disaster Management Authority (OSDMA)** vide Revenue & Disaster Management Department Resolution No. 42317/R&DM dated 27th September, 2008.

Aims & objectives of OSDMA

The Authority has the mandate to not only take up mitigation activities but also relief, restoration, reconstruction and other measures. These activities cover the entire gamut of disaster management including preparedness activities:-

- Coordinate with the line departments involved in reconstruction,
- Coordinate with bilateral and multi-lateral aid agencies,
- Coordinate with UN Agencies, International, National and State-level NGOs,
- Network with similar and relevant organizations for disaster management.

The Chief Secretary to Government of Orissa is the Chairman of the Authority and has overall power of supervision, direction and control over the affairs of the Authority and the functioning of the office bearers. The Managing Director of the Society appointed by the Government of Orissa is its Member Secretary and Chief Executive Officer of the Society. He remains in overall charge of planning, implementation and monitoring of all activities of the Authority. He remains in overall charge of the funds of the Authority.

ORGANISATION CHART OF OSDMA

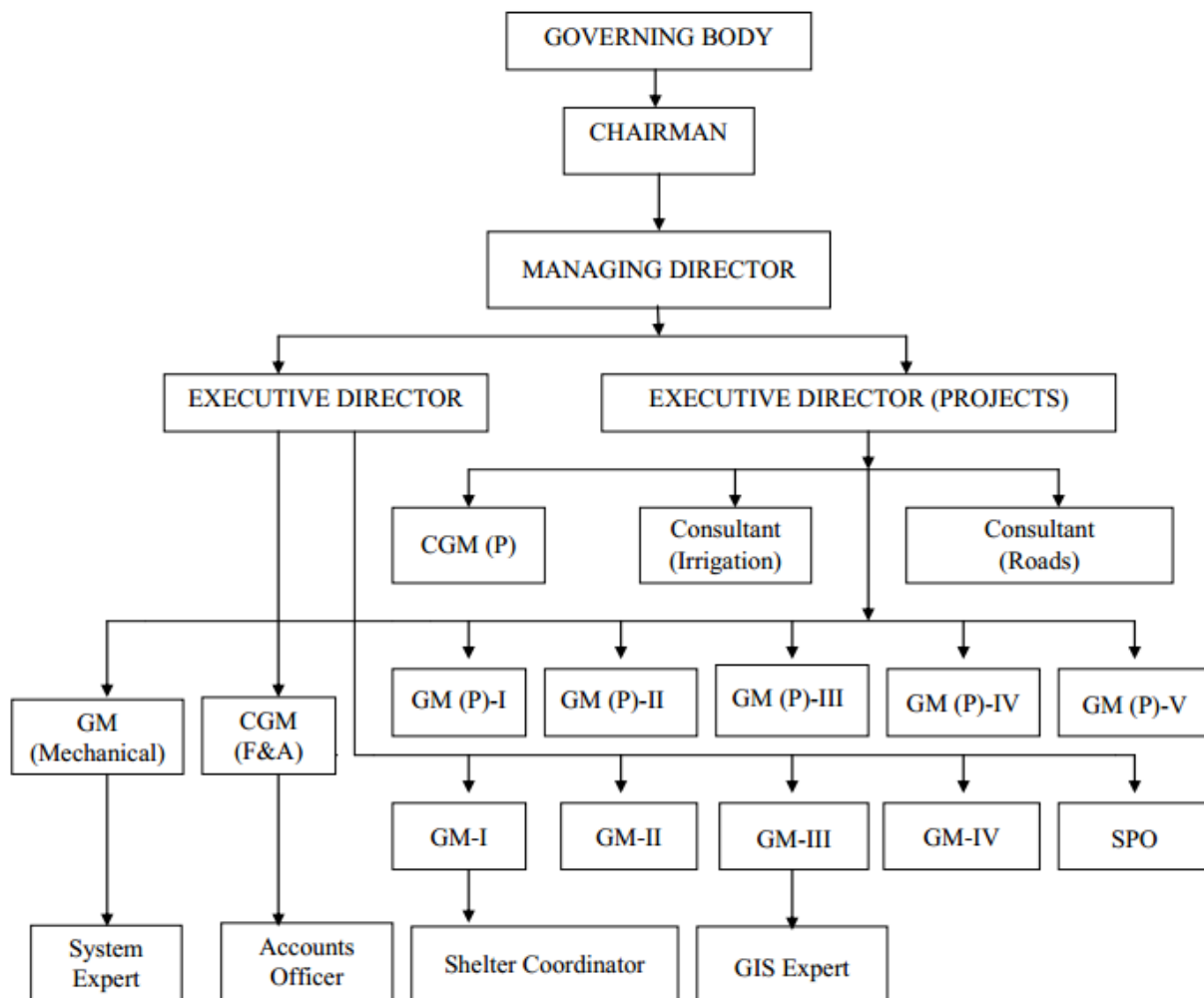


Chart showing organization and structure of OSDMA ³¹

3.2 Odisha Disaster Rapid Action Force (ODRAF) ³¹

Five Orissa Disaster Rapid Action Force (ODRAF) units have been set up at Cuttack, Chatrapur, Balasore, Jharsuguda and Koraput to assist the civil Administration at the time of calamities to clear relief lines, take up search & rescue operations and help in management of disasters. The ODRAF units have been carved out of the Orissa State Armed Police (OSAP) Battalions and the Armed Police Reserve (APR) of District Police.

Mock drills have been conducted involving ODRAF, State Fire Service, National Disaster Response Force (NDRF), State Port Organisation and Community Volunteers for better coordination among the stakeholders for effective management of disasters.

3.3 Strengthening of Emergency Operation Centres (EOC) ³¹

Multi-hazard resistant Emergency Operations Centre (EOC) buildings have been constructed at 16 District headquarters and the State level EOC has been set up in the Cell Office of SRC at Rajiv Bhawan.

4. INITIATIVES

4.1 State Disaster Management Policy (SDMP) ³²

In the context of proclamation of International Decade for Natural Disaster Reduction (IDNDR), National initiatives and State's own experience, the State Govt. felt it necessary to have a specific policy for disaster management and to provide necessary guidelines on all aspects of emergency management. The focus of the Disaster Management Policy shall be on total risk management and vulnerability reduction by strengthening the physical infrastructure as well as bio-physical, psychological, social and economic status of the people and to make the people increasingly disaster resilient as well.

Revenue Department of the State will be the administrative department for disaster management under the general guidance and supervision of the Government. The OSDMA will play a coordinating role in the pre-disaster and post-disaster phases, while Special Relief Organization will play the lead role during the response phase.

i. Principles of the Disaster Management Policy

- Take a proactive approach to disaster management and promote a culture of prevention and preparedness among individuals and institutions.
- Follow a multi-hazard approach to disaster management
- Shift from a relief and welfare approach to a rights and entitlement-based approach to humanitarian assistance.
- Since sustainable development will not be possible without the active involvement of the communities, make the vulnerability reduction programmes community driven.
- Integrate Disaster Management into Development Policy and Planning.
- Institutionalize efficient, well-coordinated and participatory disaster management initiatives as one of the basic ingredients of good governance.

- Ensure quality at all stages of emergency management including prevention, mitigation, relief and reconstruction and make their adoption mandatory. For doing so, universally accepted minimum standards will be adopted. If necessary, the standards would be modified taking into account local conditions and customs.
- Attempt harmonious blending of all disaster management interventions with local cultural ethos.
- Focus on protection of the environment.
- Promote inter-agency coordination and cooperation for Disaster Management.
- Involve all stakeholders in disaster management and define their roles in different stages of disasters.
- Create an enabling environment for ensuring higher participation of all stakeholders
- Work on legislation(s) to provide statutory backing to essential disaster management functions and agencies.
- Establish a trigger mechanism for emergency operations.
- View people as valuable partners and strengthen community-based coping mechanisms for dealing with disasters.
- Promote a spirit of volunteerism, develop a cadre of well-trained volunteers whose services will be utilised during emergencies.
- Document and use people's indigenous knowledge, whenever possible.
- Share information and knowledge about disasters and their management with all stakeholders.
- Develop a network amongst various disaster management entities using OSDMA as the main hub.
- Establish an Institute dedicated to conducting research, development and training on disaster management related activities.
- Make Disaster Management a part of the educational system and curricula.
- Decentralise management of disasters to the Block, Gram Panchayat / Municipality levels and strengthen their institutional and functional capacities to be effective as the first responders to disaster events.
- Ensure that humanitarian assistance is provided in an equitable, consistent and predictable manner.
- Emphasize participation of women in all stages of Disaster Management and recognise their special problems in disaster situation.
- Recognise the higher vulnerability of children, elders, physically and mentally challenged, during and after emergencies and design interventions accordingly.

ii. Strategy

Disaster Management will have an integrated approach covering the 3 phases of disaster:

- The pre-disaster phase

- The response phase and
- The recovery and Rehabilitation phase.

Coordinated efforts of some or all the following stakeholders would be required for effective disaster management:

- The community affected/ vulnerable to disasters
- Volunteer based organizations such as NSS, NCC, Indian Red Cross, Civil
- Defence, Scouts and Guides, Nehru Yuva Kendra, etc.
- Civil Society Organizations including Community-based Organizations
- Panchayati Raj Institutions and Urban Local Bodies
- Police, Home Guards, paramilitary forces
- District Administration
- Orissa Disaster Rapid Action Force (ODRAF)
- Special Relief Organization
- Orissa State Disaster Mitigation Authority (OSDMA)
- State Govt. Departments
- Govt. of India organizations, agencies in the State
- Public Sector Organizations
- Private Sector Organizations
- United Nations Agencies
- Bilateral and multi-lateral agencies

iii. Prevention, Preparedness and Mitigation

a) Integrating Disaster Management with Development Planning

All aspects of disaster management will be integrated with the normal development planning at all levels

b) Capacity Building

The Government will consciously promote programmes and projects to augment the capacity of the State and the people to be better prepared to face disasters. Community Based Disaster Management Plans and mock drills will be undertaken to ensure better preparedness.

c) Planning for Disaster Management

A State Disaster Management Act will be notified to promote disaster management, based on multi-disciplinary, inter-departmental, inter-sectoral and unified command approach at all levels.

d) Role clarity and unified command system

A clear chain of command will be established with Special Relief Organisation as the nodal agency for rescue and relief operations and OSDMA as the nodal agency for preparatory, preventive, mitigative and reconstruction activities.

e) Trigger mechanism

A trigger mechanism will be put in place, which would ensure warning dissemination, quick/advance mobilisation of human and other resources, prompt evacuation and rescue operations as well as steps for recovery and reconstruction.

f) Constitution of Specialized Task Forces

Specialized Action Group(s) will be formed and provided with the required training and equipment to enable them to carry out search and rescue work, establish communications, provide emergency medical services, set up temporary shelters, maintain law and order, etc

g) Risk assessment and vulnerability reduction

A systematic risk assessment for different types of disasters will be undertaken and coordinated by the OSDMA.

h) Role of local self-government

Being closest to the people, the role of the local self-government institutions assumes greater importance in disaster management. They will be the first responders in emergencies. Emphasis will be given to strengthen and empower these institutions and their functionaries, to effectively discharge their functions.

i) Community participation

The Government will actively promote, through its own agencies, NGOs and other stakeholders, active community participation in risk assessment, vulnerability analysis, mitigation, planning and implementation of response and rehabilitation activities.

j) Synergy of efforts

Active participation of NGOs, community based organizations (CBOs) and other civil society institutions are essential for effective disaster management. Therefore, their help and cooperation will be solicited.

k) Coordination

All agencies at the State and District levels will inform the concerned officials (MD, OSDMA/ SRC/ concerned District Collector) before the commencement of any new activities and submit necessary reports requested for or published by the agency. All agencies involved in emergency relief and other disaster management activities will have to operate within the framework laid

down in this policy and other related laws, codes and government notifications in force and guidelines issued from time to time.

l) Training Institutions and Training of Stakeholders

The OSDMA will play a nodal role in this process. Officers, posted to key positions in the field, will be given training in disaster management. Training and orientation will be organized for elected people's representatives, Government officials, NGOs, community leaders, teachers, students and disaster response task forces.

m) Communication System

Constant endeavour will be made to make the communication systems linking the State, District, Block, Gram Panchayat as safe as possible. Application of Information Communication Technology (ICT) in early warning systems, evacuation planning & execution and rapid damage assessment will be promoted.

n) Inventory of Resources

A detailed inventory of resources, both human and material, available with all stakeholders required for emergency management functions will be prepared at the State, District, Block and GP/ Municipality levels.

o) Shelter needs

An assessment of shelter requirements during emergencies in areas vulnerable to frequent disasters like floods and cyclones will be made. Existing community buildings will be strengthened and, if necessary, shelters will be constructed to house the vulnerable population in times of emergencies.

p) Strengthening of Infrastructure

Concerted efforts will be made to strengthen roads, bridges, embankments, canals & drains, dams, public & community buildings, power transmission & distribution networks and other critical infrastructure in the State with a view to making those disaster resistant.

q) Control Room & Emergency Operation Centre

The State level control room will be suitably equipped. A standby State level control will be developed, which will be immediately activated if the main control room gets affected due to any disaster. The district control rooms will be strengthened adequately. During emergencies temporary control rooms will be set up as close as possible to the location of the crisis.

4.2 Disaster Risk Management (DRM) Programme ³¹

GoI-UNDP DRM programme was implemented in 155 disaster prone blocks spread over 16 districts of Angul, Balasore, Bhadrak, Cuttack, Ganjam (Part), Jajpur, Jagatsinghpur, Kendrapada, Khordha, Keonjhar (Part), Koraput, Mayurbhanj (Part), Nuapada, Puri, Rayagada and Sambalpur. Under the programme, Disaster Management Committees were formed at district and block level. Members of Block Disaster Management Committees were trained.

4.3 Urban Earthquake Vulnerability Reduction Programme (UEVRP) ³¹

Govt. of India-UNDP Urban Earthquake Vulnerability Reduction Project (UEVRP), a component of the Government of India UNDP Disaster Risk Management (DRM) programme was implemented in Bhubaneswar, Cuttack and Sambalpur cities. These urban areas come under the Earthquake Risk Zone-III i.e. moderate damage risk zone as per the earthquake risk zonation map prepared by Bureau of Indian Standards and published by Building Material Technology Promotion Council of India (BMTPC).

For smooth implementation of the programme, City Disaster Management Committee (CDMC) had been constituted under the chairmanship of Revenue Divisional Commissioner. City Awareness Committee (CAC) under the chairmanship of Municipal Commissioner/ Executive Officer and City Enforcement Committee (CEC) under the leadership of Vice Chairman of the local development authority had also been constituted in each programme city to support the CDMC in implementation of different activities under the programme.

4.4 National Programme for Capacity Building of Engineers in Earthquake Risk Management (NPCBEERM) ³¹

The Government of India sponsored NPCBEERM programme was implemented in the state for capacity building of serving as well as privately practising Engineers in earthquake resistant design and construction practices. Four government engineering colleges i.e. (i) National Institute of Technology(NIT), Rourkela, (ii) University College of Engineering(UCE), Burla, (iii) Indira Gandhi Institute of Technology (IGIT), Sarang and (iv) College of Engineering and Technology (CET), Bhubaneswar have been identified as State Resource Institutes (SRI) for imparting capacity building training to the Engineers.

4.5 National Programme for Capacity Building of Architects in Earthquake Risk Management (NPCBAERM) ³¹

Government of India sponsored NPCBAERM programme was implemented in the state for capacity building of serving as well as privately practising Architects in earthquake resistant design and construction practices. National Institute of Disaster Management (NIDM), New

Delhi was the nodal agency for implementation of the project at national level. OSDMA monitors implementation of the project at the state level. Two institutions i.e. (i) Department of Architecture, College of Engineering and Technology (CET), Bhubaneswar and (ii) Piloo Modi College of Architecture, Cuttack are declared as State Resource Institutes (SRI) for imparting capacity building training to the Architects.

4.6 Awareness Building and Documentation ³¹

OSDMA brings out reports and documents on calamities and responses. It has brought out a compilation titled Managing Disasters in Orissa: Background, Challenges and Perspectives comprising submissions made by sub-groups formed by the Government of Orissa to look into multiple hazards facing the state.

4.7 National Cyclone Risk Mitigation Project (NCRMP) ³¹

The National Cyclone Risk Mitigation Project (NCRMP) is proposed to be implemented in 13 States and Union Territories including Orissa with assistance from Government of India and the World Bank. Orissa State Disaster Management Authority (OSDMA) has been identified as the Nodal Agency for implementation of the project. The project will be implemented in the coastal districts of Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Puri & Ganjam and parts of Khurda adjoining the Chilika Lake

4.8 Publications

Annual Report on Natural calamities,

<http://www.osdma.org/Publication.aspx?vchGlinkId=GL005>

Handbook on Disaster Management <http://www.osdma.org/Publication.aspx?vchGlinkId=GL005>

OSDMA Annual Report, <http://www.osdma.org/Publication.aspx?vchGlinkId=GL005>

OSDMA Publications, <http://www.osdma.org/Publication.aspx?vchGlinkId=GL005>

DM Policy, <http://www.osdma.org/Publication.aspx?vchGlinkId=GL005>

Disaster Risk Reduction Program in Odisha-an Overview

<http://www.osdma.org/Publication.aspx?vchGlinkId=GL005>

Natural Hazards and Disasters <http://www.osdma.org/Publication.aspx?vchGlinkId=GL005>

India Cyclone Phailin in Odisha, October 2013 Report. Rapid Damage and Needs Assessment Report. <http://www.osdma.org/Publication.aspx?vchGlinkId=GL005>

Manual of Information, http://www.osdma.org/Download/RTI_MANUAL_ON_17_POINTS.pdf

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