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Key Aspects and Evolution of Disaster Management System in Odisha

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Key Aspects and Evolution of Disaster Management System in Odisha

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By: _VO**IS Planet**

Executive Summary

Odisha, a state in India, with home to 4.6 crore people, is one of the most disaster prone regions in the country. It has a coastline of about 480 km that lies along the Bay of Bengal, has plateaus, hills, plains and coastal areas, which makes it vulnerable to droughts, floods, heat waves and very frequently, to cyclones. Odisha's location is such that it puts it in the path of almost all tropical cyclones that form in the Bay of Bengal. It suffered loss of life and damage to infrastructure from every cyclone that has hit it till date. However, the 1999 super cyclone marked a paradigm shift in the state's disaster management systems and government capacity building mechanisms.

This case study lays out effects of cyclones that Odisha has faced since the turn of the century, what effects they have had and how the communities and disaster response bodies of Odisha have responded to it, the social and technological innovative adaptations that have taken place to better equip the state to be resilient and ready in the face of a natural calamity with the aid and efforts of state government, central government and some foreign entities.

Planning and Management of Resources During Different Phases

Odisha has a very evolved system of disaster risk assessment, it uses Geographic Information System and mapping techniques. The Hazard Risk and Vulnerability Analysis (HRVA) was effectively used to reduce disaster risk in urban areas. It studies cyclonic winds, flood vulnerability and other meteorological parameters to assess the risk exposure of urban communities. Social vulnerability assessment is aimed at analyzing the risk exposure of communities based on social and financial indicators like age, gender, income and education etc. It is done through field assessment. Cyclone shelters are put in place for the shifting of people out of vulnerable areas in the times of crisis . These shelters have proper arrangements for drinking water, sanitation and food. Proper medical facilities and free sanitary napkins are also provided.Apart from this, animal shelters are made next to human shelters so people don't have to abandon their livestock in times of emergency. These shelters are managed by committees formed by participation of local communities along with Odisha State Disaster Management Authority (OSDMA) and Block Development Officer (BDO)/sarpanch. Odisha also has a one-stop risk management system called SATARK, developed by OSDMA with Regional Integrated Multi Hazard Early Warning System; it provides an early warning system for disasters.

Odisha leads the way in pre disaster planning and readiness. It has an advanced information dissemination system at block, district and state level for pre-disaster emergency alerts and for communication during crises . The Early Warning Dissemination System uses Satellite Based Mobile Data Voice Terminals (SBMDVT) set up in the District Emergency Operation Center (DEOC) and the State Emergency Operation Center (SEOC), mass messaging and air sirens for broadcasting and communication. The purpose of the Early Warning Dissemination System (EWDS) is to establish an end-to-end communication system to fix the existing gap of dispersing disaster warning.

Odisha State Disaster Rapid Action Force (OSDRAF) is set up for post disaster operations in case of floods or cyclones, also used for pre disaster preparedness activities. Their key roles include; Collapsed Structure Search, Water rescue & Rescue (CSSR) Transportation, Relief line clearance, and Casualty and Communication management. The OSDMA follows its own Standard Operating Procedures (SOPs) for disaster response and rehabilitation. It is a code of operation for all levels of response with different levels of crises categorized based on severity and immediacy of the emergency.

Odisha's disaster response is very decentralised and operates on a specified code that ensures that all the levels and entities know what they have to do and they can work in sync. The efficiency of Odisha's efforts is also a result of its community participation.

Policy Framework, International Cooperation and Financial Resources

The Disaster Management Act of 2005 lays the foundation of the essentials of "disaster management". It involves capacity building, correct risk assessment and ensuring that post disaster efforts are sufficient. The National Disaster Management Authority works on a multi level organization with The National Plan, which is prepared by the National Executive Committee based on the National Policy and in consultation with the expert bodies or organizations in the field of disaster management and the State Governments. The plan includes risk assessment, preparing for the least damage from a disaster and support in rehabilitation and rebuilding efforts post disaster.

The State Disaster Management Plan in Odisha is integrated into the primary framework of the state's development policy and it performs the same functions as the National Plan but on the state level. It fortifies systems on the level of district and blocks/gram panchayats for better response to disaster, and the community is also involved with the state government in their efforts. There is also a district level planning and executing body which performs these operations on a more localized scale.

Besides policies and frameworks laid down by central, state governments and local bodies, there are several international entities that come forward for aid, with pre-disaster preparedness and post disaster rebuilding. The aid includes financial aid and sharing of technology. The World Bank has aided Odisha in building the National Cyclone Risk Mitigation Program and Odisha Disaster Recovery Project with investments of more than USD 350 million, it has also improved the intelligence for the warning system in Odisha. The UNDP has also aided the state in its efforts, it includes support in building disaster resilient houses and ensuring clean water supply in rural areas. The development of the MoGhar system was also aided by the UNDP.

The CRF and CDRF have also helped Odisha in disaster response. India is implementing Community Disaster Resilience Fund (CDRF) in the 8 coastal states reaching 77 villages, it is aimed at developing community level resilience in disaster prone areas. Calamity Relief Fund (CRF) is a joint effort of state and central government and finance commission, it is a dedicated fund for dealing with disaster management and post disaster rehabilitation.

Odisha has come forward as an example of managing a disaster in an efficient and sustainable way.

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Introduction

The New York Times published an article on May 3, 2019 titled "How Do You Save a Million People From a Cyclone? Ask a Poor State in India", and that was just one of many acclaims received by the state, world over. Odisha is one of the most disaster-prone states of India. Owing to its geographic location in the high-tide coastal area of the Indian ocean and the current trends of climate change have increased the frequency and risk factor of the natural calamities. With over 10 major tropical cyclones across two decades, along with severe floods and heavy torrential rains, the state has been hard hit. But, despite facing such a catastrophic trend over a long course of time, they have stood out as a very efficient disaster management system. The World Bank in its report of 2019 acclaimed the community outreach system of Odisha through which people are rehabilitated on time, and the system. Currently, there is a network of 450 cyclone shelters and a robust mechanism for its maintenance. Besides its own machinery, there is direct communication with the Indian Meteorological Department and the general awareness of people about the basics of early warning systems. In August 2021, two of its coastal villages, Noliasahi in Jagatsinghpur district and Venkatraipur in Ganjam district earned the recognition from the UNESCO-Intergovernmental Oceanographic Commission of being 'Tsunami Ready'. This made India the first country in the Indian Ocean Region to develop such high levels of disaster preparedness at the community level.

But an efficient system is only successful, if there is equal contribution by the people, and thus Community based risk reduction has always been at the heart of Odisha's approach towards disaster management. The central theme of their disaster management plan states that "community based disaster risk reduction strategies are the key to effective disaster management." During any disaster, communities are the first to respond, but also the worst affected. Participation of people in the process addresses local needs, ensures local ownership and promotes a sense of self-reliance and mutual help to prevent and reduce damage. It is important to understand how Odisha has tackled a slew of disasters in the past few years with the community at its forefront. The distinguishing characteristics of Odisha's way of disaster management which has gained global appreciation therefore needs to be studied and highlighted for replication of emerging best practices.

This case-study attempts to document an overarching perspective of the key aspects and evolution of the disaster management system in Odisha; and to highlight the emerging and established best practices over the years in an endeavor to reach out to the concerned stakeholders for replication and further exploration.

Planning and Management of Resources During Different Phases

Resource planning and management is the key pillar in strategy and approach towards disaster management. In this section, key initiatives undertaken under different phases of disaster management are listed along with innovative approaches strategized and employed.

Pre-Disaster Preparedness Phase:

Cyclone Risk assessment: Through the application of Geographic Information System and mapping techniques, The Hazard Risk and Vulnerability Analysis (HRVA) for Odisha was carried out in different phases to reduce the risks of disaster in urban areas by enhancing institutional resilience and

Source: OSDMA

strengthening the community. The assessments include measuring the Cyclonic winds, flood levels, ocean currents and other hydro meteorological parameters. GIS-based Quantitative modeling techniques are used for analysis using standard public domain models and accordingly, recommended actions for the different adaptation and mitigation measures are provided. Along with disaster related parameters, daily mean temperature, rainfall, drainage are also essential

Vulnerability assessment: The analysis of physical, social and environmental vulnerability to various hazards, is also essential to ensure safety and security of the population. Based on field observations and the indicators identified, the vulnerability of different population sections and rural-urban areas is assessed. Further, in the analysis of the types of building in the area, different vulnerability functions for cyclonic winds are also used for assessment. For analyzing social vulnerability, various socio-economic indicators like income level, gender, occupation levels, education etc. are considered on field based information and the parameter is known as The Social Vulnerability Index (SoVI). Gender and poverty seems to have a high influence on social vulnerability in most places. There is a strong correlation between socially vulnerable groups to areas with low income, slum settlements in particular.

Building cyclone shelters: Indian Red Cross Society (Odisha State Branch) began constructing 23 cyclone shelters in districts of the State around the coast before the super cyclone of 1999, which managed to save 42,000 lives. The state of Odisha, now has a network of over 870 cyclone and flood shelters that can house 1000 people each. That event led the Government of Odisha to realize the need for construction of a larger number of disaster resilient shelter buildings, to undertake long term risk reduction initiatives.

National Cyclone Risk Mitigation Project for India was a World Bank financed program aimed at disaster risk management and reduction, disaster preparedness and mitigation. The $319 million project was implemented by Odisha State Disaster Management Agency (OSDMA),Odisha State Disaster Management Agency (OSDMA) in Odisha; a total 538 cyclone shelters were constructed under this project

Odisha Disaster Recovery Project was also a World Bank financed program which helped communities in Odisha in building resilient infrastructure both rural and urban, and also increasing the capacity to respond effectively to crisis and emergency.

Enhancing Institutional and Community Resilience and Climate Change was a project of UNDP to help government, communities and institutions to accelerate disaster risk reduction and climate change adaptation plans. It ran from 2013 to 2017 with aid from UNDP and USAID, it helped enhance the weather reporting system in Puri, better drainage was developed and piped drinking water was made accessible to people vulnerable to water borne diseases.

SATARK: 'Satark' is a one-stop risk management system of the Odisha State Disaster Management Authority (OSDMA).

It is in collaboration with the Regional Integrated Multi Hazard Early Warning System (RIMES) which uses new technologies to provide efficient early warning information (EWS) for improved action prior to the onset of disasters. This initiative interprets generic weather data into location specific potential areas of concern. Then customized advisories are formulated, and the chain of communication is facilitated regarding the disaster risk information to vulnerable communities and officials. Further emergency helplines are provided for people to call for assistance.

Cyclone/ Flood Shelter Management and Maintenance Committee

To ensure sustainable maintenance of the shelter buildings constructed by OSDMA, community based committees are formed for their maintenance. The committee is constituted in meetings convened by OSDMA in the presence of BDO/ sarpanch, it usually consists of 21-35 members, and creates a feeling of ownership in the community. The committee is responsible for the maintenance of these shelters, for putting them on rent and ensuring that they are not being used for some illegal, anti-social or political purpose, and ensuring that they are ready if an emergency is expected.

Response and Rehabilitation Phase

The **Early Warning Dissemination System (EWDS)** for Last Mile Connectivity is a component of the National Cyclone Risk Mitigation Project (NCRMP) under the assistance of the World Bank. It has been implemented across 1205 villages of 22 blocks in the six main coastal districts of Bhadrak, Balasore, Kendrapara, Jagatsinghpur, Ganjam and Puri in the five km range from coastlines of Odisha. The EWDS aims to establish a fool-proof communication system to fill the existing gap of disseminating disaster warning to the community level especially in case of cyclone and tsunami. It employs technologies like Satellite Based Mobile Data Voice Terminals (SBMDVT) which are set up in six District Emergency Operation Center (DEOC) and the State Emergency Operation Center (SEOC) , Mass Messaging System Digital Mobile Radio (DMR), Universal Communication Interface (UCI) and Alert Siren System at 122 locations for inter-functionality across different communication technologies. People in the coastal areas are alarmed through these 122 alert siren towers and are able to evacuate on time and save their property.

The State Emergency Operation Center is made operational at Rajiv Bhawan, Bhubaneswar with a high-efficiency communication network. It is functional all throughout the year. The Special Relief Commissioner (SRC) heades the organization and exercises all financial and administrative powers. In case of any calamity, the office operates rigorously in an emergency mode.

The basic purpose of Early Warning Dissemination System (EWDS) is to establish an end-to-end communication system to fix the existing gap of dispersing disaster warning up to the unitary level, by strengthening of State Emergency Operation Center (SEOC), District Emergency Operation Center (DEOC) and Block Emergency Operation Center (BEOC). It ensures information transfer from the state headquarters to District and Block Levels and vice versa, so the last person living closest to the sea is well connected with the system to take appropriate action at the onset of a disaster.

The **ODRAF** or Odisha Disaster Rapid Action Force is a response force deployed in the aftermath of a disaster like cyclone and flood. But they are also utilized during pre-disaster preparedness activities and initiatives. The operation and maintenance of the training of personnel, emergency equipment, and effective mechanism of coordination of deployment of ODRAF are some of the priority areas. Five units of ODRAF have been set up at Koraput, Jharsuguda, Balasore Cuttack, and Chatrapur.

Their key roles include: Collapsed Structure Search, Water rescue & Rescue (CSSR) Transportation, Relief line clearance, Casualty and Communication management. Each unit is facilitated with 66 types of equipment that are essential for first response and evacuation like road clearing equipment, tree pruner, branch cutter, RCC cutter, concrete cutter, inflatable tower light, boat, forklift, generator, collapse structure search & rescue (CSSR) kit, medical first responder (MFR) kit, hydraulic rescue kit, manikin, ambulance, high discharge submersible pump, commando searchlight, flexi water tank, flexi tent, mountaineering equipment, breathing apparatus with gas & chemical cartridge, mask diving equipment set etc.

The working procedure of the response during a disaster includes the ODRAF to follow a Standard Operation Procedure (SOP). It ensures smooth communication and coordination among the stakeholders. The stakeholders include the OSDMA and Odisha State Armed Forces of which are segregated in units spread across the state. The SOP includes Early Warning Dissemination System (EWDS), which ensures the dissemination of information or warning at state, district and block level emergency operation centers. It uses technologies like Digital Mobile Radio (DMR) and Satellite-based Mobile Data/ Voice terminals (SBMDV), which work in the time of storms or when electricity is out.

The Meteorological department issues two weather reports in a day via radio to merchants and fishermen, there are multiple stages of warning based on severity and immediacy.

1. DISTANT CAUTIONARY–There is a region of squally weather in which a storm may be forming.
2. DISTANT WARNING – A storm has formed.
3. LOCAL CAUTIONARY– The port is threatened by squally weather

5. DANGER– The port will experience weather from a storm of slight or moderate intensity that is expected to cross the coast to the south of the port.

6. Great Danger– The port will experience severe weather from a storm of great intensity that is expected to cross over or near to the port.

For evacuation, road transport services should be kept updated with weather information or emergency alerts, public transport doesn't function normally in an emergency, the state government uses buses and vans to transport people from the most vulnerable spots to safer places and cyclone shelters.

Good Practices of Odisha Disaster Management Model During Recent Cyclones

On May 3, 2019, cyclone Fani had hit the coasts of Odisha which had a sustained wind speed of 180-190 km per hour. It could have claimed thousands of lives and brought destruction worth a fortune, but owing to the massive pre-disaster planning adapted by the state government, the number of casualties were reduced to 64. Odisha is the first State in India to form an authority for disaster management along with forming a special force to deal with immediate disaster response, and over the years they have become more organized and well connected. One of the major achievements is the **decentralized governance institutional system** of a team of trained professionals and first responders from district level to block and village level. The implementation of the disaster management with participatory approach, involving the village community, the panchayat system, and voluntary organizations has been effective and brought forth intended outcomes. There are 16 district-level disaster management planning committees which branch to 155 block-level committees and further connect to 22,000 village-level committees.

All agencies and stakeholders operate within the framework and other related codes, laws and government notifications and guidelines issued from time to time. All agencies at the State and District levels are accountable to concerned officials and refer to them before performing any new activities and are required to submit reports in respective databases, to avoid overlap and duplication of efforts and improve coordination.

Community participation in the relief process is conducive for on-time dissemination of warnings and mobilization of the people responsible for effective implementation of evacuation operations. It is one of the key reasons behind Odisha's success in efficient disaster management. The local people participate in the maintenance committee of the network of 450 cyclone shelters. Through the network of shelters and committees, the state has developed the entire community to evacuate people.

In the recent disasters, Odisha has proved its progress in conducting effective evacuations. During one of the strongest cyclones of the Bay of Bengal Cyclone Amphan, there was successful evacuation of nearly 200, 000 people in the state. The alerts were issued ahead of time and the preparations began. The restoration efforts were undertaken way ahead, so by the time the cyclone moved towards West Bengal, more than 85 percent of the power repair was already done. Adhering to the goal of "zero casualty", Odisha accomplished one of the biggest evacuations ever, mobilizing around 1.2 million people before the onset of Super Cyclone Fani of 2019. Nearly 1 million evacuees had been relocated in over 4,000 shelters and

An Overview of the Developments in Disaster Response

Major Cyclones in Odisha and State's Response:

We look at the timeline of major cyclones and their impact, along with the development of response mechanisms and technical adaptation methods in the last few decades in the state of Odisha.

Duration	Cyclone Category	Impact	Milestone developments in technical and adaptation methods
8-11 October, 1967	Very Severe Cyclonic Storm	Crossed Odisha Coast between Puri and Paradeep, Loss of life-1,000	
26-30 October, 1971	Very Severe Cyclonic Storm	Crossed Odisha Coast near Paradeep Loss of life-10,000	
15-19 October, 1999	Very Severe Cyclonic Storm	Crossed Odisha Coast at Gopalpur, Ganjam	
25-31 October, 1999	Super Cyclone	Crossed Odisha Coast near Paradeep at noon of 29 October, Loss oflife - 9885	• This cyclone mapushed Odisha towards a more organized disaster management system. • 23 cyclone shelters had been constructed by the Indian Red Cross before 1999. • A Dedicated Odisha Disaster Rapid Action Force(ODRAF) was institutionalized. • Odisha State Disaster Management Authority (OSDMA) was established.

			• 335 units of the newly established Fire Disaster Response Force were set up. • OSDMA collaborated with IIT Kharagpur to design cyclone shelters equipped with generators, drinking water, and toilet facilities.
10-13 October, 2013	Very Severe Cyclonic Storm Phailin	Very Severe Cyclonic Storm Phailin	• People whose houses were damaged also took shelter in relief centres. 4197 free kitchen centers were opened covering 2223953 beneficiaries. • 9.84 lakh people were evacuated. Subsequently, 171083 persons were evacuated in 3 districts which were severely affected by flood following the cyclone • Digital Mobile Radio was used to connect State Emergency Operation centers, 6 District Emergency operation centers, 22 Block Emergency Operation Centers and 22 Fish Landing Centres.Alert Towers were set up at 122 locations within 1.5km from the coastline for dissemination of cyclone & tsunami warning. • About 30,000 disaster resilient houses were constructed for the people living in the 3 coastal districts within 5 km from the High Tide Line (HTL). An Owner Driven Construction of Houses (ODCH) policy was adopted1. The World Bank helped the government in this project to reduce future risk and promote disaster recovery.

			• Odisha State Disaster Management Authority (OSDMA) had for the first time organized a mock tsunami and cyclone drill, to test the The exercise was aimed at testing the Indian Ocean Tsunami Warning and Mitigation System(IOTWS)2Currently it is conducted in 30 districts of Odisha, and are regulated by ODRAF, Cyclone/ Flood Shelter Management & Maintenance Committee (CSMMC), district administration and Fire service department.

[1] Which would provide Rs. 3,00,000/- (Rupees Three lakhs only) per house of 300sq. ft. It would be a 1 BHK with toilets and other facilities like water and electricity supply facilities.

[2] IO TWS was was formed in response to the tragic tsunami on December 26th 2004, The Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) coordinated the establishment of the system

10-12 October, 2018	Very Severe Cyclonic Storm Titli	Crossed Odisha Coast south of Gopalpur, Ganjam	• About 3.00 lakh people were shifted in the 24 hours preceding the landfall of the cyclone. • Free Kitchen centers were opened for the evacuated people. • The cattle population was also shifted to safety and cattle feed/ fodder arrangements were made for them. Animal shelters were provided in places with large population of livestock since people were reluctant to abandon their animals in cyclone

3-4 May 2019	Extremely Severe Cyclonic Storm Fani	Crossed Odisha Coast near Puri	• To all the families that came under NFSA or SFSS, 50kg Rice along with Rs 2000 was provided and 50 kg Rice was provided to people who did not come under NFSA or SFSS in Puri and Khordha district. • Gratuitous Relief, equal to one month's pension has been provided to all pensioners under various pension schemes of the Central and State Government. • Rainfall forecasts were observed at every level and districts were coded yellow, orange and red as 'be updated', 'be prepared' and 'be updated' respectively. • The early warning system of IMD was improvised before Fani, due to participation in early monitoring, which were the Regional Integrated Multi Hazard Early Warning System(RIMES), Thailand and Joint Typhoon Warning Center in the USA. • Around 1.8 Cr SMS alerts were shared, and covered by 10 TV spots. Along with them, 274 siren alerts and 1275 DM alerts were propagated. According to a report by OSDMA in 2019, around 14 Satellite based mobile data and voice terminals (SBMDVT). • 879 multipurpose cyclone and flood shelters were assessed for fitness before Fani. The assessment included availability of drinking water, power backup and sanitation facilities.

13-16 May, 2021	Extremely sever cyclonic storm Amphan	Crossed 10 districts in, but minimal casualties.	• 2,00,346 people were evacuated from vulnerable areas to 4314 shelters. They were provided with dry food, drinking water and a free kitchen. • 44,57,182 no. of consumers were affected in 6 districts. Power was restored in five days.
23-28 May, 2021	Cyclonic storm Yaas	Paradeep, Mayurbhanj, Keonjhar districts, minimal casualties.	• 7.02 lakh people were evacuated from vulnerable areas to 8410 shelters. They were provided with dry food, drinking water and a free kitchen. • District Hqrs & COVID Hospitals - power restored within 8 hours. • Oxygen plants - power restored within 12 hours. • Block Hqrs are restored within 24 hours. • 80% Public Water Works & PHC/CHC are restored within 48 hour.

Policy Framework, International Cooperation and Financial Resources

A standard framework of disaster management should include an integrated and continuous process of planning the procedure, organizing resources, coordinating among the various groups and implementing measures before, during and after the event.

The Disaster Management Act of 2005 lays the foundation of the essentials of "disaster management". It includes suggesting ways of prevention of hazard of any disaster, reduction of risk posed by any disaster or due to the severity of its consequences. Capacity building of resources and community, enhancing readiness to deal with disaster and the ability to respond to threatening hazards. Methods of correctly judging the magnitude of aftermath and deploying sufficient resources for rescue, relief and rehabilitation.

National Disaster Management Plan

The National Disaster Management Authority (NDMA) is formalized as a multi-level hierarchy with gazetted officers for each function. The National Plan is prepared by the National Executive Committee based on the National Policy and in consultation with the expert bodies or organizations in the field of disaster management and the State GovernmentsThe National Disaster Management Authority (NDMA) is formalized as a multi-level hierarchy with gazetted officers for each function. The National Plan is prepared by the National Executive Committee based on the National Policy and in consultation with the expert bodies or organizations in the field of disaster management and the State Governments

The national plan includes– deciding what measures are to be taken for mitigation of disaster and its consequences, strengthening mechanisms of better response to disaster and hazard and laying down a framework of disaster management for ministries, states and other governing bodies. Apart from this, annual renewal of national plans, evaluation of preparedness of all the government levels for the purpose of responding to any threatening disaster situation or disaster, help enhancing preparedness where necessary. All the measures taken under the National Plan are financed by the central government.

State Disaster Management Plan

After the declaration of the period of 1990-2000 as the International Decade for Natural Disaster Reduction (IDNDR), national initiatives and Odisha's own experience of the Super cyclone of 1999, the State Govt. felt it quintessential to have a specific policy for disaster management and to formulate the necessary guidelines on all aspects of emergency response. The State Disaster Management Policy would focus on total risk management and reduction of vulnerability by improvising the physical infrastructure as well as psychological, biophysical, and socio-economic status of the people and to inculcate disaster resilience in people as well. Adhering to the above aspects, the State Government framed the State Disaster Management Policy. Odisha being a disaster prone state that has to deal with various kinds of disasters from cyclones and heavy rainstorms to droughts and fires. The state needed a system that could tackle all kinds of hazards and disasters, apart from putting systems in place for timely and adequate response to a calamity, the state also needed the participation of the community in preparedness and mitigation which is also central to achieving the goal of averting loss of life and resources.

Disaster management has been integrated into the primary policy making and planning of Odisha state government, it ensures that all the levels of organization are working in an effective and coordinated way to manage any impending emergency.

As with any well functioning organizational structure, a key feature of the state's disaster management plan is to decentralize the management of disaster. This means fortifying the block/municipality/ gram panchayat level systems of dealing with disasters and its aftermath, multiple functional bodies that have been appointed for different functions include–Community members vulnerable to disasters, because they are best aware of their own problems which makes them able to respond to it more appropriately, volunteering organizations such as s NCC, NSS, Scouts, Indian Red Cross, Nehru Yuva Kendra, Civil Defense,etc. Apart from these the following are also functional:

1. Civil Society Organizations and CBOs
2. Urban Local and Bodies Panchayati Raj Institutions
3. Police, paramilitary forces and Home Guards
4. Odisha Disaster Rapid Action Force (ODRAF)
5. District Administration
6. Odisha State Disaster Mitigation Authority (OSDMA)
7. Special Relief Organization
8. Govt. of India organizations, agencies in the State
9. State Govt. Departments
10. Private Sector Organizations
11. Public Sector Organizations
12. United Nations Agencies

The state government is also involved in setting up and funding research and development in the direction of better understanding weather patterns, damage assessment and possible methods of mitigation. Building a background of Disaster Management in the basic education system and training people for emergency response, evacuation and carrying out of official procedures during a disaster has promoted a spirit of volunteerism among people which is good.

District Disaster Management Plan:

Under the Disaster Management Act 2005 under Section 31, it is mandatory for the District Disaster Management Authority (DDMA) to set up an integrated process of organizing, planning, and implementing machinery for prevention as well as mitigation of disasters.

These processes are to be incorporated in the developmental plans of the different departments so as to minimize the loss to be suffered by the communities and are to be documented so that it is handy and accessible to the general public. of Disaster Management Act 2005 (DM Act) makes it mandatory to have a disaster management plan for every district. DDMP shall include Hazard Vulnerability Capacity and Risk Assessment (HVCRA), prevention, mitigation, preparedness measures, response plan and procedures. The District Disaster Management Plan (DDMP) is the guide for achieving the objective i.e. mitigation, preparedness, response and recovery. This Plan needs to be prepared to respond to disasters with a sense of urgency in a planned way to minimize human, property and environmental loss.

The district authority acts as the district planning, coordinating and implementing body for disaster management and takes all measures for the purpose of disaster management in the district. It involves providing effective support and resources to all the concerned individuals, groups and departments in disaster and mitigating the impact of disasters at the block, district and gram panchayat level. Education and awareness is also a part of the district plan, it communicates necessary and relevant information with the public to alert them and also makes sure all the administrative departments have access to factually correct information, and that confidentiality is maintained wherever necessary. It ensures that people and administration are aware and skilled enough to be ready to respond in the event of an emergency, promoting participation of communities, Volunteers / Village Task Forces in prevention, relief and reconstruction processes along with the Government Administration, NGOs and CBOs at all levels. .

Collaboration with International Organizations:

Besides effective policy framework and implementation, many international organizations have also contributed in the development and regulation of the disaster management of Odisha. The World Bank has supported during various times, to reduce vulnerability and impact of cyclones and other hazards of coastal communities. In 2010, the National Cyclone Risk Mitigation project was started and it was an intervention in all the 10 coastal states of India.

In Odisha, the World Bank has aided the state government in restoration and improvement of housing and public services among the vulnerable communities of the state. After the Super Cyclone of 1999, through their projects like the National Cyclone Risk Mitigation Program and Odisha Disaster Recovery Project investments of more than USD 350 million were made. The World Bank has also helped improve the intelligence for the warning system in Odisha. This system was introduced during the Cyclone Mitigation Project and has been used for the past 12 years.

The World Bank has also been assisting states in creating cyclone shelters and access to these shelters. It has provided early warning systems and helped governments create early warning dissemination systems. The project included 156 Road Works, 20 Piped Water Supply 395 Irrigation Works, 34 Cyclone Shelters Works & 64 Rural Water Supply works. The project commenced in the year 2000-01 and by the end of the project closure date i.e. 30th September, 2004, 583 packages worth Rs.231 .67 crore were completed.

After the Super cyclone of 1999, National UN Volunteers in India had teamed up with UN Information Technology Services (UNITeS) to help villages prepare for cyclones, earthquakes, and other calamities. The National UN Volunteers in their joint efforts with UNITeS set up online information booths in remote villages in Odisha and trained community members, including women to operate them.

The UNDP is supporting the Panchayati Raj and Drinking Water Department for fast tracking rural housing' project (2017-2021) in Odisha for building disaster resilient housing for people of vulnerable sections of society, it is funded by the Panchayati Raj and Drinking Water Department, Government of Odisha and covers 30 districts and 314 blocks. The UNDP has provided technical support to the government in building affordable houses. Also the UNDP has helped develop technical solutions like MoGhar which is an application for tracking the progress of construction of the houses, it is linked to the rural housing website and the four-tranche fund is only released when the photograph of the completion of one stage is verified. People living below the poverty line also receive financial support under this scheme.

CRF

The Calamity Relief Funds, as in operation today, are broadly based on the recommendation of a joint endeavor of the Central and State Governments and Finance Commissions. They are essential to meet the expenditure for developing infrastructure and providing relief to the people affected by cyclone, flood, tsunami, drought, earthquake, landslide, hailstorm, avalanche, cloud burst and others. The essential features of the CRFs are as follows:

During the period from 2001 to 2007 CRF conducted relief and reconstruction work expenditure of Rs 7.02 crore in 10 projects. Around Rs.19.92 crore was sanctioned for flood proofing measures in Baitarani River System. These projects were completed under the Jajpur Irrigation Division of Water Resources, from 2005 to 2008.

CDRF

Developing Community Capacity is crucial for effective disaster management. Community participation is a key resource for emergency response and restoration, so to facilitate capacity building among local people, India carries out Community Disaster Resilience Fund (CDRF) in the 8 coastal states reaching 77 villages. UDYAMA is a Participatory Organization (PO) in collaboration with partner NGOs to carry out resilience processes in the community. The objective of the CDRF in Odisha is to promote activities that link community livelihoods and support at-risk communities for social, cultural, economical and ecological safety, and attain sustainability in their disaster adaptation ability. Women groups are empowered and included in Disaster Risk Reduction initiatives and to take part in the baseline preparation of attaining resilience, mapping in terms of location, resources, social groups, vulnerability and community capability. Along with that, preparation of disaster risk reduction strategy and advocacy at Gram Panchayat, district and block to merge the plan for village developments. UDTAMA also focuses on the promotion of Eco-Agriculture development fund, coastal plantations, revolving Grain banks, nursery raising, pisciculture for community income and nutrition, eco-farming, handicrafts, micro-business for local needs, rural sanitation and other community welfare.

Way Forward

The Government of Odisha leads the way in adapting to calamities coming its way. With an increasingly progressive system, it has been able to tackle challenges at every level. Amongst its various credentials that other disaster-prone states of India and countries of the world should learn from, a notable one would be sustainability. In the Super cyclone of 1999 an estimated damage of $4.44 billion was incurred, while during the Phailin cyclone of 2013 reported $4.26 billion worth of infrastructural damage. Thus, there was a scope of improvement in preventing this loss. To manage it, the State has inculcated sustainability in the disaster management system. The demand for sustainable building technologies and livelihood is provided through enterprises. Reconstruction activities, when designed to involve local manpower, generate jobs giving way to immediate growth in the local economy. At the same time, building material and skill based local enterprises ensure continuous supply of quality building materials and skills. In the long term this is likely to result in a sustainable improvement in shelter conditions while also enlarging livelihood options in the region. An initiative working on this concept called The Ashraya Core House Construction Program is currently functional in Odisha, which is in partnership with CARE India. The core of the Ashraya Program is the Building Materials and Services Bank (BMSB) which is the local production and supply hub for improved building materials, skills and elements. Thus, at the core of any efficient disaster resilience system is a continuously evolving process and adaptation to climate change

The NDMA's program Apada Mitra is for training volunteers for better response to disaster in 30 most flood prone districts in India, Odisha has two districts under this scheme Jagatsinghpur & Puri. It is aimed at making local communities more capable of dealing with emergencies at the local level.

Annexure I: Disaster Terminologies

The United Nations has defined Disaster, as a disruption of the functioning of a society or community, which includes damage to human resource, economic or environmental impact and loss of property. Disaster management is how we respond to the damaging effects of said disaster. It is the process of how we condition ourselves and our resources, respond to and evaluate the effects of major failures. Though often caused by natural factors, disasters can also have human origins. The International Federation of Red Cross & Red Crescent Societies states that a disaster occurs when a potential hazard affects a vulnerable section of society. Thus a disaster is the combination of hazards, and underlying vulnerability and the amount of effect that it can have i.e risk.

Hazard: A hazard is defined as a physical event that has potential to cause damage and cause socio-economic disruption or degradation of the environment. Typical examples of hazards can be absence of rain (leading to drought) or the abundance thereof (leading to floods). Chemical manufacturing plants near settlements and incorrect agricultural techniques, can also be seen as hazards which could lead to possible disasters. Hazards can be the creation of man or the environment.

Risk is the human inability to cope with a particular situation. In the context of disaster management, it is usually the probability of damaging consequences, death, expected losses, damage to property and the environment, injury, disruption of social systems or the economic activity. Hazards cause damage to communities differently on account of their resources and ability to cope. Marginalized communities will be more at risk than others.

Vulnerability is the degree of a person or community to get affected by a calamity or disaster has, to predict, cope with, or avoid and recover from, the consequences of a hazard or disaster. Marginalized, poorer and over-populated communities are more vulnerable and less able to cope with disasters.

Mitigation is the measures taken to reduce the impact of a disaster or hazard.

References

https://osdma.org
UNDP Hazard Risk and Vulnerability Analysis (HRVA) of the City of Bhubaneswar (Odisha) Report
the federal.com
IMD Cyclone Warning In India SOP report
Odisha State Disaster Mitigation Authority Manual
Ndma.gov.in
Orfonline.org
Cyclone Warning System In India, report by Dr. Mrutyunjay Mohapatra Director General of Meteorology Sujit Kumar Mohanty, R Chatterjee and Rajib Shaw
Building Resilience of Critical Infrastructure: A Case of Impacts of Cyclones on the Power Sector in Odisha from MDPI https://www.mdpi.com/2225-1154/8/6/73/htm
caritasindia.org
Cyclone-fani-defanged-disaster-management from https://thewire.in
Departmental Disaster Management Plan of Electronics & Information Technology Department, Government of Odisha
State Disaster Management Plan June- 2017 from osdma.org
https://srcodisha.nic.in/cyclone.php
https://projects.worldbank.org/en/projects-operations/project-detail/P148868?lang=en

https://projects.worldbank.org/en/projects-operations/project-detail/P092217?lang=en

https://www.in.undp.org/content/india/en/home/operations/projects/environment_and_energy/enhan cing-institutional-and-community-resilience-to-disasters-an.html

https://krishisanskriti.org/vol_image/11Dec201607125888%20%20%20%20%20%20%20%20%20Debasis%20Ganguli%20%20%20%20%20%20%20%20105-108.pdf

https://metnet.imd.gov.in/mausamdocs/157116_F.pdf

https://www.in.undp.org/content/india/en/home/climate-and-disaster-reslience/successstories/Pandemic_no_bar_in_Odishas_quest_for_building_roofs.html

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