



Case Study

Disaster Governance and Decentralised Resilience: A Case Study Analysis of Kerala and Odisha

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Abstract

With the looming threat of climate change and vulnerability of India to natural calamities, disaster governance has become a priority for policymakers. Effectiveness of risk reduction measures necessitate a bottom-up model with local governments at the forefront. This paper presents a comparative case study analysis of the disaster management framework and the role of Panchayati Raj Institutions in the states of Kerala and Odisha, both of which have battled severe disasters yet adopted distinct approaches to recovery. The study also examines how institutional structures, community engagement, and power dynamics shape preparedness to disasters. While Kerala relies on a people-led model, Odisha favours a technocratic model with strong centralising tendencies. A robust theoretical foundation is outlined for the two states namely the theory of decentralised governance and adaptive governance. A third theory evaluates the role of power in navigating disaster response in Kerala. The findings enlist the challenges faced by both the governance models and underscore need for a hybrid scenario which takes advantage of community participation and efficiency of institutional structures.

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1. INTRODUCTION

The Indian subcontinent is vulnerable to disasters such as earthquakes, floods, cyclones due to its unique geophysical location. Various kinds of riverine flooding have been a common hazard in various regions of the country. According to National Disaster Management Plan of 2019, 12% of the landmass is susceptible to flooding. Kerala is one such state which is vulnerable to annual flooding due to its abundance of river channels and high rainfall by virtue of being located on the west coast. Regions such as Kuttanad, Alappuzha and Wayanad are high risk areas for flooding due to their topography, steep slopes, and rivers tributaries.

Another common hazard occurrence in the country is cyclone. The east coast of India, due to its proximity to Bay of Bengal, is more vulnerable to cyclonic activity. Odisha stands as a case in point as the state having faced the maximum instances of devastating cyclones. The above facts necessitate disaster risk governance in India.

According to World Bank, "Governance is defined as the manner in which power is exercised in the management of a country's economic and social resources for development." [1] India follows a "cooperative federalism" model wherein power is shared among three tiers of the government. We took a leap forward in local governance by devolving power to the third tier of the government through the 73rd and 74th constitutional amendments.

The Panchayati Raj system gives decision making powers, both financial and administrative, to local governments thus empowering them. In regions vulnerable to disasters, their role becomes even more crucial. They enable localised mitigation action, collective participation of people and timely response.

The objective of this article is to evaluate the role played by local self-governments in disaster management by analysing case studies of two states – Kerala and Odisha, both vulnerable to natural disasters and known for their robust local governance. The aim is to look beyond their role as an implementation agency and analyse the institutional structures, early warning systems, financial resources, community participation, and limitations of governance framework in both the states.

The current body of literature revolves around specific disaster cases in both the states and the role enacted by various stakeholders without linkage to any theoretical justification. This article aims to bridge this gap by providing the foundational theory explaining the governance models in the states. The original contribution relies upon contrasting the governance elements in the two states and untangling the complex power relations and motivations behind actions of the stakeholders and its subsequent effect on disaster risk reduction.

Thus, the research questions which this study aims to answer are as follows:

1. How do differences in institutional capabilities, community engagement and fiscal position shape the responses of local governments to disaster management?
2. How does the framework of adaptive and decentralised governance help to explain these variations?
3. How do power dynamics in the federal system determine effectiveness of disaster risk reduction measures?

The article is organised as follows. Section 1 presents the methodology employed and the conceptual framework deployed to interpret the case studies. Section 2 outlines the disaster case studies of both the states. Section 3 explains the theoretical framework behind the governance models in the states. The findings and a comparative analysis are carried out in Section 4 followed by conclusion in Section 5.

2. CONCEPTUAL FRAMEWORK AND METHODOLOGY

This article follows a systematic approach to understand Kerala and Odisha's governance framework for disaster management. The two macro-cases (Kerala and Odisha) were selected purposively for analytical purposes. Selection was based on three criteria: (a) high exposure to climate-sensitive disasters since 2018 (b) availability of at least one peer-reviewed field study at the panchayat or district level and (c) sufficient variation in governance orientation to enable theory-testing. The study adopts a qualitative case study approach by utilising secondary sources such as government websites, news articles, and the available literature including the panchayat-level surveys of Sreeja and Gireesan (2024) in Alappuzha and the process-tracing interviews of Banerjee and Mohapatra (2023) in Ganjam and Kendrapara. Three of the most devastating disasters - 2018 Floods in Kerala and Cyclones Yaas and Fani in Odisha are taken as the beacon for evaluating government's response and subsequent recovery efforts.

The theoretical lens employed to view the specific cases revolves around two theories. First is the Theory of Decentralised Governance which applies to Kerala and second is the Theory of Adaptive Governance which is the case of Odisha.

A third Theory of Bounded Rationality and Power Dynamics are put forth to unravel the complex web of politically-structured relations in the state of Kerala and their impact on disaster risk reduction.

3. CASE STUDY DESCRIPTION

3.1 KERALA

This southern state, situated in the heart of the ecologically fragile Western Ghats, is vulnerable to numerous calamities such as floods, landslides, seawater erosion. The most notable of these are the 2018 floods and the 2024 landslide in Wayanad. The disastrous floods on 16th August 2018 due to heavy monsoon led to 70 landslides in the montane regions of the state. The official death toll was approximately 480 with damages worth \$3 billion. All the 14 districts were put on red alert and 1 million people were evacuated. A "Level-3 Calamity of severe nature" was declared by the government.

This state has been chosen due to its unique experiences. Despite various reports outlining the dangers of disturbing ecological equilibrium in Western Ghats (Gadgil Committee), there has virtually been no reduction in risk. This points to some sort of "implementation paralysis." which this research aims to uncover. This case of Kerala emphasizes larger issues of power relations and implementation challenges.

Kerala has been the leader in devolving power to local governments. The Kerala Panchayati Raj Act was enacted in

1994 to empower these third-tier bodies legislatively, financially, and administratively. Kerala has a total of 1,200 local self-governing institutions with 941-gram panchayats. The grassroot action undertaken is studied by various authors through responses of specific panchayats to the floods.

Pozhuthana panchayat in Wayanad district faced severe floods in 2018 due to high monsoon rainfall and its hilly terrain. This resulted in large scale infrastructure damage, loss of lives and displacement of the tribal population.

The role of panchayat here can be studied in 3 stages – pre-disaster preparedness, response during the disaster and post-disaster recovery efforts. For the first stage, risk mapping was carried out and village response teams were established. Further, early warning systems were put in place along with identification of relief shelters in case of emergency. The tribal population was trained through mock drills and awareness campaigns.

The actual disaster response involved evacuation of families, activation of Emergency Operations Centre and coordinating with NGO's and the police for swift action. The third stage encompassed the following efforts: Rs. 5,00,000 for rebuilding homes was distributed to the affected families, critical infrastructure such as roads, telephone lines were restored, health camps were set up and rehabilitation packages were announced to compensate the economic losses of farmers. The panchayat also undertook long-term mitigation strategies which included identification of vulnerable zones through hazard assessment, afforestation programmes, designing disaster-resilient housing and integration of disaster planning in local governance planning.^[2]

However, these commendable efforts were not free of challenges. There were delayed early warning systems, shortage of trained personnel and financial constraints impeding effective disaster management.

Another similar case is of the Alappuzha district which is also vulnerable to severe flooding risk. A study conducted by Sreeja and Geerisan^[3] for the panchayats in the Alappuzha district revealed the gaps in disaster governance. The authors undertook a survey of all the stakeholders including elected representatives as well as the affected population. They found that just 26% of the respondents were aware of the flood-prone areas and majority of them were officials.

There was lack of scientific hazard mapping and profiling of vulnerable regions as well as absence of any linkages with research institutions. It was further seen that despite having the mandate, the gram panchayats had prepared no disaster management project proposal. There was also no tangible result seen in the improvement of infrastructure such as roads or rural electrification due to lack of specific funds. The status of capacity building and training was also dismal. One of the panchayat secretaries observed that none of the villagers had exposure on how to use life jackets and further 75% of them were not aware of the term first aid. Disaster management committees were formed by all the gram panchayats that were sampled. However, they were dominated by political officials and had no representation from women or youth organizations. However, in some areas these committees were only existing on papers and no committee was constituted at the ward level.

Localised and Indigenous knowledge can really come in handy during the disaster, yet resource details of natural physical and human resources in the vulnerable areas were not collected by the gram panchayat. Also, there was no data available regarding the technically qualified persons like doctors, engineers, electricians in the area. The significance of disaster resilient buildings had also declined as they were no longer suitable to be used as relief shelters due to their low maintenance.

There was a lack of quorum in the Gram Sabha meetings and less than 73% attended at least 3 meetings in a year. No minutes of the meeting were recorded about the disaster preparedness measures. The field data revealed that none of the panchayats had prepared the disaster management plan at the local level. The authors conclude that there is an absence of a holistic strategy, lack of capacity building and skill training of officers, low community participation, and lack of proactive attitude.

Another region which fell prey to the 2018 floods is the area of Kuttanad. Historically vulnerable to annual flooding, Kuttanad is comprised of the Vembanad water channel system. In response to periodic disasters, the local community here has devised effective adaptation strategies based on traditional knowledge systems. Such intricate planning based on an understanding of ground realities can be fulfilled through bottom-up disaster governance planning by authorities.

With time, indigenous knowledge in the context of flood risk planning has been overshadowed by technical knowledge such as structural interventions. However, people in the Kuttanad region have developed cropping pattern as a mitigation strategy. The farmers have shifted to a second crop along with the main crop paddy. However, the earlier system of single cropping was found to be effective against floods as it allowed the water to move slowly across the lands. Thus, a multi-cropping system boosted by green revolution has exacerbated the flooding risks in the region. A mix of scientific and traditional knowledge is vital for effective disaster risk reduction.^[4]

RECOVERY FINANCING

The Kerala government estimated its damages at Rs. 3,100 crores post the 2018 floods. The state resorted to various measures to finance this requirement. It requested grants from the central government, sought resources from the Chief Minister's Relief Fund, floated a New Kerala Lottery, utilised social media to rope in crowd funding through philanthropic efforts. The state has announced a 750-crore relief package for the rehabilitation of victims of the Wayanad landslide.

3.2 ODISHA

Odisha's geographical location along the Bay of Bengal makes it vulnerable to disasters such as cyclones. This makes disaster management critical in its governance framework. According to NITI Aayog, 15% of the population in the state is multidimensionally poor which make them more exposed to climate-related changes. Tropical cyclones have triggered widespread riverine flooding and storm surges in the coastal districts of the state. In this case study, we will analyse disaster governance framework for two of the major cyclones that hit the state in the recent past – Yass (2021) and Fani (2019).

A “very severe cyclonic storm” Yaas made landfall in the state of Odisha and West Bengal during May 2021. 120 village settlements were flooded due to overflow in Baitarani River. Overall damages were estimated at Rs. 6.1 billion. Cyclone Fani, “an extremely severe cyclonic storm,” hit the state in late April 2019. It originated from a depression west of Sumatra and killed 90 people in India and Bangladesh. Combined loss in both the countries was \$8 billion.

The former cyclone hit the state when it was still dealing with the effects of COVID. There was the double challenge of shifting people to safe shelters whilst adhering to social distancing norms along with the huge influx of migrant population in the state.

Disaster Governance in Odisha has proven to be a lighthouse model for other states due to its effectiveness in mitigating adverse impacts and displaying swift recovery mechanisms. The state’s **Zero Causality Mission** has drastically reduced mortality rates during cyclone Fani. Moreover, the state has become India’s first to implement **Tsunami Ready Villages** such as Venkat Raipur and Noli Asahi. Through this, community participation and local disaster mitigation responses have been highly successful. Early evacuations, mock drills, and awareness campaigns have put Odisha on the global map for disaster risk governance.^[5]

Several studies have analysed Odisha’s governance framework and the state’s response to these calamities.

Banerjee and Mohapatra ^[6] have employed a process tracing method to analyse state’s response to these disasters. The authors have conducted focus group discussions and in-depth

interviews with officials, non-state actors, and the affected local communities to gauge the on-ground situation. Two coastal districts – Ganjam and Kendrapara were chosen for the field visit. Further, data was collected through interactions with officials from State Disaster Management Authority, block and tehsil-level officers, district emergency operation centres as well as elderly citizens who had been experienced these calamities in the past decades. The findings of the paper can be summarized through the figure and tables below.

2.2.1 Institutional Arrangements for Disaster Management

Odisha’s disaster management has a decentralized command structure. Policies for disaster management systems are framed by the State Disaster Management Authority and executed by the State Executive Committee and the Revenue and Disaster Management Department. Two specialized agencies are integrated in this structure. The Special Relief Commissioners’ office and the Odisha State Disaster Management Authority (OSDMA) rely on space-based data from the National Remote Sensing Centre, Indian Meteorological Department, and the Odisha Space Applications Centre. In the districts, the position of Chairperson of the District Disaster Management Authority is held by the Collector. The Block Development Officer and the Tahsildar are assigned the work of the Authority. At the village level, the Sarpanch heads the Village Disaster Management Committee. Two additional local bodies, the Cyclone Shelter Maintenance Committee and the Village Disaster Management Committee, said the Village Sarpanch in ground level implementation.^[6]

Table 1: Stages of Disaster Management

Phases	Objectives
The Pre-Disaster Phase	Warnings, Alerts, Evacuation, Mock Drills
The Response Phase	Emergency Shelter and Aid Distribution, Communication, and Information Dissemination
The Recovery and Rehabilitation Phase	Reliefs, Search and Rescue Operations, Medical Assistance

Source:^[6]

Table 2: Institutional Governance and Policy Framework

Component	Key Factors	Relevance to Odisha’s Disaster Governance
Institutional Framework	OSDMA, Revenue & Disaster Management Department, Odisha Disaster Rapid Action Force (ODRAF)	Established a post-1999 Super Cyclone for governance coordination and rapid response
Legal & Policy Framework	Disaster Management Act (2005), Odisha Disaster Management Policy (2021)	Strengthens governance structure and aligns with national disaster management policies
Inter-Agency Coordination	Coordination between State, NGOs, Local Bodies, and Last-Mile Connectivity in Early Warnings	Ensures effective disaster response and reduces delays in relief operations
Financial & Insurance Mechanisms	Government Disaster Funds, Micro-Insurance for Disaster-Affected Communities	Supports economic resilience and aids faster recovery for affected populations
International & National Benchmarking	Sendai Framework for DRR, Comparisons with Gujarat & Andhra Pradesh, Best Practices from Japan & Netherlands	Odisha’s disaster governance model is globally recognized for cyclone management

Source:^[6]

Table 3: Disaster Preparedness and Risk Mitigation

Component	Key Factors	Relevance to Odisha’s Disaster Governance
Cyclone Resilience Strategies	Early Warning Systems, Evacuation Planning, Cyclone Shelters	Odisha’s proactive measures significantly reduced cyclone-related casualties
Community-Based Disaster Management (CBDMD)	VDMCs, Trained Volunteers, Public Awareness Programs	Encourages local participation in disaster preparedness and response
Technology & GIS Mapping	Satellite-Based Monitoring, GIS Hazard Mapping, Automated Weather Stations	Enhances disaster forecasting and improves localized risk assessments

Source:^[6]

Nayak^[7] has emphasized the role played by community-based organisations (CBOs) in enhancing resilience during disasters. The author undertook a study in Alanda gram panchayat which witnessed widespread destruction during cyclone Fani.

CBOs such as women self-help groups, caste and youth organisations proved instrumental in disseminating information about dos and don'ts during the disaster. Maa Dwarika youth club and Baba Budhanath youth club of Alanda village and farmers' clubs of Juanla, Porokona village helped to organise seed banks and stored essential food grains in these common areas.

Caste-based groups ensured timely evacuation efforts by shifting people to shelter houses. The Swain agricultural community helped move people to the Gram Panchayat office and the primary school in Alanda. Further, the Kishore clubs of Talatanla provided emergency aid to the injured population. Post-disaster activities such as cleaning the debris from roads, houses and disposal of animal carcasses were also performed by the above-mentioned youth organisations. The efforts by these groups in distributing ration and collecting funds to establish temporary electricity connection the area is also commendable.

This social capital is the foundation of Odisha's disaster resilience.

However, these groups had not received proper training in the last decade. Data regarding CBOs needs to be updated periodically and first-aid training of CPR needs to be provided to these last-mile organisations for effective response and recovery during disasters.

The measures taken by the government in wake of the cyclone Fani include interim relief packages. Short-term measures include free support to slums within Bhubaneswar Municipal Corporation without possession of NFSA cards. 50 kg each of wheat and rice were distributed to the households to ensure food security. Further, 2 lakh rupees from the Prime Minister's National Relief Fund were given to the families who had lost their members in the disaster and 50,000 rupees to the injured people.^[8]

Certain challenges remain in adequate response and recovery due to lack of coordination among agencies and broken last mile connectivity. Inadequate infrastructure and mobile network coverage hinders timely alerts for the vulnerable tribal population of the state.

Climate change has led to emergence of new-age challenges. Rising cyclone intensity and frequent coastal erosion pose major risks to Odisha's long-term sustainability. Extreme weather events necessitate a **shift towards a "climate-resilient governance model"** encompassing planning at micro level and "synergy among sectors".^[9]

4. DISCUSSION – THEORETICAL FOUNDATION

4.1 THEORY OF ADAPTIVE GOVERNANCE

Odisha's success story can be attributed to the framework of "Adaptive Governance." It is defined as "a spectrum of engagements involving individuals, networks, groups, and establishments that develop while striving for a preferred condition within social and ecological frameworks".^[10]

Holley, and Thomalla^[11] have outlined four essential attributes of adaptive governance critical for fostering disaster resilience. These attributes encompass (1) decentralized and multitiered institutions, (2) involvement and cooperation, (3) self-organization and networks, and (4) learning and innovation.

For this state, compounding or cascading disasters have given prominence to adaptive governance. The 2011 earthquake in Japan is a case-in-point of compounding disaster. The earthquake triggered a tsunami which in turn damaged a nuclear plant thus delivering a "triple-punch effect." One disaster precipitating another gives rise to catastrophic events, studying which become vital for disaster risk governance.

The number of deaths were reduced significantly from 10,000 during the 1999 cyclone to 44 during Phailin due to adaptive governance. During this cyclone, the government undertook the largest evacuation ever in which 1 million people were evacuated from 18 districts.^[1]

Holling^[12] presents the principles of adaptive governance in his seminal work. The dynamic changes in the environment require policies and institutions to respond to these changes. Adaptive governance includes flexible and innovative structures, trust, and collaboration along with periodic monitoring to assess outcomes.

Odisha's adaptive governance model was not designed proactively but forged through repeated shock. The 1999 Super Cyclone — with wind speeds of 170–185 mph and over 48 hours of continuous rainfall — caused catastrophic damage and became the state's institutional turning point. This was followed by Cyclone Phailin in 2013, which brought a five-foot storm surge and further riverine flooding, and Cyclone Fani in 2019. Each successive disaster forced incremental institutional learning, so that by the time of Fani, the state's response drew on cumulative lessons from the prior two decades.^[6] The resulting model is characterised by five features that recur across the state's disaster planning documents: flexibility, innovation, participation, information-sharing, and skills-driven capacity building — underpinned by committed leadership, multilayer institutions and continuously refined standard operating procedures.

The central question for us is what are the key elements visible in the state's policy that can be traced to adaptive governance. This is the research question we will attempt to answer by undertaking an analysis of the case study of Odisha presented above.

Another term for this kind of governance model is "Polycentric Governance." *It is a governance system that can transform and change existing practices to incorporate new learning and experiences in the system to respond to emerging threats from climate change and other uncertainties.*^[13] It has many layers of governing powers which help to disseminate knowledge across these layers.

Walch^[14] argues that a traumatic shock followed by dedicated leadership and political will can transform governance systems into adaptive and flexible models which are best suited to deal with socio-ecological disasters.

KEY ELEMENTS OF ADAPTIVE GOVERNANCE IN ODISHA'S DISASTER MANAGEMENT FRAMEWORK

1. **Multilayer Institutions** –The state has various levels of governance at state, district, and block level. This translates into vision of the state that “every life is precious” and ensures resilience. To quote a community member, “The government is very much committed to saving lives. It is in this context whenever a cyclone is in the reckoning, the authorities ensure preparedness at cyclone shelters and safe buildings, and vulnerable communities are evacuated and kept in these shelters with all basic amenities. (Respondent from a seaside village in Rajnagar block of Kendrapara district in Odisha).”
2. **Innovation and Learning** – The shock of 1999 super-cyclone led to establishment of Odisha State Disaster Management Agency. This was followed by a series of investments in capacity augmentation such as cutting-edge technology for early-warning systems, construction of 824 multi-purpose shelters and fostering partnerships with international agencies such as World Bank.
3. **Policies and Plans** – The state has put together clear, detailed plans such as Odisha Climate Change Action Plan outlining standard operating procedures for disaster management. The Village Disaster Management Plan is prepared at the local level in consultation with affected communities thus ensuring state's commitment to “grassroot governance.”
4. **Networks** – The state has assisted in formation of self-help groups which oversee the functioning of risk-reduction measures at the village level. Also, organisations such as UNDP, Red Cross work closely with State Disaster Management Agency. CBOs are the backbone of this governance framework as they ensure better understanding of local vulnerabilities. Women's participation in mitigation activities has also been given its due importance which has led to effective response during disasters.
5. The Disaster Management Act of 2005 clearly outline the role of NGOs in supplementing efforts of the government. In Odisha, NGOs such as CYSD and Bal Raksha Bharat act as facilitators between the state and affected population and assist in disaster preparedness by undertaking village-level vulnerability assessments.
6. **Decentralised Decision Making** - Odisha Gram Panchayat Act, 1964 was amended to enable members of Panchayati Raj to be responsible for undertaking mitigation measures.

Capacity Building – A state-of-the-art “State Emergency Operation Centre” has been set up for timely evacuation warnings by utilising space-based assets. The state has also passed a resolution to create a taskforce on disaster and pandemic management for future guidance.

Disaster Management is also being included in the school curriculum which will produce a formidable force of volunteers. The state has been taking continuous efforts in strengthening natural barriers. Mangroves are being planted along coastal belts as they act as shields against cyclones and tsunamis. The state has adopted a **“BUILDING BACK BETTER” Approach** for reducing damage to critical infrastructure and increasing overall resilience.

4.2 THEORY OF DECENTRALISED GOVERNANCE

Decentralisation implies “dispersal of decision-making power, away from the centre, to lower levels of government.” It not only encompasses devolution of power but also functions, responsibilities and duties. This provides lower rungs adequate incentives for functioning autonomously. The theory of administrative decentralisation has its foundations in classical political philosophy of Alexis de Tocqueville and John Stuart Mill. Tocqueville's analysis revealed how decentralised governance created multiple centres of powers and fostered civic engagement. Mill's approach to decentralisation through utilitarianism argued how decentralised model of governance leads to better outcomes as officials at local level possess superior knowledge of needs of community. This has been termed as **“local knowledge advantage”** by other scholars such as Ostrom.^[15]

DEMOCRATIC COMPONENTS OF DISASTER MANAGEMENT PLAN

1. An emergency response team will be formed comprising of local volunteers who understand the area and possess indigenous knowledge.
3. A Local Resource Group of 20 members will be formed who will be responsible for collecting the data and necessary statistics and prepare a status report.
4. District Planning Committees shall conduct workshops by inviting subject experts on soil conservation, climate change. The ideas from such seminars will be shared with lower levels of government to prepare the plan.

The floods of 2018 jolted the state and send waves of caution across the government. There was a massive demand from people to adopt community-based mitigation measures. On the lines of democratic governance, Kerala has implemented the “Nammal Namukkayi” campaign modelled on the lines of people's participation. It has two major components: Extensive participation of people to identify policy gaps and preparation of a disaster management plan for every self-governing institution at local level. For this, the Local Self-Government Department, Kerala State Disaster Management Authority (KSDMA) and Kerala Institute of Local Administration (KILA) jointly engaged in the resource-intensive, time bound, pan-Kerala grassroot-level consultations for developing the plans at local level.^[16]

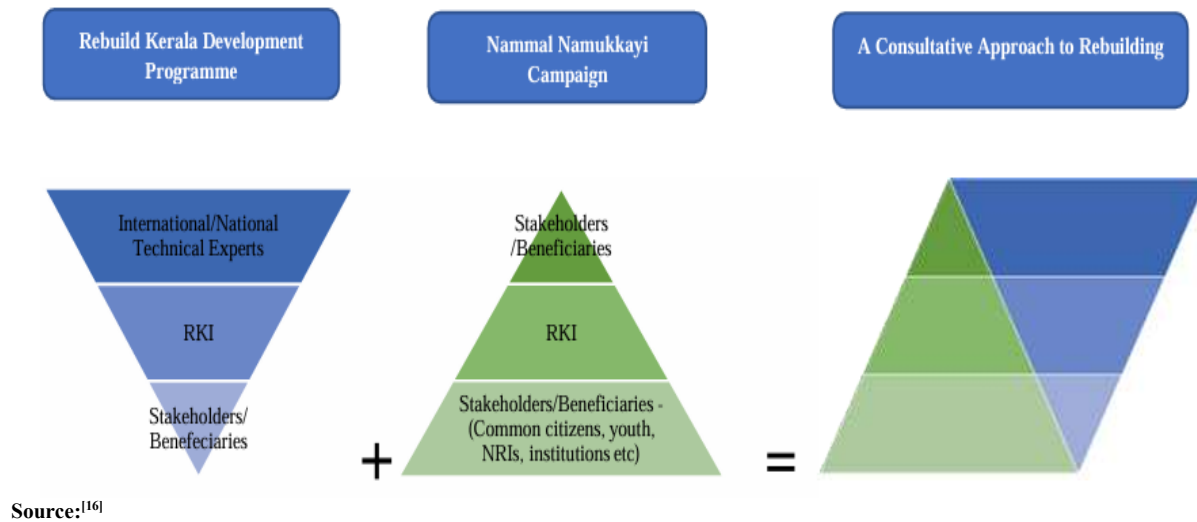


Figure 3: Approach and methodology – “Nammal Namukkayi” Programme

4.3 POWER THEORY

The paralysis in the case of Kerala can be interpreted as an outcome of specific power relations within the state. This constrains decision making in crucial situations thus weakening federalism.

Power, in this scenario, refers to “ability to influence or act.” In the Indian case, this is shared between the state and national governments. The tug of war among various stakeholders results in non-implementation of policies. For Kerala, this is reflected in dilution of recommendations by expert committees as well as in fiscal transfers.

The first theory explaining the above dilemma is “Bounded rationality” by Simon. It proposes how rationality is constrained by “cognitive capacities, information gaps and time limitations”.^[17]

These real-world constraints shape power dynamics and thus influence decision making scenarios. Forester^[18] reasoned that in the context of bounded rationality, administrators must consider constraints which are structured politically.

The second theoretical framework is the conceptualisation of power itself. Four major power theories are reflected below which will assist us in evaluating the reasons for policy paralysis in the state.

Figure 4: Summary of Power Theories

Theorist	Year	Core Formulation
Dahl ^[19]	1957	Power as decision-making: A has power over B to the extent A can get B to act against B's own preference
Bachrach & Baratz ^[20]	1962	Adds a "second face" — power exercised through non-decision-making, i.e., suppressing issues before they reach the agenda
Lukes ^[21]	1974	Adds a "third dimension" — power exercised by shaping B's wants and preferences themselves, securing compliance without visible conflict
Emerson ^[22]	1962	Power as resource-dependency: A's power over B is proportional to B's dependence on resources A controls

It was also observed that while actual implementation and planning was carried out at state and subsequent levels, the policy was guided by national interests. The glaring example of this is the undervaluation of land regulation measures in favour of development.

The constraints impeding action were identified as political pressures, economic interests of industrial lobbies and lack of consultation with the public.

The example of Kerala shows how the environmental conservation movement became politicized over time. The “Save the Western Ghats” movement which began in 1986 bore fruits much later in 2010 when an expert panel on Western Ghats was formed led by Madhav Gadgil. Emerson’s conceptualisation of “resource dependency” wherein power is shared becomes apparent when state, national governments and local politicians hold power simultaneously.^[22]

Luke’s power dimension is visible in the response to the Gadgil report.^[21] Series of disinformation attempts ignited a wave of protests among farmers and religious leaders who perceived the report as “anti-people” and forced from the top. Further, industrial lobbies exerted a dominant influence on labourers whose rationality was constrained by livelihood risks and lack of information.

Bachrach and Baratz’ view of implementation deficit is evident when the protesters pushed for rejection of the report and pressured the national government for its non-implementation.^[20] This led to the policy paralysis for the state. Finally, Dahl’s dimension can be seen when the Centre again set up a working group under K.R. Kasturirangan but with diluted recommendations.^[19]

The constraints of needing electoral support and not wanting to part ways with power led to the handicap of environmental

governance in the state. The reports were rendered invalid with a change of power in the Centre in 2014 and in the state assembly in 2016.

Competing interests and power dynamics will continue in

different forms. However, for effective Disaster Risk Reduction, it is vital to identify these factors and contextualize governance in the larger picture of lobbying, environmental laws and livelihoods.

5. FINDINGS – A COMPARATIVE ANALYSIS

Table 4: Comparison of Disaster Management Framework

DIMENSION	KERALA	ODISHA
Governance Model	Decentralised Model with people-led governance	Adaptive Governance with strong state control
Institutional Setup	Kerala State Disaster Management Authority (KSDMA), Kerala State Emergency Operations Centre (KSEOC)	Odisha State Disaster Management Authority (OSDMA), Odisha Disaster Rapid Action Force (ODRAF), district / block / village level disaster committees
Early Warning Systems	Insufficient rain gauges – Periyar Basin, outdated flood maps, State Water Policy not in tandem with National Water Policy	Early dissemination systems of warning for 1,200 villages along the coast, multiple sirens and radars, effective use of IMD forecasts
Infrastructure Capacity	Inadequate supporting infrastructure – roads, bridges etc, dams had outdated guidelines for water release,	Almost 900 multi-purpose shelters with drinking water, cooking
Relief Measures	Rescue by NDRF, state agencies	Large base of volunteers, government relief package, swift and rapid response
Financing	State's own resources – lottery, masala bonds, cess	Largely contributions from Centre – PM Relief Fund, NDRF
Community Involvement	Civil volunteers, role of panchayats	Village-level bodies, trained block level officials, NGO's, CBO's
Challenges	Limited capacity of panchayats, backward technology, combative federalism	Coordination among bodies, training of public

A COMPARISON OF FUNDING ALLOCATIONS FOR DISASTER MANGEMENT

Table 5: State Disaster Response Fund (SDRF) Allocation

Fiscal Year	Kerala	Odisha
2021-22	335.20	1,711.20
2022-23	352.00	1,796.80
2023-24	369.60	1,886.40
2024-25	388.00	1,980.80
2025-26	408.00	2,080.00
Total	1,852.80	9,455.20

Source: Ministry of Home Affairs, Guidelines on Constitution and Administration of the SDRF and NDRF based on the recommendations of the Fifteenth Finance Commission 2021-22 to 2025-26, Annexure-I (based on Report of the Fifteenth Finance Commission, Vol. II, Annexes 8.4–8.5).

The table above represents each state's statutory entitlement under the State Disaster Response Fund (SDRF), which the 15th Finance Commission fixed for the full 2021–2026 award period rather than setting annually. Odisha's allocation is consistently more than four times Kerala's across every year of the period, reflecting the Commission's weighting toward past expenditure, area and disaster risk exposure rather than population alone. It should be noted that these are statutory entitlements, not final actual expenditure; year-end spending figures, would appear in each state's Finance Accounts or CAG audit reports rather than in the Finance Commission's advance allocation schedule. It should further be noted that SDRF represents only the response-and-relief component (80%) of each state's total State Disaster Risk Management Fund (SDRMF); the remaining 20% is earmarked for mitigation under the separate State Disaster Mitigation Fund (SDMF), which is not included in the table above.

5.1 FISCAL FEDERALISM IN THE CONTEXT OF DISASTER MANAGEMENT IN KERALA

The centralised fiscal policies limits resources in the state thus impeding disaster risk governance due to limited financial autonomy. The state of Kerala has recently filed a case in Supreme Court challenging the Net Borrowing Ceiling restrictions of the Centre which limits state finances for various welfare initiatives.

In the case of 2018 floods, the state government considered imposing a 10% cess to finance recovery but this was reduced to 1% by the GST Council. Further, the refusal of aid from the Middle-east (a popular destination for migrants from Kerala) was also perceived to be an attack on federalism.

The criteria used by the 15th Finance Commission for disaster management grants also warrants a look. The commission has used population as one of the criteria to decide each state's share. However, the data from the Census of 2011 has been utilised. This is protested by the southern states as it puts them at a disadvantage. These states have implemented population-stabilising measures since decades. Thus, usage of the 2011 data inflated population figures of other states granting them a larger share of revenues. This dilutes the fiscal resources given to the southern states.

5.2 A COMPARISON OF RELIEF MEASURES

KERALA

Table 6: Official Financial Assistance (FY 2021-22 to 2025-26)

Disaster / event	Date / FY	Official package (₹)	Official source
Floods	2023-24	Central share released to Kerala from SDRF - 1st instalment of Rs 145.60 crore and 2nd instalment of Rs 145.60 crore were released in 2024 as advance for SDRF	PIB / MHA press release
Relief and Rehabilitation for Wayanad landslides	July 30, 2024 FY 2024-25	Kerala sought ₹2,000 crore central assistance; Central SDRF instalments of ₹145.60 crore each in 2024. State also allotted rehabilitation allocations, small direct allocation such as ₹6 crore for immediate medical support from CM fund, cabinet approvals for specific small grants like ₹99.93 lakh memorial. Note: Kerala collected donations of ₹765.06 crore	Kerala SDMA / MHA / PIB releases; Kerala CMDRF portal
General state contingency for floods/cyclone relief (budget head)	FYs 2021-22 to 2025-26	Kerala budget documents show heads for “relief for natural calamities / non-plan provisions.” Kerala had non-plan head earmarked of ₹721 crore for relief operations each year	Kerala Budget Documents

ODISHA

Table 7: Official Financial Assistance (FY 2021-22 to 2025-26)

Disaster / event	Date / FY	Official package / assistance (₹)	Official source			
Cyclone Yaas — Central & State packages	May–June 2021 (FY 2021-22)	PM/central package: ₹1,000 crore announced by PM (₹500 crore earmarked for Odisha). Ex-gratia Payments <table><tr><td>• ₹ 2 lakh were given to the next of kin of those who died due to the cyclone</td></tr><tr><td>Release from NDRF</td></tr><tr><td>• Additional assistance of ₹ 500 crore was released from the National Disaster Response Fund to Odisha after adjustment of 50% of the opening SDRF balance.</td></tr></table> State package: Odisha Government announced detailed sectoral packages for farmers, fishermen, weavers, and artisans, district-level immediate relief and compensation schemes were also announced	• ₹ 2 lakh were given to the next of kin of those who died due to the cyclone	Release from NDRF	• Additional assistance of ₹ 500 crore was released from the National Disaster Response Fund to Odisha after adjustment of 50% of the opening SDRF balance.	PM / Centre announcements and Odisha Government press releases
• ₹ 2 lakh were given to the next of kin of those who died due to the cyclone						
Release from NDRF						
• Additional assistance of ₹ 500 crore was released from the National Disaster Response Fund to Odisha after adjustment of 50% of the opening SDRF balance.						
Cyclone Fani — Central & State packages	2019	Central Government Assistance Advance relief funds through SDRF / NDRF ₹ 341 crore was released in advance to State Disaster Response Fund Additional ₹ 1,000 crore released by Home Ministry for cyclone relief. Additional central aid - ₹ 3,338.22 crore approved as part of assistance from National Disaster Response Fund for Odisha. Ex-gratia payments From Prime Minister’s Relief Fund: ₹ 2 lakh each to next of kin of the deceased and ₹ 50,000 each to those who were seriously injured. State’s request from Centre State government asked for ₹ 17,000 crore from Centre to rebuild and create “disaster-resistant infrastructure” (power, telecom) and disaster-resistant housing ₹ 1,600 crore livelihood support package Announced by CM Naveen Patnaik for those affected such as farmers, fishermen, handloom/handicraft workers, etc. Special ₹ 100 crore package (from the state) for street vendors, coconut growers, poultry farmers etc.	MHA / Parliament replies			
Immediate disbursements to the affected districts	Nov 2024 (post-cyclone / flood events)	Odisha government released ₹423 crore for cyclone-hit districts such as Ganjam, Balasore, Bhadrak, Gajapati	Odisha state releases / MHA.			

6. CONCLUSION

Kerala and Odisha are two states in India most vulnerable to natural disasters due to their topography and geographical location. This makes disaster management the fulcrum of governance for the states. Further, for effective disaster governance, local bodies play the central role. The two case

studies described above outline the importance of Panchayati Raj Institutions and community participation in abating the disastrous impacts of natural calamities. These enable “grassroot governance” by transforming citizens from passive recipients to active enablers of policy action. The two states have commonalities in terms of institutional structures, people-

centric governance, early warning systems, and volunteer-corps based rescue efforts. However, it can be deduced from the case studies that Odisha has a much more evolved and effective governance model based on “adaptive learning curve” and “polycentric efforts.” Last-mile infrastructure, technological interventions and funding support from the Central government are some of the advantages that Odisha embodies which puts its governance story on the global map.

Kerala on the other hand has relied strongly upon civil defence volunteers and local networks to implement response and recovery efforts. This model of “democratic governance” results in last-mile connectivity and information dissemination along with integration of traditional knowledge in mitigation efforts. On the flip side, heavy reliance on ground-level institutions can lead to absence of a strong supervisory role of state governments which provide an overarching template for action. Third-tier local bodies have underdeveloped institutional capacities which hampers effective governance. Low rates of technology adaptation and insufficient capacity building of officials lead to sub-optimal levels of disaster management. Thus, a people-led model with a dominant top-tier guiding influence is what Kerala can learn from the Odisha model.

The criteria pertaining to allocation of funds for disaster management by the Finance Commission needs a revisit. In the wake of rapid climate changes, the funding must be made more “equitable and efficient” as the present methodology puts the highly vulnerable states at risk. There is a call for “Ecological Federalism” wherein the allocations to SDRF are based on prudent factors such as hilly regions, coastline length, and wetlands. A disaster vulnerability index should replace the existing poverty-based measure. This would increase Kerala’s funding to 2,321 crores from 1,389 crores.^[23]

Disaster Governance is a “dynamic process.” There are no ready-made solutions as every disaster is different each time. Thus, governance at all tiers of the state must evolve with time to treat disaster management as a developmental priority and integrate it in the mainstream process of planning. However, this process should be looked upon in the specific socio-cultural context of the specific state as the challenges and vulnerabilities are not the same.

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