

CHAPTER - XIV

DISASTER MANAGEMENT

Disasters are unexpected events, which not only claim the lives of human beings and animals, but also result in huge damage to both natural and man-made properties. Disasters can be categorised as natural disaster, man-made disaster and environmental disaster, which are basically the products of poverty, over population and environmental degradation. A disaster may be an event that concentrates in time and space in which a society undergoes severe damages in respect of natural resources and incurs losses in social resources. A disaster affects the vital functioning of a society that includes biological survival such as subsistence, shelter, health, reproduction, and social survival such as the system of meaning and values. Disaster situation always differs in the nature of precipitating agents in regard to, sources of origin, degree of predictability, probability, controllability, speed, scope and destructive effects on people and physical objects.

This chapter on disaster management is divided into three parts. The first part provides a brief history of major disasters so far experienced in Orissa. The second part describes various dimensions of three major disasters like super cyclone, drought and flood recently experienced in the State during the years of 1999, 2000 and 2001 respectively. The third part while trying to give certain suggestions reviews the policy on disaster management with special reference to the functioning of Orissa Relief Code.

MAJOR DISASTERS IN ORISSA

The physical features and geographical locations of a State largely determine the type of natural disaster it experiences. The regions adjacent to seashore may have more cyclone effects than the inland regions surrounded by hill ranges, which are more prone to earthquake. Thus one finds the cyclonic effects in the coastal States of India like Orissa, Andhra Pradesh, West Bengal, whereas earthquakes occur more in inland regions, like Uttarkashi, Latur and Kutch. The man-made disasters are largely determined by the extent of technological development.

The Hatigumpha inscriptions of Orissa, ascribed to 1st century AD explain that cyclone from sea normally comes during April and May and during October and December and once in every three years in October and November. The cyclone on Bay of Bengal normally falls between 5 N.L. to 21 N.L., and since Orissa is situated between 18 N.L. and 20 N.L. this land has experienced almost 952 small and big cyclones, 451 tornadoes between 1891 and 1970. From 1901 to 1981 there were 380 cyclones out of which 272 cyclones were due to depression in Bay of Bengal and in 29 cases that were devastating.

A conservative estimation of the effects of natural disaster reflects that from 1963 to 1999 Orissa has experienced 13 major disasters which have killed 22,228 people, affected 7,02,97 people and made 3,421 thousand homeless. During 1971 cyclone in Orissa including a few West Coast States almost 9658 people were killed, around 49 lakh people were affected and 20 lakh people were made homeless. Similarly, during 1990 cyclone around 250 people were killed in Ganjam district, whereas recently during 1999 Super Cyclone around 10, 000 people died in the coastal districts. In all cyclonic situations so far experienced the average speed of the storm was around 110 km per hour in West Bengal, while it was 183 to 260 km per hour in Orissa and around 167 km in Tamil Nadu. However, in recent Super Cyclone in Orissa the speed of wind was not merely 260 km per hour, which was not simply a natural disaster, rather it was part of an emerging crisis of unpredictable climatic change resulting from atmospheric pollution. This has disturbed the eco-system leading to increasing frequency and increasing scale of droughts, floods, hurricanes, and cyclones (Shiva and Emani 2000). Prediction in the rise of temperature from 1.3 to 6.3 degree by 2010 (*Newsweek* 2000) has resulted in the linear trend of increase in temperature in Orissa from 37 degree in 1950 to 41 degree in 1996. Perhaps this has caused the death of 2200 people in the heat wave in Orissa during 1998 (Government of Orissa 1998).

As regards the drought situation the western districts of Orissa are frequently affected. The drought-affected districts are Kalahandi, Nuapada, Bolangir, Sonapur, Koraput, Malkangiri, Rayagada and Nabarangpur. A look at the *District Gazetteers* of the British period shows that these districts have suffered from drought particularly during the years 1868, 1896, 1818, 1820, 1922, 1925, 1929. Also in post-independence period these districts have suffered a lot during the years 1956, 1971, 1974, 1985, 1992, 1999 and in 2000.

During the Ninth Plan period the State has continuously suffered from severe calamities. On the eve of the Tenth Plan i.e., 2002-03 the entire State of Orissa is again under the grip of a severe drought. The total loss of livelihood and damage of capital stock of the State due to the calamities from 1998-99 to 2001-02 is Rs.13,230.47 crore (*Tenth Plan Document*, Government of Orissa 2002-07). The natural calamities have severely devastated the major livelihood sectors of the State and the income level of the households. The serious fall out of these unprecedented situations has been the serious set back suffered by the capital formation process in the economy. Consequently Gross Domestic Product (GDP) of the State has been substantially depressed in the process (Ibid).

SUPER CYCLONE

The first low pressure in the Bay of Bengal generated heavy wind at Gopalpur Port on 17th October 1999, which severely affected the natural as well as man-made resources in Ganjam district and partly in Gajapati district. The second low pressure in the coast of Orissa occurred in Bay of Bengal on 28th October following a full blow cyclone of rare severity on 29th and 30th October, 1999. The speed of wind flow during this time popularly known as 'Super Cyclone' was ranging from 220 km to 300 km per hour. A torrential rain which followed Super Cyclone poured water to the extent of 400 mm to 867 mm. This flooded the river systems of Baitarani, Budhabalanga, Salandi, and all the tributaries of river Mahanadi. The worst affected districts in the Super Cyclone were Cuttack, Jagatsinghpur, Puri, and Ganjam. The Super Cyclone of such a catastrophic intensity brought seven meters of high sea tide into the mainland of Jagatsinghpur district. The intensity of first low pressure in Ganjam district was 4.5 degree, whereas it was 7.0 degree during the second phase, which is popularly known as Super Cyclone of Orissa, the worst ever cyclone of the century. The people had never thought of a disaster of such magnitude for which neither they nor the Government was prepared.

People and Areas Affected

The Super Cyclone of Orissa has affected almost all the coastal districts and parts of a few inland districts of Orissa. It has affected 15,676 number of villages in 1862 Gram Panchyats and 28 Urban Centres in 97 C.D. Blocks of 12 districts in the State. Around 12.568 million

people belonging to 30 lakh families are affected in this Super Cyclone. The details of area and people affected in the Super Cyclone are presented in Table 14.1.

Preparedness Measures

Prediction of the disaster event in time, providing frequent warnings, undertaking risk avoidance measures, emergency plans and activating emergency relief are a few of the prepared measures popularly adopted by the State during various disaster situations. The death wind of the Super Cyclone was detected in the Meteorological Office at Bhubaneswar on 25th October 1999, i.e. 75 hours before the incidence. Accordingly warnings were issued to all district authorities by fax, wireless, All India Radio and local T.V. networks by 27th October (Government of Orissa 1999). This was followed by a forcible evacuation of 1.5 lakh of people by the Government in the night of 28th October to stay only in 21 cyclone shelter houses and public places. However, millions were left to face the death trap. Many point out that the warning messages adopted by the Government were not free from ambiguity and were not carrying credibility and specificity, as compared to the warnings given during the cyclone in Ganjam district, which took place only 10 days before. As a result, many people used their own judgement and preferred to stay in their mud and thatched houses, rather than to search for private accommodation.

Loss of Resources

The Super Cyclone practically shattered the backbone of Orissa. It disrupted the entire communication network system by roads, railways, air and telecommunications. The functioning of State administration and supply of essential commodities in the affected regions immediately after the incidence suffered a severe setback. The Cyclone completely destroyed the entire standing as well as prospective crops and severely damaged all the living organisms like plants, livestock and human lives. In Kujang Tahsil of Jagatsinghpur district almost seven meters of sea tides came into the inland surface and washed away 39 villages in Ersama block. The death toll of human population according to official estimates went up to the extent of 9885, though non-government sources claim this toll to be more than 30,000 (ODMM 2000). The details of human death and other losses in different districts are given in Tables 14.1 and 14.2.

Out of around 50 lakh coconut trees in the coastal Orissa almost 45 lakh were uprooted sustaining a loss of Rs.4500 crore. Other fruit-bearing trees like guava, banana, betel vine, jackfruit were also severely damaged. The Super Cyclone uprooted nearly 9 crore of trees and seasonal plants, which cannot be regenerated in coming 50 years. It equally affected the livestock resources, which took away 52,973 bullocks, 13,464 buffaloes, 1,56,424 goats, 90,232 calves and almost 11,51,245 poultry birds. The collection of milk per day by Orissa Milk Federation (OMFED) after the Super Cyclone was substantially reduced to 25,000 litres from 65,000 litres. The educational institutions of the State sustained a heavy loss. The gross damage of Higher Education Department accounts to an amount of Rs.66.24 crore. Apart from that according to the official report of the Government, 3,425 high school and 14,901 primary school buildings were damaged by the Cyclone and this affected properties worth Rs.1024.21 crore. An attempt has been made in Table 14.2 to compare the losses of natural and man-made resources, which took place during the cyclone on 7.10.1999 in Ganjam District and Super Cyclone on 29.10.1999 in all the coastal districts of the State.

Distribution of Relief

For the first time a natural disaster could mobilise huge relief support from various corners of the country and even beyond. While rendering help in the form of providing food to the distressed people of Orissa, different State Governments adopted the affected districts for reconstruction. In this process the State of Rajasthan adopted Bhadrak district, Goa, adopted Kendujhar district, the State of Maharashtra adopted Jagatsinghpur district and the State of Madhya Pradesh adopted Jajpur district. As regards the support provided by them in the form of relief came to a total of 2,119 truck loads of relief materials, which included 68 truck loads of equipment, 2,027 truck loads of food items and 24 truck loads of medicines, (*White Paper on Super Cyclone*, Government of Orissa 1999). Many States also donated cash assistance to the tune of Rs.26.21 crore to the Chief Minister's Relief Fund (Table 14.3).

In addition to the distribution of relief by the Government, the Public Sector Units (PSUs) also played a significant role during the post-super cyclone periods. Around 17 number of Central Public Sector Units (PSU) of India rendered assistance by distributing various relief items in 17 blocks of seven affected districts. Similarly, 43 State Public Sector Units also carried out their relief programmes in 48 blocks of ten affected districts. Apart from this, 20 international bodies,

19 national bodies and 92 local NGOs were also involved in carrying out relief operations. The NGOs distributed 72 trucks of food items, medicines, and equipments. They also disposed of large number of carcasses (97,379) and corpses (5,478), organised free community kitchens and provided health services, etc. to the affected people.

Payment of Compensation

In spite of the fact that the losses made due to Super Cyclone cannot be made good, Government of Orissa and Government of India have paid compensation to the survivors of the damaged houses and deceased persons. An amount of Rs.25,000/- by the State Government and Rs.50,000/- from the Prime Minister's Relief Fund was provisioned as an exgratia payment to the relatives (legal heirs) of the deceased persons. For this purpose an amount of Rs.1139.50 lakh was made available by the State Government, while an amount of Rs.2279 lakh was provided from PMRF. The progress regarding the payment of exgratia to the relatives of deceased is that up to the end of June 2000 cash compensation of Rs.3320 lakh (97.12%) has been paid. Similarly an amount of Rs.2000/- and Rs.1000/- has been paid respectively towards fully damaged and partially damaged houses. The achievements regarding this reflects that out of Rs.27,428.42 lakh allotted towards the payment of compensation as house building assistance by June 2000 an amount of Rs.27,065.50 lakh (95.39%) has been distributed (*White Paper on Super Cyclone*, Government of Orissa, June 2000). However, It is generally complained by the villagers that the Revenue Inspectors engaged in the assessment of damaged houses wilfully neglected the proper assessment of the houses due to various personal reasons. Except Gajapati district, in all other 13 affected districts a total of 15,43,672 petitions regarding non-payment and/or underpayment for the damaged houses were received by the end of June 2000, out of which 15,29,809 cases were enquired into and of this 1,18,125 cases were found eligible for house building assistance.

Rehabilitation Assistance

The total package for the rehabilitation of the affected areas and people proposed by the Government of Orissa to the Government of India is around Rs.6,227.59 crore. The State Government has received a total amount of Rs.693.72 crore from National Fund for Calamity Relief (NFCR) as grant of Government of India and Rs.826.01 crore from the various Central Ministries directly to different departments of Government of Orissa (Table 14.4). Apart from

this, in order to gear up the rehabilitation programme the State is pulling resources from different international donor agencies like DFID, UNDP, UNICEF, WFP, SDC, OXFAM, Plan International, World Vision, HIVOS, European Commission, ECHO, KFW and Act International and also from MPLAD fund of the Parliament, CAPART, Public Sector Units like NALCO, PPL, MCL, SAIL, etc. Special loan arrangements have been made from HUDCO and Orissa Rural Housing Development Corporation (ORHDC). The progress of rehabilitation programmes undertaken by the State Government is observed in the construction of educational institutions, multi-purpose cyclone shelters, public buildings like hospital, government offices, repair of roads and bridges, revival of irrigation sources like LI points, restoration of electric supply and livelihood sources like agriculture, dairy, fishery and non-farm sectors.

DROUGHT

When the coastal Orissa is struggling hard to overcome the trauma of Super Cyclone of 1999, the drought affected the entire western Orissa during 2000. This at certain level proves that the land of Orissa is always prone to various natural calamities. Shortage of rainfall below the average is one of the major reasons of drought situation in Orissa. Out of 30 districts, 24 districts were highly affected due to erratic, deficient, and scanty rainfall and seven districts were severely affected. The data with regard to rainfall situation in Orissa during May to September of 2000 show 33 per cent less rainfall, whereas in certain districts like Deogarh and Jharsuguda the rainfall was less than 50 per cent of the normal. Out of 30 districts, 13 districts have had deficient rainfall, 7 districts have had highly deficient rainfall and one district i.e. Jharsuguda had scanty rainfall. The details of district-wise rainfall during May to September, 2000 are given in Table.14.5.

Orissa is an agricultural State. People depend on rainfed kharif crops raised in 62 lakh hectares of crop area during kharif season. Paddy being the staple crop covers 42 lakh hectares, of which only 14 lakh hectares are covered under irrigation. The symptoms of drought were observed in agricultural operations like weeding, gap filling and in undertaking other inter-cropping operations, and non application of fertilizer in almost 3 lakh hectares of land in Bolangir, Jajpur, Sambalpur, Bargarh, Jharsuguda and Sundargarh. Due to heavy moisture stress and growth of stunted plants the districts like Bolangir, Nuapada, Sundargarh,

Jharsuguda, Bargarh, Deogarh, Sambalpur, and Kendrapara suffered from a total loss of paddy yield. (Revenue Department, Government of Orissa, 2000).

Crop Loss

The erratic and inadequate rainfall during this period in Orissa affected paddy crop in an area of 9.03 lakh hectares. On this basis, preliminary calculations were made taking into account the year 1991-92 as the normal production of kharif paddy, which was around 91 lakh tonnes. Anticipated crop loss due to drought has been reflected in Table 14.6. The loss of kharif paddy in 1 lakh hectare. of fallow land was estimated to be to the tune of 2.4 lakh tonnes which were worth about Rs.127.20 crore. Thus, the total loss, as calculated was 12.52 lakh tonnes of paddy, which came to Rs.663.56 crore. The drought affected 7.6 lakh farm dependent families resulting in loss of employment opportunities for about 3.6 crore mandays (*ibid*).

Restoration of Drought Affected Districts

The drought in 2000 severely affected the economy of the State as well as the living conditions of the farmers in the villages. Lack of crop insurance facilities in many areas almost ruined the small and marginal farmers. In view of this, the Government of Orissa had to provide quintals of various seeds like Wheat (7500), *Biri* (2400), *Mung* (2700), Gram (400), Mustard (1350), Groundnut (50000), Field pea (1200), Maize (100), Sunflower (400) and Till (200). For this, the State had to bear a subsidy requirement to the tune of Rs.7,91,63,240. The Government had to take steps to supply 9,000 diesel pump sets of 3.5 HP to 5 HP with a subsidy of 50 per cent, which cost Rs.4.25 crore. While looking at the ground water potential, with poor exploitation (9%), the State planned to install 1,500 shallow tube-wells and 1,000 bore-wells in drought affected areas with 50.00 per cent subsidy. This, further required an amount of Rs.7.25 crore (Table 14.7) (Government of Orissa, 2000).

The Co-operative Credit Societies financed more than Rs.275.00 crore as short-term loan towards kharif crop in seven worst affected and 17 badly affected districts. Since the loanee farmers were apprehended to be unable to repay these short term loans the Government of Orissa made arrangements to convert the short term crop loans to medium term loans, so as to make the farmers eligible to receive fresh credit and for the payment of Crop Insurance Compensation in drought affected districts. The impact of drought led to crop failure and

increased the price of rice, affecting both APL and BPL households. There are around 67.00 lakh families having ration cards in 24 districts. In order to streamline the food security in the drought affected areas, the Government of Orissa requested Government of India to provide 1,33,920 MTs of BPL rice for distribution per month (over and above the quota under TDPS) for six months at 20 Kgs. per family per month at BPL rate.

FLOOD

The unusual rainfall in almost all the districts from May to July, 2001 caused heavy flood in all major river systems of Orissa. The total rainfall received during the period was 846 mm, against the normal rainfall of 644 mm. This led to continuous downpour in the entire catchment areas of major rivers like Mahanadi, Suvarnarekha, Brahmani and Baitarani, which form the delta region of the State. This time the flood also came in the rivers of Suvarnarekha and Tel which was unprecedented since independence. Three major spells of water with unpredictable frequencies even beyond the designed capacity released from Hirakud Dam caused high flood in the districts of Cuttack, Puri, Khurdha, Jagatsinghpur, Kendrapara, Jajpur and Bhadrak. Even the rivers like Tel, Bansadhara, Ib and Brahmani flooded the districts of Kalahandi, Koraput, Jharsuguda and Deogarh. The flood affected areas included those districts, which were also badly affected by the Super Cyclone. Whatever recovery of crops the cyclone affected people had over one and half years, those were largely washed away by the flood.

The preliminary assessment made by District Collectors and the Line Departments reflected that a total of 15,584 villages in 2,429 Gram Panchayats of 199 blocks in 22 districts were affected by flood and heavy rains. Apart from these, 84 ULBS were also affected by the flood. Around 85 lakh people in total were affected under the recent flood during 2001 (Revenue Department, Government of Orissa, 2001). The flood largely damaged the habitat of the people, which forced them to camp on highways, roads, river and canal embankments with their bare necessities. The details of loss of resources as reported by the Revenue Department are given in Table 14.8. Though the death of human beings is limited to 93, extensive damage has been caused to public infrastructure like public buildings, canals, river embankments, roads, bridges and culverts, ponds, telephone and power installations.

Relief Operations

Taking into account the experiences gained during Super Cyclone in Orissa, this time the Government Departments, NGOs and the Funding Agencies undertook sufficient measures of preparedness. The rescue operations in the affected areas were carried out immediately by the Army personnel, Navy and Coast Guard Teams, CRPF and CISF personnel. In addition to 85 platoons of APR with 2171 Home Guards also took active part during the period. The NGOs also provided services. Various State Departments and non-Government agencies carried out relief operations, which could minimise the losses as compared to earlier floods in particular and natural calamities in general. The details of relief items distributed either directly or through District Collectors are given in Table 14.9.

Looking at the mass evacuation both the Government and the NGOs provided various necessary survival items like polythene sheets, garments, dry food, water purification tablets, bleaching powder, medicines, fodder etc. Since the livelihood sources of the affected people were lost in the flood, the agriculture communities suffered more than the others. Lack of crop insurance and lack of seed stock for re-vegetation almost ruined their life and livelihood. The detail of requirement of funds by various Departments for repair and restoration of damage in flood-affected areas is given in Table-14.10.

Flood Monitoring

Right from the time of heavy rain in the catchment's areas, the State Government was fully alert with a control room functioning in the Revenue Department of the State Secretariat. However, one major controversy about the recent flood in 2001 is the alleged mismanagement in the release of water from Hirakud dam. This has raised questions on the scientific management of flood control and release of water to reduce devastating impact that the people in the State had to face. However, it is a fact that this time the State Government could take up sufficient preparedness measures through close monitoring of the flood situation on a war footing. A high level team of the Government of India also visited Orissa on 19.7.2001 and prepared a preliminary assessment of the losses due to flood.

A look into the history of floods in Orissa reflects that there are multiple factors responsible for such a disaster situation. Some of the factors are: heavy rain-fall, silting and low storage capacity of the Hirakud Dam reservoir in keeping run-offs water deteriorating conditions of river

mouths, poor management of embankments and canal systems, deforestation in delta region, role of technocrats in the management of flood situation, particularly with regard to the release of water from the reservoir.

Satapathy (1993) in her study, *Floods and Flood Control Policies: An analysis with reference to the Mahanadi Delta in Orissa*, while comparing the pre-Hirakud Dam and Post Dam period observes that overall frequency as well as average intensity of floods had come down in the post dam period particularly in respect of large and very large floods, but the incidence of low/medium floods has increased in the post-dam period. This clearly indicates that human factors are responsible for flood in post-dam period. Another dimension is the role of small rivers like Suktel, Jira, Ang, Tel, etc flowing in the down stream areas of Hirakud dam, which influenced the intensity of recent flood.

The flood of 1982 and 1991 and the recent one in 2001 proves that with little flow of water the delta region can be affected by flood. Since the lower catchment of Hirakud dam equally influences the flood in delta regions, the role of Hirakud dam in controlling flood cannot be ascertained. These are some of the issues which need attention in coming days while managing the flood in delta regions of the State.

DISASTER POLICY

Orissa Famine Code 1913 having provisions to meet situations arising out of the famine conditions and flood situation was suitably revised during 1930, which continued to become a guiding force in Orissa till 1950. The introduction of the concept of social welfare and economic development brought a change in the state approach to relief work, from a mere curative one to both preventive and curative ones. In disaster situations the new approach not only incorporates life saving measures, but also prevents physical deterioration in living standard and destitution of people. It largely recommends that assistance in such situations is necessary to enable the affected people to resume their normal or ordinary pursuits of life through continuous community efforts.

Taking into account the changing demands of different disaster situations, the Government of Orissa while framing executive instructions, supplemented the old famine code. The

documents, which supplemented the shape and size of present Orissa Relief Code (ORC), are various circulars and Instructions on Flood Relief Measures (1996), Hand-Book of Important Circulars on Drought Relief Measures (1966), and a compilation of circulars and orders issued by the Revenue Department (1972). For the first time after the cyclone of 1971 in Orissa, the Government of India set up a cyclone Disaster Mitigation Committee headed by P.K.Kotteswaram, the Director General of Observatories, Government of India popularly known as Kotteswaram Committee. The Committee submitted a report with 59 recommendations to combat such disaster situations. Also, the then Governor of Orissa, Shri A.N. Khosla during 1971 set up a high level committee of technical experts headed by a retired Chief Engineer to suggest remedial measures for disaster mitigation in Orissa.

The fresh relief code of Orissa in fact took shape after the catastrophic cyclone of 1971, but the first print of the Orissa Relief Code was brought out in March 1980. In order to enlarge the scope and content of the code the Government of Orissa again amended ORC during 1996. Thus, Orissa Disaster Mitigation support system is presently guided by ORC, which is a generic document that acts more as a guideline to undertake preparedness measures during the pre-disaster period and to provide relief during post-disaster period. Secondly, the District Contingency Plan is meant for preparing a detailed plan of action for implementation at the district level.

Orissa Relief Code (ORC)

The scope of ORC includes various disasters like drought, flood, cyclone, earthquake, volcanic eruption, heavy rains, gale-wind, whirl-wind, tidal waves, fire accident, tornado, hailstorm and accident relating to communication, transport services, lightning, thunder squall, virulent epidemics, locust menaces, etc. It also includes the administration of relief operations carried out both by the Government and non-Government organisations; care of orphans, and destitutes, health and veterinary measures, agriculture oriented measures, provision of credit, strengthening of Public Distribution System (PDS) and stocking of food stuff in vulnerable areas, special relief to artisans, and others. ORC empowers District Collectors and makes them responsible for all relief operations both during pre and post disaster situations. As regards the administration of relief, ORC has clearly delineated the roles of Sub Collectors, Tahsildars, BDOs, who play major roles in the management of relief and rehabilitation

operations. However, as regards the involvement of PRI bodies certain amendments are necessary to deliver power in the administration of relief and rehabilitation programmes.

To look critically one can say that ORC does not set time frames for emergency relief for the people nor does it consider special relief distribution and rehabilitation for the aged, disabled, women, and children. The policy does not spell out much regarding the livelihood requirements, particularly in non-farm sector and for women and orphan categories. The community perspectives and preparedness during such natural disasters do not find place, and also the roles to be played by various community institutions. Since loss in such situations for the poor men are bigger, right to disaster insurance should be provisioned in high risk zones and Government should earmark special funds as premium in favour of the Insurance Companies.

National Disaster Management Cell of Orissa

The National Disaster Management Cell, a State office is functioning at Bhubaneswar since 1996. It is basically providing training to workers both in Government and non-Government organisations; organises workshops to find out different strategies and *modus operandi* to control disaster situations in Orissa. Looking at the functional necessities of these recommendations, the Government may think of merging this cell with Orissa State Disaster Mitigation Authority. By this the cell will be strengthened both structurally and functionally to achieve its goal.

ORISSA STATE DISASTER MITIGATION AUTHORITY (OSDMA)

Orissa State Disaster Mitigation Authority (OSDMA) came into existence, in the immediate aftermath of the Super Cyclone in 1999. It is registered under Society Registration Act of 1860 to operate as an autonomous organisation. OSDMA is entrusted with the task of restoring livelihood, reconstructing damaged infrastructure and enhancing preparedness measures of the State to face calamities in future. It is mandated to undertake and co-ordinate the restoration, reconstruction and rehabilitation works and programmes in response to disasters. One of the primary concerns of OSDMA is to coordinate the bilateral and multilateral aid loan for cyclone reconstruction. It will draw up long-term disaster preparedness measures for the

State, build up capacity of different stakeholders and promote community-based responses in collaboration with NGOs and civil society groups.

The OSDMA has channelised resources from the World Bank, DFID, Chief Minister's Relief Fund, various PSUs, MPLAD Fund, and is smoothly coordinating the rehabilitation activities implemented by NGOs/INGOs. Apart from this, as a part of the disaster preparedness, the OSDMA has formulated a Disaster Management Framework Policy, which is on the anvil. It has also prepared a Community Contingency Plan for 10 different blocks on pilot basis and planned to extend it to other blocks. It has taken step to establish VHP network to link District Collectors and has planned to establish the network with the BDOs, Tahasildars, and other strategic locations. Apart from that it is building awareness in a big way to involve the civil society/local communities in disaster mitigation activities; organising various training programmes and workshops of Government officials and NGO functionaries to improve preparedness to face natural disasters.

In a federal system like India it is the physical and moral responsibility of Union Government to ensure life support systems to the disaster affected people. The Union Government has evolved a policy for assisting States that are affected by the occurrence of various natural calamities, which is in operation since 1953. The Second Finance Commission introduced a concept of margin money to meet such unforeseen expenditures of the States. The Seventh Finance Commission for the first time distinguished various calamities depending upon the nature and degree of losses they cause. It has suggested that in case of severe damage of public infrastructure the expenditure for its reconstruction will be kept outside the margin money and plan outlay. During the Ninth Finance Commission various States demanded that Union Government meet all the expenditure made by States during such disaster situations out of non-plan grants and requested Government of India to make adequate assessment of such situations. The Ninth Finance Commission for the first time created a Calamity Relief Fund (CRF) for each State, which is borne by both Central and State Governments in a proportion of 75:25 per cent respectively. With the recommendation of creating a Calamity Relief Fund, a corpus fund of Rs.47.00 crore was set up in Orissa for the period 1990-95. The Tenth Finance Commission while dealing with the methodologies suggested that the intensity and magnitude

of the calamity, level of relief requirements, assistance needed, the capacity of the State to handle the problem etc can be adopted to identify a calamity as of rare severity.

In order to reduce the consequences of various natural calamities on the life and livelihood of the people, the State Government from time to time have adopted various special schemes, which have been directly and/or indirectly related to the mitigation of natural calamities. In this regard the assistance provided under Centrally sponsored schemes has also been significant to overcome the miseries of the affected people of the State. For example the Special Area Development Programmes in tribal dominated backward districts, and more particularly the Long term Action Plan (LTAP) in KBK districts have played a major role in overcoming the consequences of drought in certain parts of western Orissa. During the Ninth Plan period (1997-2002) it has been observed that the State economy has almost crippled due to the occurrence of frequent natural disasters like the Super Cyclone of 1999, drought of 2000, and flood of 2001. These disasters have obvious impact on the growth of State economy which came down to 3.76 per cent per annum at 1993-94 prices (*Tenth Five Year Plan, 2002-2007, Government of Orissa*).

As regards the financial achievements during the Ninth Plan, the total expenditure at 1996-97 prices is 66.80 per cent (Ibid). The constant curtailment of central assistance and non-realisation of internal resources (as envisaged at the time of formulation of Ninth Plan) have forced the State Government to revise its Annual Plans. While comparing with the revised outlays, it has been observed that cent per cent expenditure has been incurred during the Ninth Plan, and there has been significant improvement over the Eighth Plan expenditure. Specifically in the context of financial achievements of various approved centrally sponsored schemes of the Ninth Plan which are directly or indirectly related to the mitigation of natural calamities, Table 14.11 (A) and (B) provide a picture on the outlays and the anticipated expenditure at 1996-97 prices made during Ninth Plan period (1997-2002). The State Government in its Tenth Plan document (2002-2007) have reflected that the expenditure made during Ninth Plan period has substantially improved over the Eighth Plan period.

The recent super cyclone, drought and flood, which took place in Orissa during 1999, 2000 and 2001 respectively, sufficiently prove that the loss of properties is worse than the

stipulations under the Finance Code/Natural Calamity Code under which scarcity is declared. The destruction of natural and man-made properties in 14 districts during the Super Cyclone and flood, and in 24 districts during drought provides enough conditions to declare economic emergency in the State. The destruction of life support system in Orissa built over half a century of development or more made it grave and weakened the backbone of the State. In all recent natural calamities, the State more or less has played multiple roles in paying cash compensation, distributing free ration and supplying various inputs for reconstruction of damages. It is a fact that State response in such disaster situations varies in providing quality services which are largely influenced by the type of calamity, nature of severity, extent of damage made to man-made properties, type of state leadership, governance and the efficiency of bureaucracy. However, in spite of sufficient experiences gained due to the occurrence of similar disaster situations, that took place earlier, the responses of the State during the recent Super Cyclone, flood and drought perhaps could not meet the demands of the affected people in a timely manner.

POLICY SUGGESTIONS

In the context of super cyclone, drought and flood experienced in Orissa during the consecutive years of 1999, 2000 and 2001 respectively, certain policy suggestions for the mitigation of natural disasters during the Tenth Plan have been given hereunder. They are as follows:

- The role of Government during disaster situations has to be made clear by amending the Orissa Relief Code. While amending it, steps should be taken to incorporate various issues like standardised loss/damage assessment approaches, alternative warning system, right to information, insurance framework, quality of relief services, role of OSDMA, etc.
- In order to overcome natural calamities like drought the State Government should promote sustainable agriculture, introduce drought resistant crops, preserve forest resources, enhance existing perennial trees, establish community management of NTFPs in a more efficient manner and strengthen the infrastructure base for storage, marketing and transport of surplus agro-produces.

- In order to have an effective management of flood water in the down stream catchments area, various measures like construction of medium and small reservoirs, soil conservation, large scale afforestation, strengthening of the river embankments and linking of major rivers of Orissa with the neighbouring States should be carried out.
- A Multi-Hazard Disaster Response Plan be established and healthy governance system be ensured. Government has to strengthen the empowerment processes through delegation of administrative power and devolution of financial power to Panchayati Raj Institutions (PRI), Western Orissa Development Council (WOCD) and to similar State created bodies.
- Through a holistic network approach disaster management ought to be made friendlier and standard operational procedures be established and further the State Government has to identify, review and modify the existing laws, rules and codes of different departments. The disaster recovery mechanisms be linked with normal development processes, more particularly with the development of human resources; and modernisation of skill and equipments of Police and Para Military Forces.

ANNEXURE

Table -14.1

**Effects of Super Cyclone in Orissa by Districts
(on 28th-29th October 1999)**

Sl. No.	District	No. of Blocks/ ULBs	No. of GPs	No. of Villages/ Wards Affected	Total Population Affected	Total Agricultural Land Affected (hect)	No. of Human Casualties	Details of House Damaged			
								Washed Away	Fully Collapsed	Partially Collapsed	Total
1	Baleswar	8/3	155	1748	1226000	138000	49	11180	37485	48125	96790
2	Bhadrak	7/2	166	1356	1347000	179000	98	292	33221	82931	116444
3	Cuttack	14/4	278	1977	2367000	197000	471	0	140626	147193	287819
4	Dhenkanal	8/3	144	766	70000	138000	55	5	7909	54318	62232
5	Jagatsinghpur	8/2	165	1308	1200000	101000	8119	9948	217174	57215	284337
6	Jajpur	10/2	242	1160	1550000	176000	188	0	61895	187998	249839
7	Kendrapara	9/2	205	1567	1400000	136000	469	40	145884	125175	271099
8	Kendujhar	3/1	60	546	250000	125000	31	1164	7393	39698	48225
9	Khurda	8/3	124	1167	1310000	80000	91	0	30000	65540	95540
10	Mayurbhanj	9/2	63	341	198000	221000	10	500	6000	3000	9500
11	Nayagarh	2	40	350	150000	80000	3	0	198	14059	14255
12	Puri	11/4	204	1714	1500000	162000	301	0	58554	55368	113922
	TOTAL	97/28	1846	14000	12568000	1733000	9885	23129	746337	880620	1650086

Source: *White Paper on Super Cyclone*, Revenue Department, Government of Orissa, December 1999.

Table -14.2

Impact of Super Cyclone in Orissa during 1999

(in Nos. and crop area in Ha)

Indicators	Cyclone on 17.10.99	Super Cyclone on 29.10.99
Districts Affected	4	12
Blocks Affected	19	97
Villages Affected	3076	16,508
Municipal Areas Affected	20	28
People Affected	31,67,984	1,30,00,000
Human Deaths	205	9,885
Human Injuries	400	2,507
Cattle Killed	2869	3,15,886
Small Animals Killed	7647	3,16,372
Poultry Killed	6,79,447	18,83,468
Assets Damaged		
Total Houses Damaged	3,23,773	16,69,292
Houses Washed Away	Nil	23,493
Houses Fully Collapsed	78,821	7,48,499
Houses Partly Collapsed	2,44,952	8,97,300
Villages Affected by Power Supply	N.A.	17,032
High Schools Damaged	851	3,425
Primary Schools Damaged	1,972	14,901
Colleges Damaged	50	66
Fishing Boats Damaged	5,494	9,085
Fishing Nets Blown away	96,202	22,143
Trees Uprooted	N.A.	9,000,000
P.W.D Buildings Damaged	2,356	10,059
R.D. Dept. Buildings Damaged	1229	7020
P.R. Dept. Buildings Damaged	1113	7020
L.I. Points (Government) Damaged	806	5636
Crops Damaged, Kharif		
Paddy Crop	2,25,224	13,00,00
Vegetable Land	46,346	1,76,000
Other Crop Land	6,00,039	257,000
Potential Rabi Crop Area	-	64,900
Drinking Water Wells under GP	-	6,391
Flood Embankment Breached	-	2,005
Canal Embankment Breached	-	8,647
Tank Minor Irrigation Projects	-	6,967
Minor Irrigation Dam Partially Breached	-	31
PMRY Units Affected (Nos)	-	1,339
Rural Roads Damaged (km)	-	7,500
District Roads Damaged (km)	-	444

Source: *White Paper on Super Cyclone in Orissa*, Revenue Dept., Government of Orissa, December 1999.

Table -14.3

Assistance Received from Different States and U.Ts of India

Sl. No.	States/ U.T.	Financial Assistance Received by CM Relief Fund (000)	Assistance in Kind (in No. of Trucks)			Source		Grand Total
			Food	Medicine	Equipment	Government	NGO	
1	Andhra Pradesh	25,04	111	9	2	115	7	122
2	Assam	1,00,00	2	-	-	2	-	2
3	Bihar*	10,00,00	17	-	-	17	-	17
4	Gujurat	2,00,00	21	-	-	21	-	21
5	Haryana	-	420	5	8	433	-	433
6	Himachal Pradesh	50,00	1	-	-	1	-	1
7	Karnataka	2,00,00	12	4	1	15	2	17
8	Kerala	-	2	-	1	3	-	3
9	M.P*	1,32,51	34	-	-	33	1	34
10	Maharashtra	5,00,00	11	-	1	11	1	12
11	New Delhi	1,00,00	372	-	7	376	3	379
12	Orissa	-	597	7	38	613	29	642
13	Punjab	-	9	-	-	9	-	9
14	Rajastahn	1,00,00	1	-	-	1	-	1
15	T.Nadu	5,00,00	156	1	1	157	1	158
16	U.P.*	-	44	-	-	31	13	44
17	W.Bengal	50,00	213	1	6	205	15	220
18	Tripura	30,00	-	-	-	-	-	-
19	Pondichery	25,00	-	-	-	-	-	-
20	J & K	1,00,00	-	-	-	-	-	-
21	Manipur	5,00	-	-	-	-	-	-
22	Arunachal Pradesh	65,00	-	-	-	-	-	-
	Total	26,61,05	2027	24	68	2047	72	2119

Source: *White Paper on Super Cyclone in Orissa*, Revenue Dept., Government of Orissa, December 1999, Annexure-1.

* Refers to Undivided States

Table -14.4

Amount Released out of Rs. 828.15 Crores under NFCR for Cyclone Relief Measures as on 30.06.2000 and Amount Sanctioned to Different Departments

(Rs. in lakh)

Sl. No.	Departments	Amount Released Under	
		Amount Sanctioned in CRF	Different Ministries of Government of India
1	Ministry of Agriculture, Gol for Relief Material	2000.00	-
2	Food Supply and Consumers Welfare	3213.00	-
3	Agriculture	2035.00	340.00
4	Energy	1500.00	-
5	Works	7750.00	-
6	Rural Development	7850.00	-
7	Water Resources	5850.00	-
8	Health and Family Welfare	84.00	-
9	Housing & Urban Development	547.00	-
10	Fisheries & Animal Resources Development	350.00	211.00
11	Home	110.68	-
12	Industries	221.43	2633.00
13	Women & Child Welfare	580.00	-
14	Commerce and Transport	150.00	-
15	Higher Education	1030.00	-
16	General Administration	-	3810.00
17	School and Mass Education	526.00	1958.00
18	Civil Supply	-	40962.00
19	Panchayati Raj	6.50	-
20	Science and Technology	-	50.00
21	Steel and Mines	13.00	-
22	Textiles and Handloom	-	915.00
23	Cooperation	10.00	174.05
24	Public Relations	-	102.26
25	Revenue	0.25	-
26	Forest and Environment	-	932.00
27	Asst. Financial Advisor (Spl. Relief)	1526.30	-
28	ST & SC Development	-	296.00
29	District Collectors	29348.30	-
30	SRC	-	1296.00
31	Unspent Balance	42.00	-
	TOTAL	69372.00	82601.00

Source: *White Paper on Super Cyclone in Orissa*, Revenue Dept., Government of Orissa, June 2000

Table -14.5

Distribution of Rainfall upto the end of August 2000 in Different Districts of Orissa

Normal (+19% to -19%)		Deficient (-20% to 39%)		Highly Deficient (-40% to -59%)		Scanty (-60% to above)	
District	%	District	%	District	%	District	%
Nabarangpur	+6	Rayagada	-33	Deogarh	-48	Jharsuguda	-60
Baleswar	+5	Jagatsinghpur	-31	Kendrapara	-44		
Nayagarh	+2	Angul	-29	Nuapada	-42		
Kalahandi	+1	Boudh	-29	Bargarh	-42		
Khurda	+2	Jajpur	-29	Sambalpur	-42		
Malkangiri	0	Sonepur	-29	Sundargarh	-41		
Ganjam	-2	Dhenkanal	-28	Bolangir	-40		
Koraput	-5	Cuttack	-27				
Gajapati	-10	Cuttack	-26				
Phulbani	-15	Puri	-24				
Kendujhar	-19	Bhadrak	-21				
		Mayurbhanj	-20				
		Puri	-20				

Source: Memorandum on Drought Situation in Orissa, 2000. Revenue Dept., Government of Orissa.

Table -14.6

Distribution of Anticipated Crop Loss during Kharif Paddy

Types of Land	Area Affected (in lakh Ha.)	Yield in (Qnt/Ha)		Production		Anticipated Loss in Production (lakh tonnes)	Value of Crop Loss (Rs. in Crore)
		Normal	Anticipated	Normal	Anticipated		
High	3.15	15.16	4.72	4.78	1.49	3.29	174.37
Medium	3.98	23.80	10.84	9.47	4.31	5.16	273.48
Low	1.90	24.78	16.2	4.71	3.04	1.67	88.51
TOTAL	9.03	20.80	9.62	18.96	8.84	10.12	536.36

Source: Memorandum on Drought Situation in Orissa, 2000. Revenue Dept., Government of Orissa.

Table -14.7**Distribution of Assistance of Funds Required from Government of India for Different Departments for Different Mitigation Measures, 2000-01**

Sl. No	Departments	Amount
1	Agriculture	25.40
2	Co-operation	73.35
3	Health & Family Welfare	2.00
4	Housing & Urban Development	4.17
5	Water Resources	31.46
6	Women and Child Development	3.28
7	Fisheries and Animal Resources Development	7.85
8	Rural Development	45.03
9	Panchyati Raj	247.41
10	Forest and Environment	4.00
TOTAL		443.95

Source: Memorandum on Drought Situation in Orissa, 2000. Revenue Dept., Government of Orissa.

Table -14.8**Impact of Flood on Life and Livelihood of People**

Sl. No.	Indicators	Unit	Loss
1	Villages Affected	Nos.	15,584
2	Gram Panchayats Affected	Nos.	2429
3	C.D. Blocks Affected	Nos.	199
4	Districts Affected	Nos.	22
5	ULBs Affected	Nos.	84
6	People Affected	Lakhs	85
7	Crop Area Lost	Lakhs	7
8	Cost of Crop Loss	Crores.	60.00
9	Houses Affected	Lakhs	3
10	Cost of Affected Houses (in Rs.)	Crores	40.00
11	PWD Roads Affected	Kms.	5000
12	National Highway Affected	Kms.	700
13	PWD, CD. Works Damaged	Nos.	1102
14	National Highway C.D.Works Damaged	Nos.	265
15	Breaches on PWD Road	Nos.	102
16	Breaches on National Highway Road	Nos.	13
17	Breaches on Canal Embankment	Nos.	223
18	Breaches on River Embankment	Nos.	346
19	Pipe Water Supply Unit		
	In Urban Areas	Nos.	61
	In Rural Areas	Nos.	82
20	Tube Well Damaged	Nos.	25555
21	Persons Died	Nos.	93

Source: Memorandum on Flood (July 2001) submitted to Hon. Prime Minister during his visit to Orissa on 29.7.2001, Revenue Dept., Government of Orissa.

Table -14.9**Distribution of Relief in Flood Affected Areas of Orissa during July 2001**

Sl. No.	Items	Unit	Quantity
1	Rice	Qtls.	15000
2	Flattened Rice	Qtls.	13000
3	Gud	Qtls.	750
4	Tents	Nos.	10673
5	Polythene	Nos.	45200
6	People Covered under Free Community Kitchen	Lakhs	6
7	Food Materials Dropped by Plane	MT	563
Essential Commodities Supplied to Different Districts			
8	Rice	MT	26.151
9	Flattened Rice	MT	3504
10	Kerosene Oil	SKO	14709
11	Polythene	Nos	70082
12	Tents	Nos.	9773
13	Canvas	Nos.	900
14			

Source: Memorandum on Flood (July 2001) Submitted to Hon. Prime Minister during his visit to Orissa on 29.7.2001, Revenue Dept., Government of Orissa.

Table - 14.10**Requirements of Funds by Various Departments for Repair and Restoration of Damage in Flood Affected Areas of Orissa**

Sl. No.	Departments	Funds Required (in Crores)
1	Special Relief Commissioner	151.00
2	Health & Family Welfare	10.00
3	Works	125.00
4	Rural Development	58.80
5	Animal Resources	4.00
6	H & Urban Development	50.00
7-	Water Resources	200.00
8	School & Mass Education	20.00
9	Agriculture	16.00
10	Cooperation	18.55
11	Panchyati Raj	30.00
12	Energy	50.00
13	Grand Total	733.85

Source: Memorandum on Flood (July 2001) Submitted to Hon. Prime Ministry during his visit to Orissa on 29.7.2001, Revenue Dept., Government of Orissa.

Table -14.11 (a)

**Centrally Sponsored Schemes in Ninth Five Year Plan (1997-2002).
Directly or Indirectly Linked to the Mitigation of Natural Calamities**

(Rs. in crores)

Sl. No.	Name of the Scheme	Ninth Plan 1997-2002 outlays	Ninth Plan (at 1996-97 Prices) Expenditure Anticipated
1	Crop Insurance Scheme Seed crop Insurance	7.50	5.58
2	Afforestation & Eco. Development Prog. <ul style="list-style-type: none"> ▪ Afforestation for Soil Conservation in Catchments Area of RVP ▪ Integrated Afforestation & Economic Development Project ▪ Eco- Development / Management under UNDP Assistance ▪ Eco- Development Project for assured National Park & Sanctuaries ▪ Conservation & Management of Mangrove. Total Forest & Wild Life	1220.00 3000.00 200.00 NIL 17180.70	 NA
3	Irrigation & Flood Control Normal Schemes		
(a)	Estt of CADA, Farmers ASS, Field Channel Drain, Use of Surface Ground Water, Rehabilitation of Water Logged Area	1530.00	1908.69
(b)	Estt. of CADA Field Channel Drain, Land Levelling, Farmer Participation	352.00	87.81
	Total	1882.00	1996.50
4	Rural Development (DPAP)	1000.00	

Source: *Annual Plan, 2002-03 Orissa*, Vol. - 11, Government of Orissa Annexure - VI, Centrally Sponsored Schemes. PP- Anx-VI/1-40.

Table -14. 11 (b)

**Outlay and Expenditure in State Plan Ninth-Five Year Plan 1997-2002
Directly or Indirectly Linked to the Mitigation of Natural Calamities**

(Rs. in Crores)

SL. No	Heads of Development	9th Plan Approved Outlay (96-97 Prices)	9th Plan Anticipated Expenditure
1	Agriculture & Allied Activities		
	Crop Husbandry		
(a)	Crop Insurance	250.00	708.08
(b)	Forestry & Wild life	12275.00	12450.50
2	Rural Development		
	Special Prog. for Rural Development		
	Drought Prone Area Programme (DPAP)	1000.00	486.72
3	Irrigation and Flood control		
	Flood control (including flood protection works)	2000.00	4376.00

Source: *Annual Plan, 2002-03 Orissa*- Vol- 11, Government of Orissa PP-GN-1 to GN-9.

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