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Institutional framework and administrative systems for effective disaster risk governance – Perspectives of 2013 Cyclone Phailin in India

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ABSTRACT

Risk Governance mechanism is guided by the administrative systems and institutional framework of the central and provincial governments. Policies and legislations related to the risk management are paramount towards defining the efficiency of the on-ground implementation of the Disaster Management Plan. The present study will analyse the efficacy of robust national level institutional system on India in the form of Disaster Management Act 2005 along with a wide range of National Level Institutions related to early warning, meteorology, remote sensing, information and communication technology, satellite technology, disaster response management, which have substantially contributed to high level of preparedness, in term of effective response to disaster in the light of a category 5 tropical cyclone Phailin, which struck the east coast of India in October 2013.

The study principally examines the effectiveness of the Indian policy pertaining to the disaster management in achieving its intended outcome, i.e. achieving effective mitigation and response to a disaster thereby minimising the casualties and losses to the community caused by the cyclone Phailin, India in 2013. It is also analysed how the implementation of the policy enabled the government of the Indian state of Odisha to minimize the casualties and damage to property, in stark contrast to the 1999 Super Cyclone in the same state of India where over 10,000 people died. This was a remarkable achievement considering the havoc anarchy among administration in the year 1999, when Odisha was challenged by the similar intensity cyclone.

1. Introduction

In the last decades, it has been evident from the theorists in public policy that emergency management have increasingly recognized that the dynamic, complex environment of rapidly evolving emergency events requires a different approach than the traditional hierarchical administrative framework, which assumes stable operating conditions [2,9,10,27,30]. Numbers of attributes of governance under the federal systems are interplay in disasters, before, during and after a situation. Disasters are a true litmus test of governance. Government of India enacted its national policy in the form of Disaster Management Act 2005. The national policy put in place necessary institutional mechanisms for drawing up and monitoring the implementation of disaster management plans, ensuring measures by various department and units of Government for prevention and mitigating the effects of anticipated disasters. The legislations in place are also undertaking a holistic, coordinated and prompt response to crisis situations. The policy was formulated drawing upon the learning from a spate of natural disasters in the preceding years that took a heavy toll of lives, namely: Odisha Super cyclone 1999, Gujarat earthquake 2001 and Tsunami 2004. The disaster management has emerged as an area of study and research through the years of evidences and practices. Governments around the world are invited to use the Decade to integrate education for sustainable development into their national educational strategies and action plans at all appropriate levels. Disaster risk reduction education (DRRE) has been in the limelight for past several years [43,44,48,49,50,51].

One of the major components in Disaster Risk Reduction education is capacity building through the creation of skilled and trained professional manpower. Disaster Risk Reduction also caters to the need of reduction of impacts of climate change through holistic developmental adaptation. Institutionalization of Disaster Risk Reduction in the disaster governance through sensitized cadre of officers and personnel, needs more attention in education. Trained manpower is the first requirement for mitigation, monitoring and management of disasters. Personnel with the formal knowledge of

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disaster risk management helps in quick rehabilitation of the disaster affected people, understands their psychological conditions and helps in their post disaster settlement. In the planning and policy–making, trained and experienced personnel are highly required to give better suggestions and optimization of resources [48].

Disaster Management education and capacity building are integral to disaster management. The programs in disaster mitigation and recovery cannot be successful without building adequate capacities. Though the focus on capacity building has resurfaced with the new vision on disaster management, the efforts towards building capacities have not been very systemic. Need for building capacities of the grassroots level stakeholders in disaster management is one of the paramount important aspects [39]. Educational institutions through its interdisciplinary and holistic approach to learning, helps to create resilient societies. It encourages a long-term perspective in decision-making processes, critical thinking, holistic and innovative approaches to problem-solving. Institute, therefore, contributes to DRR while DRR increases the relevance and the quality of education in disaster-prone areas [40].

The present context will examine certain concepts in disaster management that are relevant to the study of the Disaster Management policy, namely the concepts of Cognition, Communication, Coordination and Control and the socio-technical systems for emergency management such as Incident Command System (ICS).

The vulnerability to cyclones in the state of Odisha, India is noticeable from early days of history. It is on record of Hathigumpha inscriptions about cyclone devastated Kalinganagari and its repair by Kharavela during first year of his reign. Tsunamis causing appearance of new islands and disappearance of existing ones had been strange events for Odia navigators and settlers in South East Asia and the Far East region [41].

Around the past half century, Odisha has witnessed sea cyclones in 1971, 1973, 1977, 1981, 1983, 1984, 1985, 1987, 1989, 1999 and 2013 which have damaged life and property. Odisha, with its long coastline of 450 km, occupies the face of the attracting tunnel for cyclones from Indian ocean northwards, with indentations of its Ganjam, Khordha, Puri, Jagatsinghpur and Kendrapada to Bay of Bengal, usually these costal districts facing the direction of flow of the cyclonic storm [41].

Geographically, the Bay of Bengal is the home ground of cyclones due to its topography. This acts as an attracting funnel for cyclones in the oceanic milieu. As the cyclone originates and moves towards the coast, it gathers strength being squeezed between the land mass comprising the Indian coast (Andhra Pradesh, Odisha, West Bengal) on the west side with Bangladesh to the north and Myanmar to the east. Due to the constricted path, the cyclone can accumulate greater momentum as it plays within lesser ocean surface before landfall. Out of the 35 deadliest tropical cyclones of the world, the Bay of Bengal has recorded 26, which substantiates its geographic vulnerability. The marine environment that forms the pace of these devastating cyclones is not fully understood. Only very recently there is understanding of how sea surface temperature affects the characteristics of tropical storms and cyclones, and how ocean subsurface temperatures, thermo-cline depths and thicknesses affect activity of the El Niño Southern Oscillation (ENSO) cycle, tropical cyclone intensification, and landfall prediction [4].

The research broadly focuses on the evaluation of entities in disaster risk management, especially the features relating to disaster planning, preparation and response systems. The risk management policies and institutional framework that came into practice following the promulgation of the policy, discussed in the context of cyclone Phailin and its impact in Ganjam district along with why and how the systems in place could respond promptly and effectively.

The various mechanisms that were in place and the designed features were also analysed while evaluating the policy in terms of mitigation and response following the Category 5 cyclone in 2013 in the state of Odisha, India. Having examined the impact of the policy in terms of its efficacy, the research outlined the critical issues in the design features and implementation. The observations regarding certain gaps in the policy and implementation that need to be addressed has also been highlighted.

It is evident that the effective disaster planning, preparation and dissemination of early warning information led to a minimal death toll in the wake of the strongest cyclone to hit India in 14 years. Although there was damage to property, infrastructures and some casualties, the overall quantum of loss was miniscule when compared to a similar cyclone in Philippines a month later where over 6000 people died with a colossal destruction of property.

2. Impacts of Cyclone Phailin – mitigation and response

The state of Odisha is situated on the east coast of India and extremely vulnerable to cyclonic storms emanating in the Bay of Bengal. Prior to the promulgation of the Disaster Management Act 2005, the state witnessed severe loss of life and property in 1999 Super Cyclone. The study focusses on the coastal district of Ganjam having geographical coverage of 8070 km^2, with 3.7 million populations. The district is comprising of 3212 villages and 22 urban settlements having primary livelihoods as fishing and agriculture.

On October 8, 2013 India Meteorological Department (IMD) reported about the formation of a depression over North Andaman Sea. Warning was issued to National Disaster Management Authority (NDMA), Odisha State Disaster Management Authority (OSDMA) and subsequently relayed to District Disaster Management Authority (DDMA). Emergency Operation Centre (EOC) was activated on October 8 at OSDMA and the DDMA.

On the evening of October 12, 2013 a very severe tropical cyclone, Phailin, brought torrential downpours, damaging winds of more than 220 km per hour (km/h) and storm surges of up to 3.5 m (m) to the eastern Indian states of Odisha and Andhra Pradesh [19] especially ravaged Ganjam district, which was the location of landfall of the cyclone Phailin. The cyclone was accompanied with torrential rains for 3 consecutive days, leading to floods in number of rivers.

The impacts of Phailin and ensuing floods affected more than 13.2 million people, left five districts of Odisha under water, and caused hundreds of millions of dollars [19] in damage to homes, schools, crops and the fishing industry [17]. However, early warning alerts, disseminated four days before Phailin struck land, allowed for the evacuation of approximately 400,000 people on or by 11 October [47]. Ultimately, a total of nearly 1.2 million people were evacuated [19], resulting in the largest evacuation operation in India in 23 years [24]. Early warning also allowed for the relocation of more than 30,000 animals. A total of 21 lives were lost as a result of the cyclone and an additional 23 lives due to severe flash flooding in the aftermath of the cyclone [19]. 3212 villages, 22 townships and a population of over 3.7 million was directly affected in Ganjam district. 19 fishermen lost their lives in deep sea during fishing due to cyclone philin. The standing crops in 195,674 ha of land was damaged. The fishermen communities were severely affected due to damage to their boats and nets.

A comparable cyclone, Cyclone 05B, hit the same area in 1999 with winds of up to 260 km h^{-1} [23], but had a much more devastating outcome: more than 10,000 lives were lost [55]. Government cooperation, preparedness at the community level, early warning communication and lessons learned from Cyclone 05B contributed to the successful evacuation operation, effective preparation activities and impact mitigation. This event exhibits the importance, benefits and effectiveness of the use of early warning for a massive disaster.

On the conterary, during Super Cyclone 1999, Odisha, India (Cyclone 04 and 05), emergency response, Department of Agriculture and Co-operation (DAC) in the Ministry of Agriculture functioned as