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LEADERSHIP FOR DISASTER RESILIENCE

Learning from the current practices in India

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Preface

India, the second most populous country in the world, is also one of the most disaster-prone owing to its geo-climatic conditions and socio-economic vulnerabilities. Over 58.6 per cent of the Indian landmass is prone to earthquakes: over 40 million hectares (12 per cent) is prone to floods and river erosion; close to 5,700 kilometres out of the 7,516 kilometres long coastline is prone to cyclones and tsunamis; 68 per cent of its cultivable area is vulnerable to droughts; and its hilly areas are at risk from landslides and avalanches (NDMA, n.d.). India ranks second among countries with the highest absolute number of people (819 million) affected by disasters between 1994 and 2013 (Bongo & Manyena, 2015).

It has also been well accepted that while hazards may be natural, the disasters that follow are man-made, caused by poor developmental processes and disaster management practices (United Nations, 2010). By its very nature, a crisis is a 'dynamic and chaotic process' and leadership for effective crisis management may not align with the actual leadership skills required for effective reform strategies (Boin et al., 2003). The importance of good governance during a crisis cannot be emphasised enough, and Ahren et al. (2006) explain the link between disaster and the institutional response by postulating an inherently circular relation between 'underdevelopment' and 'susceptibility to disaster' and therefore an intrinsic link to institutional failure and poor governance. This also highlights the need for preventative action and improvements in development processes, and therefore the need for leadership to build resilience prior to an event of crisis.

Over the last decade, the distinct fields of climate change adaptation, disaster risk management, disaster risk reduction and sustainable development are converging as policymakers and practitioners are increasingly recognising the inherent interconnection between them (Schipper, 2006; Bahadur et al., 2010; Matyas, 2015). In order to address disaster risk and tackle sustainable development, the concept of resilience is increasingly being called upon. This includes the growing number of policy initiatives, on-ground projects, and academic studies and developing various methods and metrics for measuring resilience.

In such a scenario, it becomes imperative to strengthen the capacities of the communities and their leaders to address risk and respond to extreme events, to build the resilience of people as well as socio-physical capital. Many interventions have been made in order to mitigate the risks arising from shocks and stresses in India at national, provincial, and sub-provincial levels by the government. Many autonomous adaptive measures have been taken by other actors and communities that often go undocumented. Since adaptation in India still remains a local initiative, documentation of such practices could help in identifying the traditional knowledge of the communities for informing effective risk reduction plans and policies. The governance and management of extreme events involves a multitude of actors that lead to collectively binding decisions that are also the result of the distribution of power, leadership, and coordination (CRED, 2015). It is therefore, necessary to identify the key gaps and innovative practices for building disaster resilience, and find approaches to strengthen these practices.

Acknowledgement

The research team would like to extend their deep gratitude towards the numerous individuals and organisations, whose constant help and inputs made this research possible. First and foremost, we would like to thank the George Washington University team, in particular Thien-Ky Luu, Eric Corzine, Deborah Elzie, and Apollo Nkwake, for regular guidance in directing the research. We would like to thank our Internal Advisory Committee members including Aromar Revi. S. Parasuraman, Amir Bazaz, Anant Maringanti, Krishna Vatsa, Kamal Kishore, Abha Mishra and Dr. Vikas Kishore Desai, as well as Loy Rego (Pro-bono Consultant) for sharing their experiences and regular inputs through the research. The research would not have been possible without the deep insights and sharing of ideas by various organisations and individuals involved in the primary case studies. We would also like to recognise the inputs provided by the various members of the two institutions, including media teams, interns, as well as finance, operations and administration.

Executive Summary

In India, where institutional and regulatory frameworks specific to disaster risk reduction are relatively new, leadership practices have been at play through initiatives undertaken by existing mainstream institutions and other actors aiding in risk management outcomes. In an attempt to understand the past and current practices of leadership for disaster resilience in the Indian context, this study funded by the George Washington University and Bill and Melinda Gates Foundation, is co-led by the Indian Institute for Human Settlements, Bengaluru and Tata Institute of Social Sciences, Mumbai. The aim of this study is: (1) understanding leadership in the context of disaster risk and resilience building in India, (2) documenting initiatives undertaken by the formal and informal institutions and individuals that have aided in building resilience of a region and the community against disasters, (3) develop frameworks that can help practitioner and research community to enable and improve these disaster resilience practices in India and beyond.

The study was structured into three major components. First, a detailed literature review was done, to set a theoretical framework for understanding disaster resilience leadership, particularly in the context of India. Second, a regionally distributed database of secondary case studies (n=159) was developed using key informant inputs and systematic online research. Analysing this database, quantitatively and geographically, provided patterns within these existing practices. Besides giving an insight on what is getting documented and what actions need more recognition and research, this database also gave directions to the third component of the study.

This third component, aimed at understanding these practices and innovations in greater detail, picked a set of case studies (n=20) from the larger database. Primary case studies were developed in detail, understanding the challenges being met by different actors across multiple regions and sectors, and recognising the key enabling factors for these initiatives to succeed. Primary case studies and the cross-case analysis further helps strengthen the emerging pattern of leadership, which is presented in this study as a typology of disaster resilience leadership. This study is aimed to serve as a guiding document for academics, practitioners and policy makers for future research and implementation.

The first section sets a broad background for the research, including how literature recognises the role of various actors and the need for collaborative action. In the context of multiple definitions and disciplinary approaches, this section also sets out the operational definitions of the key terms central to this study: disasters, resilience and leadership. The next two sections outline the key objectives, the methodology used as well as the theoretical framework used.

The fourth section describes the findings from the secondary database analysis and is structured around the diverse geographical context of the country. The next section summarises the primary case studies, followed by a section offering an insight into the emerging patterns from the cross-case analysis. Finally, the last section summarises the findings of this research in a form of a framework/'typology' that could possibly be used to understand disaster resilience leadership approaches beyond the context of India.

1. Background for the research

1.1 Role of Actors

While extreme events require financial and strategic guidance from formal actors at national and international level, events that are recurring and localised in type and scale can be effectively tackled by local actors—both formal and informal in nature. This would include local government, NGOs, private sector, Community Based Organisations (CBOs), cooperatives etc. These local institutions have a comparative strength owing to their proximity, responsiveness to social pressure and adaptation, and their collaboration with the administrative bodies allow them to work within a structured framework with better resources at disposal.

Such decentralisation, if participatory in nature, aids managerial and economic efficiency and the proximity of the local actors lead to internalisation of socio-economic and ecological and transaction cost (Messer, 2003; Miller et al., 2016). FAO (2004) describes effective Disaster Risk Management(DRM) to necessarily include strategies for natural resource management and rural development-- issues which mandate participation of both central and local institutions and therefore need a combination of both 'top-down' and 'bottom-up' approach.

One of the important facets of managing the effects of a disaster is acknowledging the community as an important wheel in the cycle of disaster management interventions, especially in remote regions where infrastructural facilities and the reach of formal disaster management institutions is poor. Community interactions and networks create strong social capital like bonding, bridging and linking which result from trust and co-dependence between the members of the community (Woolcock, 1998; Sanyal et al., 2016). Nakagawa et al. (2004) defines social capital as concomitant of 'mutual trust, social networks and social norms'. The existence of such social capital often allows the community members to deal with the repercussions of disasters and in the worst-case scenario helps them to hold on till help comes from the state. Inclusion of social capital in policies and interventions allows the disaster management to become more participatory in nature and leads to more effective and targeted implementation of policies through the feedback that community mobilisation entails (Sanyal et al., 2016; Islam et al., 2017).

One important element of community mobilisation is leadership, and more so in case in disaster management and especially post disaster recovery. The role of community leaders has been prominent in utilising social capital in the recovery process and facilitating collective decision-making. Trust on the leadership and 'political maturity' of the community helps cement social capital (Nakagawa et al., 2004). Lin et al., 2016 suggested that leaders who are able to successfully steer culture specific projects involving multiple stakeholders exhibit qualities of 'active leadership', a trait that presupposes an amalgamation of 'technical and soft skills'. The strength of the social capital of a community and the leader's popularity within the

community influences the approach of the community towards the various state and national level policies and also how they view the disaster management interventions by other informal institutions (Joshi et al., 2014)

The involvement of community in disaster management, however should not be taken as given. Samaddar et al. (2015) points that it is imperative that the interventions concur with livelihood requirements, should include all social and economic groups and should make use of local knowledge, and that the interventions should have some noticeable outcomes to encourage community participation. This is needed to make the community feel empowered and keep them in loop about the developments at each step of the intervention.

While this level of social participation is different from the 'command and control' approach that focuses on the role of formal actors while keeping the non-state actors unassertive, Cretney (2016) cautions that devolving responsibility for disaster preparedness to the community without adequate financial support from local and national government, might lead to unsavoury results.

1.2 Need for Collaborative Effort

Managing disaster entails dealing with 'uncertainty, lack of familiarity, time limitation, speed and threat' (Shah, 2011; Verbeek, 2006) and this in turn makes inter and intra-organisational collaborations between different formal institutions and informal institutions, even more pertinent. Kalkman et al. (2016) attempts to explain collaborations using a 'trust-control nexus'. According to this theory, the nature of relation between the two constructs require a balance between mechanisms of 'control', i.e. organisational structure, formalisation and hierarchy and 'trust' defined by characteristics such as 'integrity and shared moral values'. He furthers that in the context of the multi-sectoral and multi-level, the shift towards collaborative form of disaster management leads to 'diffusion of authority', increased instances of 'jurisdictional disagreements and domain conflicts'.

One of the problems faced by a collaborative approach to disaster management is that if forced, it leads to delayed response time, authority skirmishes and confusion about the situation on ground but at the same time collaboration and interoperation is becoming a requisite for disaster management in the light of the increasing frequency and intensity of disasters (Noran, 2014). The internalisation of a functioning symbiotic relationship between the formal and the informal institutions is yet to happen in the development plans of many countries. Similarly, the state of devolution of administrative and financial capacities to local administrators and actors has been uneven in many countries (Messer, 2003; Miller et al., 2016). Factors like divisive and partisan politics, corruption, deficit of trust, accountability and transparency, difference in organisational structure often stand in the way of an integrated and collaborative approach (Khan et al., 2006; Noran, 2014; Howes et al., 2015).

A networked approach to governance will help overcome the inherent shortcomings of 'inter-jurisdictional mistrust and duplication' and of rigid hierarchy. Reform suggestions proposed

were: integrated policy and multi-level planning, encouraging a culture of collaboration, cooperative funding model and integrated jurisdiction (Howes et al., 2015). Operation during crisis, therefore, is a function of multiple jurisdictions, organisations and intensive lateral cooperation, unlike the popular expectation of a singular figure at helm (Boin et al., 2003). Birkmann et al. (2010) believe that disaster impacts, if seen as windows of opportunity, paves way for change in how formal and informal response mechanisms work while responding to disasters. Institutional system in place should be such that it aids the flow of information and coordination between public and private sector and also aid the functioning of organisations like businesses, firms and NGOs. These private institutions can often bridge the technological, network and market failures faced by the state, at lower transaction cost than what is incurred by the state (Ahren et al., 2006). This is especially true in the light of increasing instances of disasters and the pressing concerns of the governments to reduce taxes and public debt.

1.3 Operational definitions of key concepts

Leadership

The preliminary literature review conducted attempted to gather an understanding of leadership in the context of disaster resilience and humanitarian operations, to develop an initial framework for assessing leadership and set base for a more systematic literature review. There is a dearth of operational leadership with respect to disaster resilience and humanitarian operations (Clarke, 2014, 2013; Buchanan-Smith & Scriven, 2011).

A majority of the literature reviewed began with the question – what constitutes a good leader? The common method identified to address this question is by identifying factors that make leadership successful, for which it becomes important to first define leadership. Leaders primarily identify an end state that is different from the current state, create a plan to reach this end state and finally successfully implement this plan. Leadership has also been seen as accountability – accepting responsibility to create conditions that enable others to achieve shared purpose in the face of uncertainty (Ganz, 2010). Leadership offers a clear grasp of the situation and enables effective functioning of all involved to make best use of resources.

There is a pressing need for leaders at all levels, but despite our near obsession with leaders we fail to understand leadership (Burns, 1978). Good leadership could comprise of two elements- relational and functional (Antonakis & House, 2014). The relational aspects of leadership focus on the socio-emotional effects of leaders on the groups they lead. The functional aspects of leadership emphasise the use of leaders' expert knowledge to ensure attainment of group goals (Antonakis & House, 2014).

Relational Aspects of Leadership

The relational aspects of leadership emphasise the leader's ability to get things done through the ideas and efforts of the team members. The ability of one individual to influence the behaviour or another is power (Emerson, 1964). Leadership is often confused with power, and individuals who are successful in achieving compliance from their team are incorrectly hailed as good leaders. Leadership is defined as a relationship in which one individual (the leader) influences another (the follower) to willingly work towards a joint purpose (Burns, 1978). In this definition, there are three important elements. First, by defining leadership as a relationship, we recognise that leadership occurs at the intersection of three elements - the leader, the follower, and the context. The same individual may not inspire everyone and one individual may not be successful in different context. Second, there is an emphasis on followers working willingly. Finally, the term 'joint purpose' recognises that the end result of the relationship is the leader and followers working towards a common or joint purpose.

Burns (1978) further distinguished between two types of leadership- transactional leadership and transforming leadership. Transactional leadership involves an exchange of material goods between leaders and followers, thereby meeting the objectives of both. A manager who gets workers to work harder in order to earn a bonus is good example of transactional leadership. Transforming leaders, on the other hand, do not take the current state of the follower as a given and address followers' higher needs. Burns' concept of transforming leadership was subsequently operationalised by a psychologist, Bernard Bass (1985) who identified that transforming leadership was characterised by four behaviours- charisma, motivation, stimulation, and consideration. First, transforming leaders are role models who exemplify values that followers admire and hence acquire a unique charisma. Second, transforming leaders motivate followers by providing them with a meaningful vision and engage them in the task of achieving that vision. Third, transforming leaders stimulate followers to think out of the box and come up with innovative solutions to business problems. Finally, transforming leaders are considerate towards their followers and treat them as human beings. They recognise that each individual is unique, and each has his or her own unique development trajectory.

Defee (2007) discusses aspects of leadership beyond the individual, in the context of inter-organisational leader-follower relationships in the supply chain environment, which is multi-systems (referring to the dealings of multi stakeholder). It is important to have some form of leadership in such an environment for a coordinated effort, which is required for the effective functioning of the entire system. Leadership at the inter-organisational context emerges when it develops a distinctive capability that benefits the other organisation. It is understood as having the ability to influence the actions of other organisation; envision a better future, collaborate and exert influence over the other organisation for better functioning of the entire system.

Functional Aspects of Leadership

The functional aspects of leadership (also known as instrumental or pragmatic leadership) involve the application of the leader's expertise and implementing of strategic and tactical solutions (Antonakis & House, 2014). Antonakis and House (2014) discuss four dimensions to this- - environmental monitoring, strategy formulation and implementation, path-goal facilitation, and outcome monitoring. Environmental monitoring consists of the leader understanding the internal and external constraints on the organisations and capitalising on opportunities present in the environment. Strategy formulation deals with the leader specifying goals and objectives for the organisation in line with the larger vision. The third dimension involves the leader's facilitation of task members to achieve their goals by providing material and intellectual resources. Finally, the last dimension involves the leader providing feedback to team members regarding their task performance and helping them to learn from their mistakes (Antonakis & House, 2014).

Operational definition of leadership

By combining the relational and functional aspects of leadership, leadership pertaining to this study has been defined as "the process by which individuals or institutions use their expertise and resources to identify and implement solutions to meet the long-and short-term needs of the community by engaging the expertise, efforts, and willing cooperation of other individuals or institutions within and outside their organisation."

Disasters

The definition of the term 'disaster' has long been debated. Though the lack of consensus puts a question mark on the intellectual health of the field, the debate is still very significant because of two reasons. First, it prompts an exploration of the past and second, it gives importance to the emerging dimension of the new forms of the hazard because of the rapidly changing human-environment relationship. Popular usages and interpretations of this term have also helped reveal different dimensions of the term 'disaster'. For instance, Quarantelli (1998) while dealing with the lack of definitional consensus, noted that disasters had been defined in terms of different aspects: physical agents, physical impact of these agents, assessment of physical impacts, social disruptions resulting from an event with physical impacts, the political definition of certain crisis situation, and an imbalance in a demand-capability ratio in a crisis situation.

Quarantelli noted that environment, in contrast to communities, is always jeopardised by the potential impact of physical agents, both on inhabited and uninhabited territory. From this viewpoint, any disaster or emergency should be considered as 'ecological'. Similarly, Porfiriev (1996) observed all disaster as "ecological" being situated in and enacted by factors of physical environment. From such ecological perspective, Oliver-Smith (1998) defined disaster as a "process involving the combination of a potentially destructive agent(s) from the natural,

modified and/or constructed environment and a population in a socially and economically produced condition of vulnerability, resulting in a perceived disruption of the customary relative satisfactions of individual and social needs for physical survival, social order and meaning"

For this study, we look at disaster resilience from a socio-ecological perspective, considering a broad array of shocks and stresses (natural, modified and/or constructed environment) that affect or potentially put a population at risk. We include social and ecological perspective as an essential element to the definition of disaster and thereby put emphasis on interaction and mutual constitution of society and environment. The focus would be on effectiveness of societal adaptation to environment.

The rationale for adopting environmental dimensions is that human communities and their behaviours are not simply located in environment. The interface between society and environment is not one of external contact between separate domains. This means that environment is experienced by people and from such experiences emerge the social organisations. The development of society is also the development of environment. Disasters occur in society and not nature, as societies themselves are in nature. In that sense, disasters do not exist in societies but in societal-environmental relations. Societal-environmental relations are then not just relations between two separate entities, but between two mutually constitutive entities.

Operational definition of disasters

The definition of a disaster pertaining to this study is as follows:

"Disaster is a process involving interaction between shocks and stresses (including those emerging from natural, modified and/or constructed environment) and a population in a socially, politically and economically produced condition of vulnerability, resulting in the disruption of resources needed for physical survival of the people and their environment"

Due to the limited time and resources, this study excludes disasters that are entirely anthropogenic like accidents, chemical, industrial, nuclear and radiological disasters, among others.

Disaster Resilience

According to Alexander (2013), the modern use of the term resilience can be traced back to William J.M Rankhine in 1858 when he used the term in the field of mechanics to describe 'strength' and 'ductility' of steel beams. The concept was gradually picked up by Holling in 1973 in the field of ecology, where he presents the viewpoints 'resilience' and 'stability'. He is believed to be the first person to coin the term. Resilience according to him is the ability of ecological systems to persist in the face of disturbance and maintain relationships between different elements of the system. His work has formed the foundation for most studies of the concept of ecological resilience as well various other forms of resilience (cited from Bhamra R et al., 2011).

Existing literature on resilience is mostly defined within the context of physical systems, ecological systems, socio-ecological systems, psychology, and disaster management, individual, organisational or engineering (Bhamra et al., 2011). Nelson et al (2007) and Osbahr (2007) study resilience in the context of climate change and adaptation where 'adaptive capacity' and 'governance' are identified as the key components of achieving resilience. Also, Berkes (2007) views resilience in the context of socio-economic where acknowledging uncertainty, realising change as inevitable, dynamic learning, and 'ability to innovate' are the key to attain resilience. Hence, resilience is closely related with 'capability' and 'ability' of an element to return to a stable state after a disruption. This conceptualisation of resilience treats disturbances in socio ecological systems as an opportunity. It equates resilience with the ability to use disturbances as occasions for doing 'new things, for innovation and for development' (Folke, 2006).

Twigg (2007), one of the pioneers in community resilience follows the building blocks of the Hyogo framework for action to define the five thematic areas for action: governance, risk assessment, knowledge and education, risk management and vulnerability reduction, and disaster preparedness and response. These thematic areas are then divided into three columns for each component – components of resilience; characteristics of a disaster-resilient community; and characteristics of an enabling environment.

The study on resilience can be further broadly classified in three general areas: readiness and preparedness, response and adaptation, and recovery and adjustment (Bhamra et al., 2011) which is in line with Ponomarov and Holcomb's (2009) three phases of supply chain resilience.

Operational definition of disaster resilience

Drawing from the existing literature, the study will view resilience as a process rather than an outcome in the context of disaster management, at the institutional level. Hence, we define resilience for this study as "an active process through which systems develop an ability to resist loss pre-disaster; continue its functioning during disaster; and reorganise and regenerate post disaster".

Based on the definition and using disaster management cycle, the study of disaster resilience can be broadly classified into four phases (Figure 1): mitigation; readiness; response; reconstruction and rehabilitation. Mitigation is the phase where proactive actions and measures are initiated so as to reduce the impacts of risks. For instance, conducting Hazard Risk Vulnerability and Capacity (HRVC) analysis and coming up with comprehensive measures to address the risk identified; setting up a separate unit for disaster management which will formulate policies, regulations and plans for reducing risk; allocation of funds for the reduction of risk and its utilisation; allocation of roles with hazard specific initiatives by developing Standard Operating Protocols (SOPs) for all department; establishment of Emergency Operation Centres (EOC)s. Activities performed in this phase have an influence in the succeeding phase.

The phase, 'readiness' is where an institution (or in some cases an individual) establishes foundation for an efficient and effective functioning in the likelihood of an event. Establishment of such foundation requires the anticipation of a catastrophic event along with an understanding of the day-to-day functioning of the society, and structuring activities around this including mock drills and simulations, training programmes for capacity building and technological interventions.

'Response' is a phase when actions are executed to address short-term goals and immediate requirements. The word 'execute' implies the availability of an already developed sets of operational guidelines... The phase requires an efficient mobilisation of resources both social (human) as well as non-social (equipment, information, finance, etc.) components from various stakeholders; and activation of a separate functional unit / body, established for handling a disaster in an emergency situation, for instance: EOCs, Search and Rescue (SAR) team, SOPs for disasters, etc.

It also demands the need for an assessment to help future interventions and authentic estimates of damages and loss. Managing the flow of such information is crucial as it could have an impact on the interventions of various stakeholders involved in the reconstruction and rehabilitation phase.

Strategies for reconstruction and rehabilitation are based mainly on the characteristics of the hazard and scale of damage and loss, for which information plays a crucial role. In this phase, interventions are towards setting and attaining long-term goals of resilience building. It gives institutions a space for learning success and failures of different approaches introduced for the programs. Approaches must be designed based on the context and demand, signifying the need for innovations based on the requirements. Thus, it calls for constant reviewing and updating of the existing operational guidelines / approaches and restructure based on lessons learnt from the experience.

Therefore, each phase is a separate but not a standalone entity. Tasks performed in the preceding phase have an influence and lay a course for the functioning of the succeeding phase. The achievement of resilience depends upon each action performed in the respective phases. Thus, attainment of resilience requires a collaborative and a coherent effort taken during all the phases.

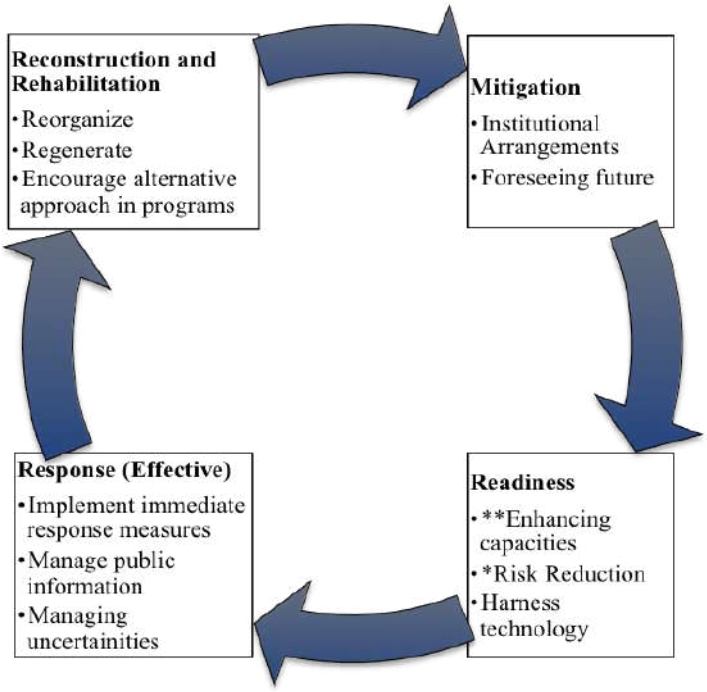


Figure 1: Framework of Disaster Resilience

Note: *signifies that the particular indicator is cutting across 2 phases of resilience (Readiness/Reconstruction and Rehabilitation); ** signifies that the particular indicator is cutting across all phases of resilience.

2. Objective of the study

The study aims to understand the past and current practices of leadership for disaster resilience in the Indian context, with the following specific objectives:

1) To analyse the initiatives for building disaster resilience within the formal institutional framework for disaster risk reduction and response.

2) To document and analyse the autonomous initiatives for building disaster resilience from within the communities impacted by or at risk of recurrent disasters.

3) To identify leadership practices and gaps for building disaster resilience within the informal institutional frameworks for disaster risk reduction and response.

3. Methodology and Theoretical Framework

3.1 Methodology

The concurrent mixed method (predominantly qualitative) approach with a case-study design has been used for the study of disaster resilience leadership. The study has been carried out in three phases: exploratory, documentation and explanatory phase.

Phase 1: Exploratory - This phase included identification of actors (individuals/ initiatives/ institutions) and their initiatives for building disaster-resilience this has been done through a review of literature and secondary information available on the public portal. The identified cases have been organised using the framework described in Table 1. For formal institutions, a preliminary quantitative and qualitative analysis is conducted to review identified cases and understand the larger context of disaster resilience leadership practices in the country.

Phase 2: Documentation - Of the total cases identified, a set of cases were selected for in depth exploration and documentation. A list of the initial set of initiatives has been prepared to filter out the final set of case studies to be explored in detail for the documentation.

In order to understand the complexities within the system, a case study approach was used to qualitatively document a select cases of leadership practices highlighting various means towards an effective leadership in the context of disaster resilience. This has been developed through interviews conducted with the key informants from the government, NGOs, activists, academics, practitioners, and community members. The primary information gathered through interviews has been corroborated with secondary data.

Phase 3: Explanatory - This phase included understanding leadership behaviour for building disaster resilience. The analysis has helped in identifying the practices and principles that contribute towards building and strengthening resilience in the complex Indian context. This has been done through cross-case analysis of the documented case studies, identifying the patterns emerged and understanding the underlying complexities required to build up the disaster resilience.

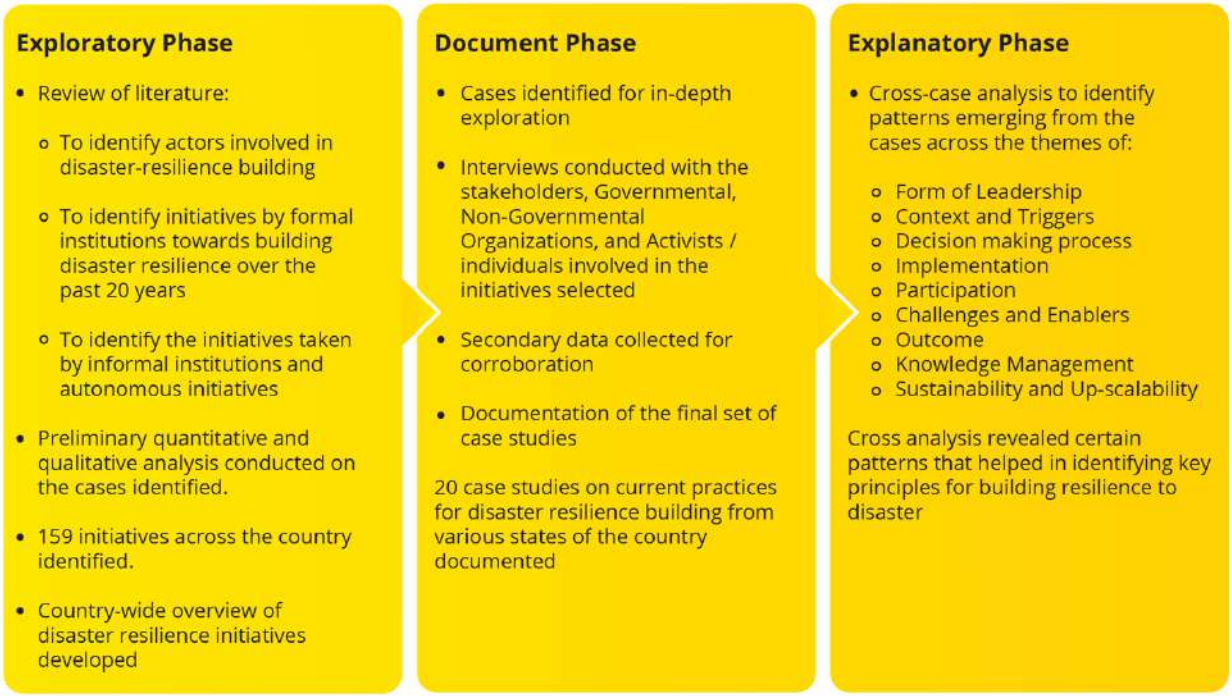


Figure 2: Research Methodology

3.2 Process and Tools of Data Collection and Analysis

Step 1: Geographical focus

The Phase 1 analysis included a review of initiatives that have attempted to address disaster risks reduction and resilience building needs across all Indian states. A risk profiling was conducted for all states. Clustering of the states has been carried out using a 'Composite Vulnerability Index' approach to calculate the disaster risk index of the Indian states on the basis of a) Hazard Exposure and b) Vulnerability of the states.

The states were then clustered using an algorithm (the K-Means Clustering Algorithm) and then regrouped on the basis of the eco-regions. This enabled the distribution of the states with more or less same representative samples among TISS and IIHS, so that the two groups of states can complement the analysis of each other. The sharing was also done based on prior experience and existing networks of the two institutions. The same risk profiling also corroborates to the criteria for exclusion of states for the second level of exploration.

Based on the availability of relevant secondary data, some states had to be excluded from the analysis, although it was ensured that the comprehensive coverage of the diversity with regard to hazard, risk, vulnerability, topography and geography is not compromised by this exclusion. Key case studies from the selected regions and characteristics (explained below) are then studied in detail for further analysis, and documentation and dissemination to a wider audience.

Step 2: Secondary Literature and Data Review

This was done in two parts. (1) A literature review was conducted on leadership, resilience and disaster frameworks, after which a framework was developed to understand disaster resilience leadership in India(2) A systematic secondary review was conducted to identify relevant and key case studies for studying leadership in India, including mapping the disaster risk profile of the state, key disaster response and disaster risk reduction initiatives in the past two decades, identification of key case studies, formal institutional and policy frameworks for disaster risk reduction.

Although the aim of the second part was to develop an exhaustive list of potential leadership cases, the research team is cognizant of the fact that not all initiatives taken are documented or find a mention in the public domain. This being a limitation, the research will attempt at documenting cases that are evidently noted to have delivered outcomes towards risk reduction and/resilience building. This documentation will be carried out through a systematic review of secondary information available in various public portals. For this purpose, the following steps were undertaken:

1. Understanding the HRVA profile of selected states to various disasters to identify the list of disasters that have struck the state within the time period 1998-2018 (past two decades).
2. An online search of news reports, journal articles, blogs, government reports and research publications to identify individuals and organisations that have taken the lead in managing and developing resilience during and after a disaster. These cases of leadership will be identified in and around the shocks and stresses specific to each state from results of the previous step.

   Keywords used:

   i.<state name>+<shock/stress>+<year>+planning+preparedness
   ii.<state name>+<shock/stress>+<year>+relief+aid+response
   iii.<state name>+<shock/stress>+<year>+rehabilitation+recovery

   Search engine used: Google (up to 5 pages), relevant government websites, relevant civil society websites, and news portals (national daily, and some regional newspapers).

   A parallel google search was also run on awards and recognitions (by NDMA, UN bodies, Corporate Organisations etc.) bestowed on individuals and organisations in context of disasters and resilience.

   Keywords used:

   i.<state name>+<shock/stress>+Disaster + Awards
   ii.<state name>+<shock/stress>+Resilience + Awards

   Search Engine used: Google (up to 5 pages), Institutions websites

Step 3: Identification of Cases of Disaster Resilience Leadership across states
This step involved a review of initiatives taken up by formal institutions as well as noted/documented cases of autonomous actions taken in each state towards building disaster resilience over the past 20 years. This was carried out through review of secondary information available through public portals, news articles, blogs and other online sources. Apart from the Internal Advisory Committee inputs, some key informant interviews (2-4 interviews per state) were conducted across public sector, private actors and civil society organisations to identify cases of disaster resilience actions and initiatives. An illustrative set of 8-10 cases per state (or a total of up to 300 cases across the country) were documented and quantitatively analysed using the Case Study Selection Framework presented in Table 1.

This phase also included a brief study of each state's risks, vulnerabilities, as well as capabilities towards building disaster resilience, through a review of secondary information like disaster management plans or state budgets. This step will continue across the three phases of the project, to capture the dynamics of the functions of the stat, in the context of which both formal and autonomous actions take place.

Key stakeholders from a variety of actors (public, private, civil society members, community representatives, etc.) have been interviewed for the project. The dimensions within which the leadership practices have been explored include existing conditions of vulnerability of the state, trigger for leadership action, role of action taken, agency of the leader in question, time of action, scale of action and disaster, form of leadership observed, resources available to the leader, perception of participation, constraints, networking and communication, outcomes of the exercised leadership, and long term sustainability of the action taken and decisions made.

Step 4: Documentation of Select Past and Current Practices
This step involves critically examining a select and diverse set of initiatives taken up by the formal and informal institutions, people's collectives and movements, and community interventions highlighting current leadership capabilities towards building disaster resilience. These cases were documented using a case study approach to generate an in-depth and multi-faceted understanding of the leadership capabilities in the context of disaster resilience. The framework of inquiry for each case is presented in Table 2 below. The step involved in-depth interviews with formal stakeholders, i.e. the operational leaders involved in building disaster-resilience, as well as the team members, partners and select members of the communities they worked with, along the Framework of Inquiry presented in Table 2.

The criteria for the selection of case studies attempts to incorporate the diversities with regard to risk profile of the context (the risk index utilised in sampling), topography, geography, sector, characteristics of the initiative (formal vs autonomous, uniqueness, innovation, level and scale), leader/leadership characteristics, etc.

Criteria for the Case Study Selection

While these cases are only indicative of the thousands of actors who have come to make a difference, the idea is to recognise a pattern among these actors and build a framework that can be disseminated to enable many more such actors in the future. We aim to select case studies that can capture a diversity of challenges, and models of leadership practiced. Table 1 below lists the criteria that we have attempted to cover to ascertain this diversity in the select set of cases:

The preliminary documentation of case studies based on secondary and some select primary interviews (described in Part A), have been documented as per Table 2. A qualitative analysis has been conducted across the identified cases to reveal a pattern of leadership initiatives across the country and regions. Detailed qualitative analysis has been performed on the final cases selected for documentation using the framework developed for cross-case analysis inclusive of components identified from the cases identified.

Step 5: Understanding the systemic features and leadership behaviour for building disaster resilience

The cases studies documented in Step 1 and Step 2, were analysed quantitatively and qualitatively (respectively) to illustrate the conditions and context of Disaster Resilience Leadership in the country. While the former will provide a broad sense of types of actors and their actions across different regions and disaster management scenarios, the latter will provide deeper insights into the conditions and constraints in which leadership emerges, how it is perceived by other actors, and how it delivers actions towards resilient outcomes. This analysis will be conducted with a backdrop of the regional vulnerabilities and capacities of the formal public institutions. This phase will attempt to identify the distinct practices by formal and autonomous actors and delve deeper into the competencies required to address resilience challenges.

Table 1: Framework for Case Identification and Quantitative Analysis

Spatial	State
Sector	Agriculture, water resource, Livelihood, Animal Husbandry and Dairy, Watershed Management, Environmental and Forest, Public Health, Education etc.
Types of actions/interventions	Physical, Technological, Social, Regulatory, Market, Investment, Community Based
Actors	National or local government, International donors, Private sector, NGOs, Local communities and individuals
Climatic zone and Disasters	Mountains, Arid, Floodplains, Coastal etc. (drought, flood, contamination (arsenic, iron), cyclone, storm surge, salination)
Affected Groups involved	Marginal Groups, Women, Youth, Tribal, Farmers, Migrants etc.
Temporal	Disaster risk reduction initiative: past two decades Institutional frameworks: past 3 years
Pre-disaster Intervention	Disaster Risk/Hazard Mitigation, Prevention, Preparedness, Capacity Building etc.
Resilience	Differing Conceptions of Disaster Resilience, Psychosocial Vs Socio-ecological resilience, Formal top down Interventions Vs Autonomous bottom-up Initiatives, Local and Community Resilience Vs Systems Approach to Resilience (Systemic Characteristics/ Attributes, Ability, Agency, Process, Outcomes), Reconstruction and Rehabilitation, Readiness, Response, Mitigation, Reorganisation and regeneration.
Leadership	Individual Vs Institutional Leadership, Ethical dimensions of leadership, Operational leadership within teams, between teams, and external teams, Leadership functions in Multilevel Systems, Dimensions with respect to existing conditions of vulnerability, trigger for leadership action, Role of Action taken, Agency of the leader in question, time of action, Scale of action and disaster, Form of leadership observed, Resources available to the leader, Perception of participation, Constraints, networking and communication, Outcomes of the exercised leadership, Long term sustainability of the action taken and decisions made

3.3 Theoretical framework

A more detailed framework has been developed to enable a detailed qualitative approach of inquiry for analysing leadership cases. To understand the primary cases of leadership, the following characteristics of the practice are documented, analysed and assessed:

Table 2: Disaster Resilience Leadership Framework / Preliminary Typology

No	Key Characteristic	Suggested directions of Inquiry
1	Existing Conditions of Vulnerability	1. Physical exposure to risk
		2. Persistence of poverty and inequality
		3. Other Socio-economic vulnerabilities (incl. cultural and religious conditions)
		4. Capacities to cope (institutional and community level)
2	Trigger for Action	1. Climate adaptation
		2. Personal motivation & livelihood
		3. Job requirement
		4. Community based dearth of leadership
		5. Occurrence of disasters elsewhere
		6. Risk perception (value of the leadership itself)
		7. Availability of funds
3	Role	1. Public sector (formal) actor or agency
		2. Private sector (formal) actor or agency
		3. Civil Society Organisation (formal/informal)
		4. Individual within other formal role (informal)
		5. Member of the affected community (informal)
4	Agency	1. Power
		2. Gender
5	Time of Action	1. Mitigation and Planning
		2. Preparedness
		3. Early Warning
		4. Response, rescue and relief
		5. Recovery
		6. Rehabilitation
6	Scale of Action/Disaster	1. Intensive risk context (high intensity low frequency)
		2. Extensive risk context (low intensity high frequency)
7	Form and perception of Leadership	1. Lead from behind
		2. Self-Governing / Organising common interests
		3. Multiple leaders with opposing interests
		4. Learning from practice
8	Resources Available and	1. Financial resources

No	Key Characteristic	Suggested directions of Inquiry
	employed	2. People (including the benefiting communities)
		3. Networks
		4. Appropriate technology
9	Processes of Participation	1. At the conception level
		2. At design level
		3. During implementation
		4. During ongoing/planned actions in the future
10	Perception of Participation	1. By team members and partners
		2. By community benefitted by the actions
11	Constraints	1. Resource constraints
		2. Power and Agency constraints
		3. Physical or access constraints
		4. Socio-political constraints
12	Networking & Communication	1. Partnerships built
		2. Modes of communication employed
		3. Communication processes with the benefiting communities
13	Outcome	1. Positive (short to mid-term)
		2. Social Environment
		3. Leadership
		4. Institutional Capacity Building
14	Long Term Sustainability	1. Sustainability of the institution formed: a. Value structures formed b. Resource viability c. Diversity of actions relevant for the current and future risks
		2. Sustainability of the actions taken: a. Long-term resilience implications on the benefitted community

The following set of questions further guided the case study enquiry. These were indicative questions but were adopted suitably as per the case requirements. The questions in italics focus on changes that have taken over time.

Table 3: Questions of Enquiry

1. Context and triggers
a. What were the existing conditions of risk and vulnerability that motivated the initiatives/actions? (Physical exposure to risk, persistence of poverty and inequality, other socio-economic vulnerabilities incl. cultural and religious conditions, capacities to cope at institutional and community level)
b. What was the socio-historical/ institutional/regulatory/political context that gave rise to setting up the institution?
c. What were the specific triggers that motivated the establishment of the initiative? (Climate adaptation, personal motivations, job requirement, community-based dearth of leadership, occurrence of disasters elsewhere, risk perception, availability of funds, etc.)
d. What were the original value systems and objectives that led to the start of the initiatives?
e. How were the problems identified? What are the factors taken into consideration when identifying the nature of problem to be addressed? (larger the frame, larger the mobilisation)
f. Has the context changed over time? If yes, how? (Risks and vulnerability, institutional/regulatory context, etc.)
g. How has the changing context affected the functioning of the original initiative? Have the values, objectives and motivations changed over the period?
h. How do they measure their own success, and have they had to adjust the modus operandi according to outcomes? (Metrics, outcomes, etc.)
2. Decision-making processes
a. Who were involved in setting up the initiative? Why?
b. How were the affected people included in these processes? / How was people's participation envisioned? (at the conception level, at design level, during implementation, during ongoing/planned actions in the future)
c. What was the original organisational structure/design?
d. Why was it designed to be so?
e. How was the concept of collective or members conceptualised? What are the factor that are significant in influencing the recruitment of groups (especially the interest and critical mass) for the initiatives? What are the main characteristic features of the group? How does it help in mobilising resources and attaining the goals / objectives of the movement?
f. What actions were originally planned under the initiative? Why? What information or data was used to inform the decisions?
g. Has the resource availability/utility changed over time? If yes, how and why?
h. Have the processes of participation changed over time? If yes, how and why?
i. Has the organisational structure changed over time? If yes, why and how?

j. Have the set of activities undertaken changed over time? If yes, why and how?
3. Challenges and Enablers
a. What were the hurdles faced at the beginning? (Resources, power and agency constraints, physical or access constraints, socio-political constraints, regulatory constraints, etc.)
b. Were they addressed? If yes, how?
c. What resources (people, finances, technology, networks, etc.) were involved at the time of setting up the processes?
d. What are the mechanisms laid down to take advantage of the present opportunities (political, social, economic, etc.) which help in gaining momentum? (Cross-class/caste, location, multi-constituency alliances, etc.)
e. Have there been particular aspects of power relations/gender dynamics that have impacted the processes/actions – positively or negatively?
f. How are strategies decided considering the diverse, and sometimes conflicting interests of different individuals and groups who are within and outside the movement? What influenced the decision of strategy formulation?
g. What were the key enablers without which this initiative would not have functioned / would have been significantly different from what it is at the moment?
h. Have there been other challenges met in the process? If yes, then what?
i. Have there been new set of resources accessed and employed over time? If yes, what, how and why?
j. Have the power relations/gender dynamics evolved over time? If yes, how and why?
4. Implementation and Scaling up
a. What kinds of partnerships are fostered in the process? Why?
b. What kinds of communication strategies (with partners, employees, and affected communities) are employed in the process? How are shared values identified?
c. Was there a plan to scale up? If yes, what was it and did it work?
d. How has the initiative scaled up over time? (Geographical influence, coverage of vulnerable communities, emergence of new initiatives, etc.)
e. What were the challenges faced in scaling up? How were they overcome?
f. What are the envisioned plans for scaling up, and lessons from the past attempts that will be incorporated in the process?
5. Outcomes
a. Have the objectives set out upfront being met? If no, then what are the shortfalls?
b. Have you witnessed any co-benefits in the process that have come out of the initiative – esp. the kinds that were not originally planned? (For the communities involved, for the locality, for local economy, for the institution itself)?
c. In what ways do you think the institutional capacities improved over time?
d. What helps in achieving the key milestones over the course of time?
6. Sustainability
a. What have been the long-term outcomes for the benefitting communities and places?
b. How sustainable is the institutional set-up itself? (Value structures, resource viability, diversity of actions for current and future risks, etc.)

c. How alliance with other groups having different ideologies / knowledge / interests are built and sustained?
d. What different forms of social capital changes and continued during the progression of the movement (relations of authority, trust and norms, values)? Why and how are they generated?
7. On Structure and Leadership
a. What is the perception of leadership for the people working at the institution?
b. What are the perceptions of the people (beneficiaries of actions) about the initiative?
c. What is the form of leadership practiced? Has this changed over the period of time – if yes, how and why? (Operational leadership, Leadership Functions in Multilevel Systems, Empowering leadership) - Refer to leadership frameworks.

4. Findings from the Secondary Case Study Database

4.1 Summary overview of Disaster Resilience Initiatives documented

Following a systematic identification and documentation of a sample set of Disaster Resilience Initiatives across the 36 states/UTs, a database of 159 initiatives was generated. As mentioned, sources for information used include key informant inputs, systematic online search and key secondary resources. This quantitative analysis is a means to recognise the types of cases and initiatives that are currently getting documented in secondary sources, and where there might be gaps – either in action, or documentation.

Table 4: Resilience Initiatives found - by Geography

Geography	No. of Initiatives	Key Observation
South	35	The most number of disaster resilience cases and initiatives found through secondary review came from South and North India – which are also regions exposed to intensive events such as floods, earthquakes and cyclones. Areas such as the central and the island regions get the least coverage. These are either because the risks they are exposed to are of extensive nature (low intensity, high frequency – such as public health issues) and do not attract much attention, or simply because they are not as well recognised and documented. More focused research is required in these areas to understand the current landscape of disaster resilience initiatives and actions, both by formal and informal actors.
North	34	
North East	27	
West	23	
East	16	
All India Scale	16	
Centre	6	
Island	2	
Grand Total	**159**	

Table 5: Resilience Initiatives found - by Terrain

Terrain	No. of Initiatives	Key Observation
Hilly	40	Aligning with the observations made in **Table 4**, most cases found were in hilly or coastal areas, also locations for intensive risks. There were fewer cases found from the dry and arid regions.
Semi-arid	39	
Coastal	30	
Riverine	16	
Combination of two or more	14	
Sub-humid/Dry	9	
Plains	5	
Arid	3	
Island	3	
Grand Total	**159**	

Table 6: Resilience Initiatives found - by Exposure context

Context	No. of Initiatives	Key Observation
Rural	108	Of all the cases found, most were concentrated in rural areas, and only 22 out of 159 were initiatives taking place in urban or peri-urban areas. This could be due to multiple reasons: With a greater complexity of issues and actors in urban areas, initiatives here are either entirely by formal public developmental institutions, or by informal private actors. These types of actors remain less documented than the formal private actors This could also be due to a larger political discourse and attention that is given to rural areas in India until 2005 when national urban schemes were introduced. There is thus a need for more research on urban disaster resilience initiatives or the lack thereof.
Composite	29	
Urban	21	
Peri-urban	1	
Grand Total	**159**	

Table 7: Resilience Initiatives found - by Reasons triggering action

Shock/Stress Triggering Action	No. of Initiatives	Key Observation
Drought/Water Scarcity	39	Most cases found were focused on drought or flooding. These are both annual affairs in India, often with the same region facing a drought followed by a flood during monsoons. This aligns with the findings in **Table 6**, where drought is largely seen as a rural risk in India, with limited regulatory or procedural definitions of water scarcity in the urban context that can be recognised as a 'disaster'. There were fewer cases that documented health outbreaks or recognised development shortfalls such as informal housing in the context of disasters. These areas need more exploration.
Flooding	30	
Combination	22	
Cyclones	21	
Earthquake	14	
Environmental degradation	8	
Socio-economic Vulnerabilities	7	
Tsunami	7	
Landslide	5	
Health Outbreaks	2	
Erosion	2	
Chemical Pollution	1	
Informal Housing	1	
Grand Total	**159**	

Table 8: Resilience Initiatives found - by Role of the actors

Role	No. of Initiatives	Key Observation
Public Sector Institutions	50	The bulk of cases highlighted public or non-governmental institutions as the primary actors acting in a formal capacity. There were very few cases found where individuals (working outside the role of their institutions) were seen as key actors. Even fewer were cases about private sector initiatives, although there were some cases where academic institutions, religious groups and activists groups emerged as key actors.
NGO	37	
Community Group/Leader	13	
Multi/Bilateral Funding Agency	10	
Individual	10	
Foundation	8	
Humanitarian actor	8	
Combination	7	
Academic	4	
Private sector actor	4	
Political Head	3	
Activist	3	
Religious Entity	2	
Grand Total	**159**	

Table 9: Resilience Initiatives found - by DM Phase of actions taken

DM Phase	No. of Initiative	Key Observations
1. Mitigation/Developmental	51	Many cases that are traditionally seen as developmental initiatives, have been included in this study as initiatives leading to risk mitigation and preventive action. The cases from the traditional disaster risk reduction perspective, primarily focused on immediate response, rehabilitation or recovery. There were very few cases identified that are working towards the complete cycle for building ground-up resilience, or planning for risk reduction.
2. Planning	5	
3. Preparedness	29	
4. Planning for response	6	
5. Early warning and evacuation	1	
6. Immediate response	20	
7. Rehabilitation	20	
8. Long-term recovery	16	
9. Complete cycle	11	
Grand Total	**159**	

Table 10: Resilience Initiatives found - by Sectors

Sector	No. of Initiatives	Key Observations
Water management / Agricultural Development	33	We attempted to find a variety of cases belonging to different sectors that have had implications for building resilience, including those that are traditionally seen as developmental sectors such as education and governance.
Rescue response	15	
Planning	14	
Resilience Building	13	
Community Mobilisation	13	
Built environment	10	
Special Social Groups	8	
Climate Adaptation / Mitigation	7	
Capacity Building	7	
Livelihoods	7	
Governance	6	
Infrastructure	5	
Policy	5	
Health	4	
Drought mitigation	3	
Early Warning Systems	3	
Food Security	2	
Insurance	1	

Sector	No. of Initiatives	Key Observations
Communication	1	
Education	1	
Emergency Shelters	1	
Grand Total	**159**	

4.2 Regional Analysis of Disaster Resilience Initiatives in India

India is a developing nation of 1.324 billion people1, diverse geography and geo-climatic conditions. Since 1972, the country has witnessed more than 63,000 deaths accounted for by 30 major disasters across the country.

The National Disaster Management Authority (NDMA) captures the vulnerability of the country through some unnerving statistics; more than 58 per cent of the country is prone to moderate to high intensity earthquake, 12 per cent of land is prone to flooding and subsequent erosion, over 75 percent of its coastline witnesses cyclones and tsunamis, drought affects more than 68 per cent of India's total cultivable area while the hilly regions of the country are at high risk of landslides and avalanches. The socio-economic conditions, unplanned growth in urban spaces, increasing climatic variability, degradation and unchecked exploitation of natural resources has had a multiplier effect on the disaster risk that the nation faces. Kahn (2005) identified that the per-capita income, geography and the institutions that are actively working in a country are key factors that determine the extent of damage caused by disasters.

Well-functioning and integrated institutions with a synchronisation between workings of formal and informal disaster management institutions is imperative for better preparedness and response towards disasters and therefore better mitigation of the damages.

The government machinery is the foremost authority on disaster management and has more financial, administrative and political aid at disposal. The informal institutions like NGOs, CBOs, volunteer groups, CSR units and charities are also integral because they can outmatch the reach of the government to places and communities that would have been otherwise not reachable. There has been a paradigm shift in the nature of efforts taken by both formal and informal institutions from relief-centric efforts to preparedness and mitigation.

[1] Population in year 2016. Accessed from https://data.worldbank.org/country/india

Regional risks and vulnerabilities in India

This section briefly describes the regional patterns emerging from the 159 documented cases of disaster resilience leadership across the country.

North-Hilly (Uttarakhand, Himachal Pradesh, and Jammu & Kashmir)

The hilly terrains of the northern part of the country face frequent flash floods, earthquakes, cloud burst and the resultant landslides. The 2013 flood and landslides, triggered by torrential rains, devastated the state of Uttarakhand leading to massive destruction of life, property and crucial infrastructure. More than 9 million people were affected. The disaster management efforts here were rehabilitation and mitigation focused. Informal institutions focused on capacity building and advocacy pivoted on sectors such as 'livelihood' and 'agriculture'. The aim was post-disaster revival of agriculture and promotion of alternate livelihood options along with relief and rehabilitation in the flood hit areas. Government-led initiatives, apart from relief and rehabilitation, also addressed eco-restoration and forest degradation along with livelihood improvement and community development.

While the state of Jammu and Kashmir is also prone to flash floods, snow blizzards and avalanches, the current research has only used instances of earthquake and drought. In case of the former, the aim was to relieve the affected population from the socio-psychological stress of destruction of life, property and livelihood. Droughts in the state were witnessed in Leh due to the gradual shrinking of glaciers which has had a severe effect on the farmers who have been traditionally dependent on glacier water for irrigation. A successful individual led effort by the 'ice-man of India', Chewang Norphel, saw the construction of 17 artificial glaciers and subsequent recharge of ground water and springs, which also had a positive effect towards stemming the out-migration of villagers.

Jammu and Kashmir in the western Himalayas has experienced major earthquakes in the past, and the seismic activity of this area is closely associated with the active faults and the regional tectonic features which include the Main Boundary Thrust (MBT) and Main Central Thrust (MCT) running parallel to Himalayas. The north-west Himalaya has distinct crustal zones of homogenous seismic behaviour demarcated by major thrusts and faults. The entire state is at risk of being affected by a severe seismic event.

Following a massive earthquake in October of 2005, an initiative to revive traditional, local livelihoods was started by the Centre for Environment Education Himalaya (CEE) in Noorkhah village, Baramulla district. This rehabilitation effort led to the creation of a multi-layered monitoring system that and helped restore the livelihoods of around 300 nearly 301 identified beneficiaries.

However, while the initiative was successfully implemented, it was not without its share of constraints including representation of women in SHGs, concerns of sustainability concerns,

and adequate representation and assertion of the rights of minorities during village meetings. A Yet another example of an NGO/Organisation led initiative in the aftermath of the 2005 earthquake was a collaborative 'Needs assessment' done by TISS and the University of Kashmir wherein temporary shelter and immediate relief items were provided to over 17000 families across 60 villages in Kupwara and Baramulla districts of Jammu and Kashmir. The programme also included a Disaster Preparedness programme in partnership with the National Service Scheme(NSS), a community based early warning system in 31 most vulnerable villages of Baramulla and Kupwara districts, and a livelihood restoration initiative also comprised of livelihood restoration through a 'cash-for-work' initiative focussed on restoration of key provisions like water, sanitation and homes.

In the state of Himachal Pradesh, about 32 per cent of the total geographical area of falls in the very high seismic zone V, while the rest (68 per cent) lies in the high seismic zone IV. Ten out of twelve districts fall in the very high seismic zone. From 1964 to 2008, 520 earthquakes of varying magnitude occurred in Himachal Pradesh. The hills and mountains of Himachal Pradesh are liable to suffer landslides during monsoons and also in high intensity earthquakes. The vulnerability of the geologically young and not so stable steep slopes in various Himalayan ranges, has been increasing at a rapid rate in the recent decade due to inappropriate human activity like deforestation, road cutting, terracing and changes in agriculture crops requiring more intense watering. Forest fires, avalanches and cloud bursts are also some disasters the region is susceptible to. Most of the Disaster Risk Reduction (DRR) cases in Himachal Pradesh are for preparedness or mitigation. A significant amount of that work has been under the DRR programme under UNDP from 2009-12. The programme facilitated the institutionalisation of disaster management across various strata of urban and rural governance. The other case of resilience building in which Himachal Pradesh's efforts have been commendable is a movement, 'Community Led Total Sanitation' (CLTS). This particular programme played a significant role in reducing the intrinsic vulnerability of the community that was afflicted by diarrhoea every monsoon. Led by local NGOs and the Panchayati Raj Institutions (PRIs) the movement ensured that every household had individual working toilets.

Most DRR initiatives are found to be headed by the government but the initiatives such as CLTS have proved the critical role NGOs can play. Among other examples, the International Union for Conservation of Nature (IUCN) is implementing a project on 'Coping with Uncertainties: Building Community Resilience and Ecosystem Based Adaptation to Climate Change in the Indian Himalayan Region (CwU), under the Government of India's National Mission on Himalayan Studies (NMHS),' in three Himalayan States including Himachal Pradesh.

North-eastern Hilly region (Assam, Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura)

The north-eastern region of India, with a total population of over 50 million, is highly vulnerable to climatic variations. Frequent earthquakes and landslides are the common disasters in this region and the disaster management efforts focus on mitigating the damage. Lack of dependable livelihood options was one key factor across the states that led to higher vulnerability. The intervention in the states therefore focussed on the capacity building of the communities, improving the economic and livelihood activities, food security, to increase access to financial tools, recharge of groundwater, construction of earthquake resistant houses etc. The initiatives were largely NGO-led, followed few by government and faith-based organisations.

The vulnerability profile of the north-eastern states is dominated by earthquakes and landslides. In Assam, floods are a recurring annual feature when Brahmaputra and its tributaries (which have large catchments) are flooded submerging a substantial part of Brahmaputra plains. Up to three or four million hectares of land have been affected by these floods occurring during the summer monsoon between May and September. The floods affect the crops, cause erosion, breach embankments, wash away cattle, destroy houses, uproot trees and even affect the wildlife sanctuaries (Kamal R. Dikshit, Jutta K. Dikshit, 2014).

Sikkim is subject to heavy environmental degradation due to the high influx of tourists and rampant commercial growth. Manipur and Mizoram face earthquakes of varying scales. The slight earthquakes occur more frequently than the high intensity ones (Kamal R. Dikshit, Jutta K. Dikshit, 2014).

Groups such as Inter Agency Group (IAG) which partner with local NGOs in these states, PRAGYA which works with vulnerable & marginalised communities and ecosystem conservation work in this region. Mitigation activities, for e.g. in Sikkim are found to revolve around promoting climate adaptive practices, while groups viz. North East India Committee on Relief and Development (NEICORD), Indo Global Social Services Society (IGSSS) use traditional architectural methods for building shelters and forming seed banks to increase food security. In several cases, these ideas are also seen emerging from the community itself. The Loktak Development Authority, Government of Manipur, undertook the task of rejuvenating the Loktak Lake which had lost most of its ecosystem owing to unsustainable human activities. The purpose of the intervention was to check the deteriorating condition of Loktak Lake and to bring about improvement of the lake ecosystem along with development in the field of fisheries, agriculture, and tourism while conserving the catchment area involving concerned departments of the state government.

Sloping Agriculture Land Technology (SALT), an organisation funded by the Baptist Church of Mizoram and the state government of Mizoram, works on the issues of soil erosion and forest

destruction. It established one of the best sustainable systems of agriculture applicable for steep hills in Mizoram and worked on increasing agricultural productivity for economic and environmental stability The World Bank, along with the Mizoram state Public Works Department and village council also initiated a programme to strengthen natural slopes along roads while retaining the natural vegetation which would be lost with stone and cement works. While there were setbacks in the programme in form of delays and unskilled labour, the initiative benefited both road building agencies and users by protecting the road and its users from landslides while also retaining the hillside's productivity.

In Sikkim, the government initiated a Lake Revitalising Project in 2008 to counter the effects of sporadic monsoons and scanty winter rains. The project enabled water availability for drinking and irrigation by pipeline connections, recharged the ground water and improved livelihoods of local people.

North- Semi Arid (Punjab)

Punjab, a semi-arid state in the northern part of India, battles a looming water crisis owing to the exhaustive and exploitative nature of agriculture practiced in the state. It has led to severe water deficiency and depletion of groundwater resources, and also increased level of toxicity in groundwater, owing to the high amount of chemicals used in agriculture. These issues have led to prominent and effective interventions towards 'mitigation' by both formal and informal machineries in the state, including NGOs and communities, towards promotion of water efficient agricultural practices and rejuvenation of water bodies. The interventions have led to cleaning of river and revival of old ponds through rainwater harvesting.

The Kudrati Aahar Parivar by the NGO Kheti Virasat Mission is one initiative where farmers are encouraged to grow their crops organically without pesticides and also taught how to source and package the products in an environment friendly manner. The NGO organises weekly organic bazars to bring together farmers and the consumers. The farmers are paid a fair price to compensate any losses of productivity.

The interventions in the state also address stressors like migration induced by failure of bore wells and extreme water crisis, river pollution and soil contamination and excessive use of chemicals in agriculture which lie in the 'mitigation' phase of disaster management. The disaster management efforts in the state have prominent interventions by individuals, communities and NGOs. These have largely focused on the agriculture and water sector, through promotion of water efficient agricultural practices, rejuvenation of water bodies, ensuring crop productivity through intercropping, crop diversification and water saving techniques.

Interventions like the Nirmal Kuteya Seechewal and the Kudrati Aahar Parivar have addressed issues like excessive river pollution, encroachments on riverbanks, degrading ecological balance and crop quality induced by excessive usage of chemicals, through the lens of

collective responsibility and local participation. The drought of 2015 saw an individual-led effort in the village Sandharsi, Patiala that lead to revival of old ponds through rainwater harvesting. The results were manifold, ranging from decreased consumption of diesel for irrigation since pumping of water from ponds requires less energy, and flood protection since ponds provide cushioning. There was lesser dependence on government subsidies and the bore industry for irrigation. The drive led by three farmers of villages Chungawan, Sampla and Pandwa is yet another example of individual farmers successfully leading the efforts to address the issue of declining water table and continuous exploitation of water. They took up innovative techniques like intercropping and improved irrigation methods and were able to improve productivity and profitability of their yield. While these individual and community supported initiatives employed collective responsibility to achieve their goals, almost all of them have been constrained by largely remained localised and not up-scaling. The affinity towards status quo and the opposition to any kind of social change is also a typical challenge faced by individual-led initiatives. For e.g. the efforts by Sant Balbeer Singh Seechewal (*Nirmal Kuteya Seechewal)* to clean the river were thwarted by the high priests in the beginning. On multiple occasions, the activities of the organisation were declared illegal because of deliberately stopping the flow of water (which was polluted from industries and cities).

North- Riverine (Bihar)

The riverine floodplains areas of Bihar are part of the Indo-Gangetic plains and are prone to frequent and incessant flooding. Displacement of villagers due to flooding, soil erosion and unsafe drinking water causes the loss of livelihood, destruction of livestock and standing crop. It is one of the underlying reasons for the consistent out-migration witnessed by the drought prone regions of the state. The interventions in the state have focused largely on 'preparedness and response'. Use of early warning systems, long term interventions, emergency support and psychosocial assessment of the affected population were few systems in place. Many districts in Bihar also experience drought, and the interventions in few of these areas have been on revival of traditional irrigation system through community involvement. The initiatives in the state are largely NGO-led along with initiatives by regional organisations and volunteers.

One such initiative by the DHAN foundation with community contribution, worked towards revival of traditional irrigation systems, locally known as Ahar Pyne. It was a successful effort towards conservation of water resources, ensuring equitable irrigation for small and marginal farmers. This effort was however constrained by continuous encroachment of land. Another initiative led by Nav Jagriti focussed on mitigation of flood hazards through increasing community preparedness through implementation of DRR initiatives.

Volunteer-led efforts in the state include Lok Sangarsh Vahini in the West Champaran District of the state, which focussed on issues of displacement of people due to riverine soil erosion. It

is a self-sustaining movement that empowers and encourages people rendered landless and displaced because of two incessant river erosion.

While beneficiaries in most programmes were village communities, some initiatives such as the Gorakhpur Environmental Action Group (GEAG) targeted the state government as the beneficiary to prepare an early warning system for floods in the region and make the administration aware of the link between Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA). The result of the exercise was the development of a district disaster management plan with inclusion of climate change issue.

North- Humid subtropical (Uttar Pradesh)

Uttar Pradesh, part of the Upper Middle Gangetic Plains, faces recurrent floods and droughts. The formal and informal interventions in the state were mainly towards 'mitigation' and have largely focused on the water and agriculture sectors through the use of watershed development, animal husbandry, water management and early warning systems. The drought prone regions of the state had interventions that focused on promoting water efficient agricultural practices, revival of traditional mode of irrigation, to develop and implement strategies for sustainable energy and water resource management within Ganga basin etc.

One such initiative was started in 1995 by a farmer Prem Singh of Banda district in order to address low productivity of agriculture and to minimise ill effects of the green revolution. While this led to sustainable agricultural practises using seed banking, crop rotation and organic farming, it was constrained by prevalent government policies and existing debts on the farmers. An important government-led initiative was the Bundelkhand Relief Package (2008) for drought mitigation in Bundelkhand region through watershed development, promotion of animal husbandry and provision of rural drinking water. Most other initiatives were NGO-led and benefited the community, examining issues such as over pollution, river encroachment and reduced water flow. Some such initiatives are the *Jal Jan Jodo Abhiyan* and *Jal Biradari*, which promoted water efficient and sustainable agricultural practices, and spread awareness about relevant government schemes. An NGO Tarun Bharat Sangh (TBS) spearheaded these efforts and resulting in the revival of eight traditional water bodies in the water scarce Bundelkhand region. The Living Ganga Programme (Gangotri to Kanpur) by the World Wildlife Fund (WWF) is another such effort where strategies were developed for sustainable energy and water resource management within the Ganga basin.

In the flood prone regions of the state, interventions by formal and informal institutions have led to development of an early warning system for floods and strengthening of the existing mechanism by developing a district disaster management plan. The aim was to address the issues of increase in flood frequency and food security in flood-prone areas. Improving food security of local communities was an initiative by OXFAM, involved introduction of paddy and mustard varieties that have a shorter growth period duration and a wheat variety with longer growth period.

Central – Semi-Arid (Madhya Pradesh, Chhattisgarh)

The drought-prone nature of the central part of India has a slow but recurrent phenomenon which has an impact on the livelihood of a large section of vulnerable people. Participatory integrated watershed management for in-situ conservation of the rainwater, recharging of about 2.8 lakh dug wells, renovation and repairs of local tanks such as the *bundela*, *chandela* and *peshwa* tanks, digging of farm ponds and open wells has been recommended as medium-term measures. Development of unutilised water resources in Madhya Pradesh, improving efficiency of the already developed canal irrigation system are the long-term investment portfolio for mitigating droughts. The region has hard rock soil and insufficient ground water, constantly tapped for domestic and agrarian purposes and the arid climatic conditions are further aggravated by rampant deforestation.

There has been a significant role played by private enterprises in this region. The Environmental Planning and Coordination Organisation (EPCO) has been designated as the State Nodal Agency for addressing climate change issues. The Climate Change Cell of EPCO intends to establish a mechanism that facilitates management of long term climate risks and uncertainties as an integral part of the state development planning. The basic purpose of establishing the cell is to build the capacity of the state government officials to coordinate and mainstream climate change issues in development activities and policies. Organisations like Action Aid are working in rural areas in drought management and livelihood development, ultimately building resilience of vulnerable communities.

East-Riverine Coastal (Odisha)

Odisha has a 480 km coastline with significantly higher density in the coastal areas compared to the interior parts. The state has a sub-tropical littoral location to tropical cyclones, storm surges and tsunamis and a large part of the state comes under Earthquake Risk Zone-II, and has a long history of frequent onslaught of cyclones and floods. The natural calamities have led to massive human casualties, loss of infrastructure and disrupting livelihood. The most notable event which triggered disaster preparedness management and mitigation measures in the State is the Super Cyclone in 1999. Along with multi/bilateral agencies, the state government set up holistic measures for rescue, relief and rehabilitation. Several NGOs are also active at the grassroots level in the coastal rural areas. The collaborative approach adopted by these different entities ensured a holistic approach to rehabilitation and mitigation activities.

The Odisha State Disaster Management Authority (erstwhile 'Mitigation Authority') - the OSDMA was established in the aftermath of the Super Cyclone. They also went on to establish the Odisha Disaster Rapid Action Force (ODRAF), a unit specialised in rescue and relief operations. The preparedness of the state was again tested in 2013 when cyclone Phailin struck and though the loss of infrastructure and livelihood was significant, human casualties were a bare minimum. Individual programmes by the UNDP, the Department for International Development (DfID), and the World Bank were undertaken jointly by the OSDMA,

programmes which focussed on capacity building, preparedness and inculcating a culture of community-based disaster management.

East- Sub Humid (West Bengal)

The state of West Bengal, located in the tail end of the Ganga basin is witness to many extreme hydrological events that originate in the upper catchment of the basin. The high population density in the state along with the prevalent socio-economic inequalities increase the vulnerability of the population towards recurrent events like floods and cyclones. There have been initiatives by the state government as well as communities to assess the risks and vulnerabilities associated with these disasters, such as development of early growth variety of crops, use of tree walls to counter coastal flooding, community seed banks to ensure food security, afforestation to augment food and fuel security etc.

The NGO Development Research Communication and Services centre (DRCSC), has worked extensively in the districts of Birbhum, Purulia and 24 Parganas to address the problem of food and fodder security, water scarcity, distress migration and poor soil health. For example, in Saldiha village (Purulia), the DRCSC used a cooperative approach to pond excavation and pond renovation with construction of ponds to address the domestic and agricultural water needs of the community during drought and encouraging mixed cropping that increased both food and income availability stemming the flow of distress migration amongst the community members. While there were initial constraints such as labour costs that the community had to bear, it ultimately led to the establishment of a Long-term Disaster Mitigation Agency in the village.

SAFE is another NGO that has undertaken initiatives to address water scarcity and food and fodder security in the incessantly drought prone district of Purulia. They adopted techniques like rainwater harvesting, water budgets and collective farming and the end result was a rainwater catchment area of 200 sq. metre, an increase in agriculture yield and better management of water for agricultural purpose. After overcoming initial constraints in convincing and nudging farmers from their traditional farming techniques, the programme was replicated across the district.

Many regions in the cyclone prone areas have programmes that use advocacy and collective responsibility as means for implementation, for e.g.; through building of disaster resistant houses in villages of Sundarban or using tree wall as strategy to withstand cyclones and violent storms. After the 2005 cyclone, GOAL, an Irish humanitarian agency, constructed 250 disaster resistant houses in the villages of Sundarban. They used traditional architectural techniques and flood resistant core designs to construct houses and community buildings in the villages.

East- Semi Arid (Jharkhand)

Jharkhand is a landlocked state located in the eastern part of the country and is also one of the richest in mineral ores. The climate of the state is dry semi-humid to humid semi-arid and has recently noticed an increase in the spate of dry spells. Owing to factors like high dependence on agriculture, mono-cropping, poor governance and prevalent socio-economic variability, the state is highly vulnerable to disaster risk. Majority of the disaster management initiatives in the state is focused towards creating resilience against drought, for e.g. construction of water conservation structures, improving the quality of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) assets (dug wells, large ponds, check dams and rural roads) to address the issue of water availability. One of the successful interventions by the government is establishing the '*Matsya Mitra Programme,* meaning 'friends of fish', the programme provides financial and technical guidance and training to farmers for rearing fishes in ponds as well as in reservoirs. It gave a positive push to fisheries in the state and a consistent source of alternate livelihood.

The government of Jharkhand incorporated MGNREGA in its initiatives to build drought resistance across various villages in the state, with interventions such as construction of water conservation structures, improving the quality of dug wells, large ponds, check dams and rural roads. In the project villages, such interventions have helped improve water availability and agricultural productivity and also enabled cultivation of paddy in both Rabi and Kharif seasons. Concerns of food security and distress migration have also been addressed by organisation-led programmes. Community-based water conservation efforts in Chakai village is one example where participatory management of water resources was used to form farmer clubs. It required continued efforts from the organisations to restrain people from following water intensive cropping and follow multi-cropping and mixed cropping preparations.

A crucial example of a successful 'individual led' venture is 'Jharkhand's Water man', Simon Oraon who address stressors like water scarcity, deforestation and illegal felling of trees through a sense of community ownership of natural resources, voluntary participation and environmentalism. It led to the construction of five irrigation reservoirs around Ranchi and various environmental projects like mass tree plantation, digging of ponds and wells. The villagers came together and volunteered their time and labour for construction and maintenance of water harvesting structures. The intervention had to face its share of constraints in the form of resistance from the forest departments since the initiative required access to the forested lands.

West - Arid, semi-arid and coastal (Rajasthan, Gujarat and Maharashtra)

The western Indian states included for this research are the states of Rajasthan, Maharashtra and Gujarat and they fall within the semi-arid to arid category. Rajasthan has always battled severe water deficiency due to insufficient rainfall and rain-fed water sources. Most initiatives in the state deal with the water sector aiming to address issues of water scarcity, dilapidated condition of canals, unequal distribution of water and ecological imbalance.

Initiatives in Rajasthan were largely individual and NGO-led, with organisations like Tarun Bharat Sangh (TBS), Sambhav Trust and Gram Vikas Navyuvak Mandal Laporiya (GVNML) focussing on revival and adaptation of traditional water harvesting systems to address drought and its effects, such as chronic poverty, malnourishment and poor agricultural productivity. In Bhaonta, TBS revived traditional water structures called johad using locally available materials for construction and community participation. The johads constructed transformed a forgotten river Arvari into a perennial river, increased groundwater table and consequently improved agricultural and milk production.

GVNML used rainwater harvesting to increase the groundwater level of the Laporitya village from below 500 ft. to around 15 to 40 ft. As a result, Laporitya not only witnessed improved agricultural yield but also supplied water to 10-15 neighbouring villages. Organisations like Sahyog Sansthan & Action for Food Production (AFPRO) have focussed on making fodder security as part of drought proofing techniques by development and management of pasture lands in the village.

Over 70% of the total geographic area of Maharashtra's is classified as semi-arid. The droughts that the state faces is compounded by over exploitation of its limited groundwater resources and the severely unequal rainfall that the state receives across. Most initiatives in the state are organisation and/or individual led with a strong focus on advocacy, training and capacity building and collective responsibility. They include community participation to achieve participatory groundwater management, water conservation through rainwater harvesting and construction of structures like earthen dams farm ponds. There have been considerable community led efforts towards desilting water tanks to combat water scarcity, low agricultural productivity and distress migration in the villages of Naigaon, Pingori and Medsinga. One common strand in all these villages was the voluntary labour by the villagers. Desiltation helped increase the holding capacity of the water tanks, recharge groundwater and improve the soil moisture in the surrounding area. All this led to increase in agricultural productivity and alternate livelihood options in villages with fish cultivation in ponds.

A unique individual-led initiative has been that of the Model Village - Hivre Bazar, in the Ahmednagar district of Maharashtra. It was started by Popatrao Pawar to overcome water scarcity and low agricultural productivity, encompassing components like construction of structures such as earthen dams and farm ponds. The village also implemented water audit and crop management techniques, resulting in an increased level of groundwater and biomass, drinking water, more farming activity, livelihood sustainability and even reverse

migration to the village leading to better education and health facilities in the village. However, there were also limitations in the equity outcome in the village such as for the landless, for whom even with the improved livelihood, returns from wage work was insufficient and uncertain There is also the question of whether the indirect gains of watershed development and other measures offer an adequate substitute for access to significant assets such as water and land. One factor that aided the implementation of the program was socio-cultural homogeneity of Hivre Bazar, as community participation and consensus is often very difficult if the social make of the community is varied.

The *Jalyukt Shivar Abhiyaan,* launched by the government of Maharashtra to make the state drought free by 2019 is good example of how the government can use collective responsibility. The project involves deepening and widening of streams, construction of cement and earthen stop dams, farm ponds, mapping techniques and GPS surveys. The *Indo German Watershed Development* programme, started by a German missionary in 1990 is also an example of how an individual-led collaborative effort toward drought mitigation in semi-arid regions of Maharashtra was upscaled by the Government of India for the implementation across other semi-arid states.

Initiatives that require community participation and effort towards the implementation are often limited by availability of trained manpower with social skills to interact with the community while implementing participatory processes. Factors like leveraging government funding, dispute of land ownership, getting approvals from government departments, seasonal nature of availability of villagers for *shramdaan* and very often resistance from large farmers, are the roadblocks to smooth implementations of projects that aspire to use collective responsibility for program implementation.

Interventions in Gujarat were largely organisation and individual led, focussing on conservation and maintenance of water sources to ensure equitable distribution of water, flood preparedness and mitigation, and rehabilitation of earthquake victims by construction earthquake resistant houses. Sustainable Environment and Ecological Development Society (SEEDS) is an NGO in Gujarat that trains local masons in earthquake resistant construction preparing them to respond to shelter needs of the communities during such an event. It led to the formation of the Masons Association, an information centre for dissemination of modern technologies in construction through newsletters and public meetings.

In 2004, a combined effort by an NGO (UNNATI Organisation for Development Education) and the government (Gujarat State Disaster Management Authority-GSDMA and Bhachau Area Development Authority and Bhachau Nagarpalika) resulted in training of masons in hazard safe houses. The setting up of the Shelter Innovation and Support Centre by *Kutch Nav Nirman Abhiyan* and the *Shod Yathra* by SRISTI are some initiatives by organisations in earthquake prone regions of Gujarat. The end-to-end early warning system for Ukai and Local Floods in Surat City using improved reservoir operation, is an example of successful organisation-led initiative for flood preparedness and mitigation. It resulted in the formation and further

diversification of the Surat Climate Change trust up to the block level, development of reservoir inflow and outflow prediction models, installation of more automatic weather stations and development of city level spatial data.

Lack of guidance is a major constraint faced by programmes, especially the ones that do not have a template to follow. It often led to omission of important components. The formation of the GSDMA and the GSDM Act after the 2001 earthquake is one such instance. The formulation of an Act and a policy framework to form an authority was a first of its kind exercise in India.

Southern Coastal Tropical and Riverine (Tamil Nadu, Kerala, Puducherry and Lakshadweep)

Tamil Nadu and Puducherry are most susceptible to cyclones and floods, with the Tsunami in 2004 being the most noticeable. About 8 per cent of Tamil Nadu is affected by five to six cyclones every year, of which two to three are severe. Cyclonic activities on the east coast are more severe than on the west coast and occur mainly between April-May and October-November. Tamil Nadu is also subjected to annual flooding, including flash floods, cloudburst floods, monsoon floods of single and multiple events, cyclonic floods, and those due to dam bursts or failure[2]. The 2004 Indian Ocean tsunami killed over 230,000 people predominantly across coastal South and South and South-east Asia. Nagapattinam was the worst affected district with nearly 75% of the casualties occurring in this district. In the reconstruction phase, the government focused mainly on the fisheries sector, housing, resettlement of vulnerable communities, urban and rural infrastructure including schools and hospitals.

The Tsunami rescue and relief operations witnessed excellence in leadership of several public sector officials and NGOs. Organisations such as BEDROC are knowledge exchange platforms that coordinate the activities of several NGOs that are working and directing their actions to the vulnerable areas... Their interventions range across disaster preparedness to livelihood building. On the government front, the 'Tsunami Relief and Rehabilitation Programme' is a package of relief, rehabilitation, preparedness and development related programs in response to the December 2004 Indian Ocean tsunami. Linking relief to development, the emphasis is on providing women with greater decision making and empowering them to play a lead role in reconstruction and preparedness programmes. The thrust is on building women's capacities for effective preparedness and risk reduction. The targeted population is predominantly the lower strata of the economic and social ladder of fishing and other marginal communities.

Kerala has a significant coast line and most hazards in these areas are erosion, monsoon, storm surges and sea level rise. The western flank of the Western Ghats covering the eastern part of Kerala has a significant coast line and most hazards in these areas are erosion,

[2] ENVIS Centre: Tamil Nadu

monsoon, storm surges, and sea level rise. The western flank of the Western Ghats covering the eastern part of Kerala is identified as one of the major landslide prone areas of the country. The landslides in the state include rock falls, rock slips, debris flow and in a few cases rotational types of slides. But the most prevalent recurring and disastrous type of earth or tectonic movement noted in Kerala are the debris flow (*urulpottal*), characterised by the swift and sudden down slope movement of highly water saturated overburden ranging in size from soil particles to boulders, destroying and carrying with it everything lying in its path. Riverine flooding is a recurring event in the state as a result of heavy or continuous rainfall exceeding the absorptive capacity of soil and flow capacity of streams and rivers. Consequently, the rivers overflow its banks onto flood plains. The recent floods in Kerala in 2018 killed more than 450 people. Due to heavy rains, dams were filled to capacity and the flood gates, flooding the low-lying areas around them. Heavy rains in Wayanad caused landslides, further catalysed by rampant deforestation.

Resilience building in the State has been in development oriented, for e.g. the 'Clean Home Clean City' campaign in Alappuzha is a community-led waste management programme that has helped clean the canals using aerobic composting bins and biogas plants that were provided to every family to ensure they segregated garbage and processed it in their own composting plants. The programme also brought about a behaviour change not only in the community but also with the sanitation workers.

The Lakshadweep islands are off the south west coast of India, most vulnerable to inundation from accelerated sea level rise. There are hardly any international organisations/agencies engaged in the field of disaster prevention and reduction in Lakshadweep. During the Ockhi cyclone the Indian Navy played a big role in relief and rescue.

The Island regions of the country, Andaman and Nicobar, is home to a diverse array of flora and fauna. The natural resource driven nature of the economy of the region along with physical isolation from the mainland and a large concentration of tribal population, make the island highly vulnerable to disaster risks. The initiatives focus on response, rehabilitation and mitigation of the damages afflicted by tsunami. These include interventions that were largely organisation-led and propagate community-based mangrove management, development of sustainable livelihood, supporting income-generating activities and addressing livelihood needs of the tsunami-affected communities. After the 2004 tsunami, the Coastal Poor Development Action Network (COPDANET), an NGO, initiated a project on the restoration of tsunami-damaged mangroves. The initiative led to the restoration of mangroves in the cyclone hit areas of Andaman and helped in sensitising local populace to the importance of mangrove preservation, established community-based protected zones, and helped in setting up a database, website and resource centre in South Andaman.

The Tsunami Response Programme in Andaman and Nicobar Islands was initiated by ActionAid after the 2004 tsunami, to be able to cater to the needs of the vulnerable section of

the affected populace. Community participation and linkages with local government was used to build the disaster risk resilience of the local community and to develop a disaster-based preparedness plan. While efforts to mobilise the local community did pay off, what acted as a constraint was the immense time taken to convince the tribal council and administration of the benefits of local administration.

SWAYAM, initiated in 2005 by the Microsoft India, used microfinance as a tool to support income-generating activities and livelihood needs of the tsunami affected communities. The microcredit programme offered small and short-term loans that enabled the beneficiary to restart business and receive quick returns. The programme resulted not only in a smooth transition from relief to long-term development, but it also raised awareness of possible future disasters and contributed to capacity development of local residents.

Southern – Semi arid (Karnataka)

The state of Karnataka spans several bio-geographic, hydro-meteorological and agro-climatic zones. Karnataka is vulnerable to multiple natural hazards such as drought, flood and hailstorms. Parts of rural Karnataka, especially in the Mandya, Kolar, Tumkur and Mysore districts are frequently affected by droughts established the first Drought Monitoring Cell (DMC) in the country in 1988, as an institutional mechanism affiliated to Department of Revenue (Disaster Management), Government of Karnataka. The Karnataka Watershed Development Project (KWDP), known locally as 'Sujala', was initiated in late 2001 as a community driven, participatory and holistic watershed development project to improve the productive potential of selected watersheds in seven predominantly rainfed districts in eastern and northern Karnataka.

In the urban areas, the capital, Bengaluru, is affected more by conditions of environmental degradation, importantly the lakes in the city. The lakes in the city are severely polluted, affected by deposition of sewerage. Several NGOs are actively working to save these water-bodies. In 2009-10, the Mahadevapura Parisara Samrakshane Mattu Abhivrudhi Samiti (MAPSAS) was formed to formally manage the affairs of the Kaikondrahalli Lake. United Way helped to raise funds for the maintenance of the lake and worked with MAPSAS to maintain this lake.

Southern – Coastal and semi-arid (Andhra Pradesh and Telangana)

Andhra Pradesh has a coast line of 1030 km. and 2482 villages are along the coast line. Nine out of 23 districts in AP suffer from severe drought frequently. These districts have a population of about 30 million and they account for about 70 per cent of state-wide crop production loss due to drought. The state has experienced considerable earthquakes of magnitudes greater than 5.0, and its other major concern for the state is the long coast line along the Indian Ocean with very active faults. The coastline ranging from Srikakulam in the north and Nellore in the south is affected by at least one cyclone every year. The entire state suffers the consequences of cyclones and floods, because all districts except Vizianagaram, West Godavari and Guntur, have one or more faces with over 100 km of very vulnerable seacoast. The 2004 Tsunami also affected the state badly and very recently the Hudhud cyclone caused extensive damage to the city of Visakhapatnam and districts Vizianagaram and Srikakulam.

Andhra Pradesh is piloting Public Private Partnership (PPP) in Disaster Risk Reduction (DRR) in the cities of Vijayawada and Visakhapatnam, and also investing in the 'Last mile' of Early Warning Systems (EWS), which is a key to rapid response and reduction in loss of life and livelihood. In the aftermath, under the auspices of the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific, and Cultural Organisation (UNESCO), three new Intergovernmental Coordination Groups (ICG) for tsunami warning and mitigation systems were established in the Indian Ocean (ICG/IOTWS), the Caribbean and adjacent regions (ICG/CARIBE EWS), and the North-eastern Atlantic, the Mediterranean and connected seas (ICG/NEAMTWS). Non-profit organisations like Timbaktu Collective are also working closely in the rural areas to build resilience in rural communities in Ananthpur district of Andhra Pradesh by empowering them. Their work started as developing 32 acres of barren land and is now 2800 hectares of forest home to over 400 species of flora and fauna and several species of mammals, amphibians, birds, reptiles and insects provides employment to 1190 farming families in 173 villages. They have also empowered a women's co-operative movement, which has a cash reserve of ₹2 crores.

5. Findings from the Primary Case Studies

5.1 Descriptive Summary of Primary Case Studies

This section gives a brief overview of the case studies undertaken as primary research by the project team. Detailed case studies, including supporting audio-visual material, teaching notes and supporting exhibits, are shared separately and will be made available on http://iihs.co.in/knowledge-gateway/ (contingent to approvals). Also see Annexures 2 and 3 for more detailed descriptive statistics of these cases.

Table 1: List of Case Studies documented through primary work

No.	States	Name of Initiative	Type of Organisation /Name of individual	Geography	Terrain	Shock/ stress	Rural/ Urban	Scale	Sector	DM Phase
1	Maharashtra	Model Village of Hiware Bazaar (Case 2)	Popatrao Pawar	West	Semi-Arid	Drought	Rural	Village	Built environment/ community mobilisation	Mitigation
2	Maharashtra	Jalyukt Gram Abhiyan- Programme to make Maharashtra a drought-free state by 2019 (Case 3)	Government of Maharashtra	West	Semi-Arid	Drought	Rural	State	Built environment	Mitigation
3	Maharashtra	Indo-German Watershed Programme (Case 3)	Network of NGOs	West	Semi-Arid	Drought	Rural	State	Built environment	Mitigation

No.	States	Name of Initiative	Type of Organisation /Name of individual	Geography	Terrain	Shock/ stress	Rural/ Urban	Scale	Sector	DM Phase
4	Maharashtra	Rebuilding Malin (Case 6)	Government of Maharashtra	West	Semi-Arid	Drought	Rural	Village	Built environment	Rehabilitation
5	Maharashtra	Pani-Panchayat (Case 1)	Vilasrao Salunkhe	West	Semi-Arid	Drought	Rural	Village	Built environment	Mitigation/Preparedness
6	Gujarat	Gujarat State Disaster Management Authority (Case 9)	Government of Gujarat	West	Arid/Semi-arid/Coastal	Drought/Earthquake/ Flood	Rural/Urban	State	Planning/Governance	Response/Mitigation
7	Gujarat	Role of women led Non-Governmental Organisations in Disaster Resilience Initiatives (Case 10)	NGOs	West						
8	West Bengal	SABUJAYAN - A MAHATMA GANDHI NREGA Nadia Initiative for Riverbank Stabilisation through Vetiver Plantation (Case 2)	MGNREGA	East	Sub-humid	Flood	Rural	Villages	Built Environment	Mitigation

No.	States	Name of Initiative	Type of Organisation /Name of individual	Geography	Terrain	Shock/ stress	Rural/ Urban	Scale	Sector	DM Phase
9	Bihar	Lok Sangharsh Vahini (Case 4)	Collective of Individual	North	Riverine	Flood	Rural	Community	Built Environment	Response/Rehabilitation
10	Jammu and Kashmir	Artificial Glaciers (Case 1)	Chewang Norphel	North	Hilly	Drought	Rural	Villages	Built environment	Mitigation
11	Jharkhand	Matsya Mitra Programme (Case 2)	Fisheries Department of Jharkhand	East	Semi-arid	Drought	Rural	Villages	Built Environment	Mitigation
12	Punjab	Seechewal Initiative (Case 1)	Balbir Singh	North	Semi-arid	Drought	Rural	Village	Built Environment	Mitigation
13	Sikkim	Dhara Vikas (Case 2)	Rural management and Development Department (RMDD) with funding support from MGNREGA	North-East	Hilly	Drought	Rural	Village	Built Environment	Mitigation
14	Rajasthan	*Chowka* System of Water Harvesting (Case 1)	Laxman Singh	West	Arid	Drought	Rural	Village	Built Environment	Mitigation

No.	States	Name of Initiative	Type of Organisation /Name of individual	Geography	Terrain	Shock/ stress	Rural/ Urban	Scale	Sector	DM Phase
15	Rajasthan	Reviving Traditional water conservation Practices through *Johads (Case 1)*	Rajender Singh	West	Arid	Drought	Rural	Village	Built Environment/Community mobilisation	Mitigation
16	Mizoram	Young Mizo Association (Case 5)	Collective of Individual	All	Hilly	Earthquake	Rural	State	built environment	Mitigation
17	Various States	Role of Corporates in building Disaster Resilience (Case 8)	Corporate Institution	All	All	All	All	NA	built environment	Response/Rehabilitation/Preparedness/Mitigation
18		Resilience Building through Academic Institution (Case 7)	Academia	All	All	All	All	NA	Built environment/community mobilisation	Response/Rehabilitation/Preparedness
19		Indian Meteorological Department (Case 11)	Government of India	All	All	Drought and Cyclone	All	District	Built Environment	Preparedness
20	Assam (and extended into Nagaland	Rural Volunteer Centre	Volunteer Group later formalised as an NGO	North-east	Riverine	River erosion and flooding	Rural	District	Capacity building and livelihood diversification	Response and Recovery

No.	States	Name of Initiative	Type of Organisation /Name of individual	Geography	Terrain	Shock/ stress	Rural/ Urban	Scale	Sector	DM Phase
	and Tripura)									
21	Andhra Pradesh/ Telangana	Timbuktu Collective	Collective of individuals locally formed associations	South	Arid Plains	Drought and poverty	Rural	Mandal	Climate Change adaptation, Ecological restoration and capacity building	Long-term recovery
22	Delhi and Gujarat	mHS City Labs	Private Sector not-for profit foundation	North and West	Earthquake prone plains	Earthquake prone informal housing	Urban	Neighbourhood	Built Environment	Mitigation
23	Delhi, Rajasthan and Uttar Pradesh	Boond Private Limited	Private Sector for-profit social enterprise	North and West	Locations disconnected from energy grid	Energy poverty stress and climate adaptation	Rural	Select Districts across three states	Renewable Energy	Mitigation
24	Kerala	Canal Restoration	Political and Social Movement	South	Estuary and Backwaters	Public Health outbreak and flooding	Urban	City	Solid waste management and food security	Response, recovery and mitigation

No.	States	Name of Initiative	Type of Organisation /Name of individual	Geography	Terrain	Shock/ stress	Rural/ Urban	Scale	Sector	DM Phase
25	Gujarat	Urban Health and Climate Resilience Centre	Public, Private and Foundation Partnership later formalised as a Public Trust	West	Riverine	Public health outbreak following floods	Urban	City	Public Health	Response, recovery and mitigation
26	Tamil Nadu	BEDROC	Non-governmental organisation working as a knowledge broker	South	Coastal	Tsunami, 2004	Rural	District	Livelihood Recovery	Response, and long-term recovery
27	Odisha	Odisha State Disaster Management Authority (OSDMA)	New Public-Sector Institution	East	All incl. coastal and riverine	Super cyclone, 1999	Urban and Rural	State	Planning, Policy and Governance	Complete cycle
28	Himachal Pradesh	Community-led Total Sanitation Project	Public sector initiative owned and implemented by communities	North	Hilly	Health stress, mental stresses	Rural	District	Sewage management	Response and mitigation

5.2 Primary Case Studies - A Brief Description

The following ‘case face’ pages briefly describe the 20 cases studied and documented in detail by the two research teams. Each case face page contains a brief description of the triggers and the actions that followed, and the geography in which the initiatives are taken. It briefly identifies the form of leadership that seems to be emerging, as well as the case focus and the potential learning objectives that can achieved by using the case as a teaching learning material.

Rural Volunteer Centre: Sustaining long-term incremental recovery

Bharghav Ozha, Leona D'souza, Zohrab R Gamat, Garima Jain

IIHS Case #
01

Geography

Dhemaji District, Assam

Forms of Leadership

Dynamic leadership, Joint decision-making, Enabler

Case Focus

(1) Sustaining an institution without the charismatic leadership; (2) Building local leadership and autonomous institutions

Trigger

Request by residents of Dhemaji district in Assam post 2000 floods and consistent soil erosion

Actions taken

Evolved from rescue and relief to long-term resilience building based on local emerging needs. Innovative actions taken by the RVC for improving food security and sanitation include training and creating self-help groups, hosting weekly women-run markets, providing agricultural training, livestock rearing and setting up a weaver's federation. These have given rise to more autonomous initiatives including volunteer network to manage early warning system. Their work is now focusing on children (funded by the NGO Save the Children).

Learning Objectives

- How does the definition of resilience evolve over time with changing needs and context?
- What are the limits of leadership?

Building place-based institutions and initiatives to build resilience in rural communities – Timbuktu Collective

IIHS Case #
02

Teja Malladi, Sandeep Vishwanath, Garima Jain

Geography

Anantapur, Andhra Pradesh

Forms of Leadership

Transformational and Empowering

Case Focus

(1) Self-governance
(2) Community Empowerment
(3) Place-based, need-based institutions

Trigger

Drought impacts livelihoods, leading to issues like farmer suicides, migration, gender issues, forest and land degradation, social and economic backwardness

Actions taken

Creating community-led and owned cooperatives that focus on eco-restoration, women empowerment, alternative education, organic farming livelihood alternatives for landless and for people with disabilities

Learning Objectives

- To understand the typology of creating place-based and community-led institutions that become self-sustainable institutions
- To understand how to build local leadership that can take forward the initiatives
- To understand building resilience for rural communities

What lessons does mHS, a hybrid social enterprise, offer for taking preventive action for communities with low risk perception in India?

IIHS Case # **03**

Swati Janu, Zohrab Reys Gamat

Geography

New Delhi

Forms of Leadership

Interdisciplinary team

Case Focus

(1) Innovation within constrained resources, (2) Scaling up solutions, (3) Tech-adoption & human centred design, (4) Strategic partnerships, and (5) Diversity of actions

Trigger

Growth of informal settlements in seismic cities without sufficient structural strength for earthquake safety.

Actions taken

Offering construction related technical assistance to vulnerable, at-risk communities as disaster preventive action through strategic partnerships. The diverse approaches have ranged from door-to-door assistance linked, microfinance loans and dissemination of information through digital platforms.

Learning Objectives

- To understand the diverse actors and agencies that can drive social innovation
- To explore inclusive community engagement and human centred design models
- To learn strategies to scale and implement social ventures

Does Boond---a for-profit social enterprise---represent a new developmental transition in India?

Garima Jain, Amir Bazaz, Yashodhara Udupa, Zohrab Reys Gamat

IIHS Case # **04**

Geography

Rajasthan, Uttar Pradesh

Forms of Leadership

Transformative, Empowering

Case Focus

(1) Innovation, (2) People-driven governance, (3) Tech-adoption, (4) Commitment to sustainable outcomes, and (5) Bringing new processes of management

Trigger

Lack of access to energy in rural areas excluding them from developmental gains experienced by the rest of the country.

Actions taken

Offering **low-cost** and **reliable solar based energy solutions** to rural households disconnected from main electric grids including financing, technical installation, long-term servicing, operation and maintenance. Village-level needs-based solutions are designed and implemented, including home systems for small hamlets (<10 HH), pico-grids (<20 HH), micro-grids (<45 HH), solar water purification plants, Light for Education, etc.

Learning Objectives

- To explore the alternate forms of governance that could bring about transformational change in the development trajectory of a developing country
- To understand the typologies of leadership, and recognise the form practiced within Boond
- To appreciate the co-benefits of developmental outcomes on enhancing community resilience to risks

Urban Health & Climate Resilience: a Case of Surat City, India

IIHS Case #
05

Anuj Ghanekar, Dr. Vikas Desai

Geography

Surat, Gujarat

Forms of Leadership

Transformative, Empowering

Case Focus

(1) Multi-stakeholder collaborations, (2) The role of culture in leadership (3) Importance of research, training and advocacy in disaster resilience

Trigger

Twenty-three floods in century, the plague in 1994, devastating floods in 2006, followed by issues like leptospirosis and heat stress

Actions taken

The Urban Health & Climate Resilience Centre, a research, training & advocacy-based initiative (2013-16) with seed funding by Rockefeller Foundation, later institutionalised by Surat Municipal Corporation as PPP mode (2017 onwards)

- Vulnerability assessment
- Heat & Health Action Plan
- Advocacy for strengthening vector-borne disease surveillance
- Community Action models- piloting

Learning Objectives

- To explore how the leadership during routine influence the leadership during disasters
- To understand the cultural enablers for disaster resilience leadership in the city context
- To understand the institutionalisation process of leadership development along with challenges involved in it.

Building resilient cities through behavioural change – A case of Alappuzha

IIHS Case # **06**

Teja Malladi

Geography

Alappuzha, Kerala

Forms of Leadership

Political and Institutional

Case Focus

(1) Innovation, (2) Behavioural change for sustainable solutions (3) Community participation and ownership

Trigger

Villagers protests against municipality dumping waste in their backyards

Actions taken

Decentralised waste management and canal rejuvenation by creating awareness and social change to achieve long term sustainable and scalable solutions.

Learning Objectives

- To appreciate the benefits of political will and leadership
- To appreciate the long-term outcomes and benefits achieved by including behavioural and social change aspects in program design
- To understand the process for engaging responsible actors for programme design and implementation

Recovering from the tsunami: A case of continued efforts to build resilience in Nagapattinam

Vineetha Nalla, Dhanapal G, Yashodhara Udupa

IIHS Case # **07**

Geography

Nagapattinam, Tamil Nadu

Forms of Leadership

Leading from behind, leading from practice, coordination and resource management

Case Focus

(1) Coordination platform for resource management in relief and rehabilitation process
(2) Approaches to resilience building in coastal communities
(3) Lessons on processes

Trigger

The 2004 Indian Ocean Tsunami that hit Nagapattinam affecting nearly 38 villages and taking about 6065 lives. Fisheries and agricultural sectors, which are the primary economic activities in the district were the hardest hit, severely affecting the coping capacities of the coastal communities.

Actions taken

NCRC was set up immediately after the tsunami to coordinate resource flows in relief operations working closely with the government. In the following weeks, NGOs were organised into sectoral groups relating to shelter, livelihoods, health and sanitation focusing on recovery and rehabilitation process. Having a long-term resilience agenda ever since its inception, NCRC continued to work on resilience building of coastal communities. In 2008, BEDROC succeeded NCRC and continues to work on building resilience focusing on livelihood improvement and environment

Learning Objectives

1. Importance of coordination platforms in a disaster management
2. Implications for having a long-term resilience agenda in recovery and rehabilitation processes
3. Building resilience through improving livelihood options and focusing on vulnerable groups and regions.
4. Understanding the method of practice in NCRC and the typology of leadership practiced.

Building a resilient organisation to building a disaster resilient State – OSDMA

Gargi Sen, Sandeep Vishwanath, Garima Jain

IIHS Case #
08

Geography >

Odisha

Forms of Leadership

High level Institutional and inclusive with participation from NGOs, Civil Societies and communities, and creating local leaders

Case Focus

(1) Institutional Innovation, (2) Collaborative approach to Disaster Management and preparedness, (3) Building Resilience. Focusing on the innovativeness of OSDMA's approach in self design and outreach

Trigger

The Super Cyclone that hit Odisha in September-October 1999 resulting in a casualty of 10,000 lives, along with heavy loss in livestock, agriculture and infrastructure in 14 districts.

Actions taken

Coordinating relief, rescue and rehabilitation operations in the aftermath of the cyclone, creating special task force -ODRAF. After the immediate shock subsided focus was shifted to building disaster management preparedness, capacity building of communities and local governments, developing cyclone shelters and establishing a bottom-up planning processes for disaster management

Learning Objectives

- Significance of innovation in conceptualisation and flexible mode of operationalisation of an organisation within the Government
- How implementation through an open collaborative approach ensures faster and seamless operation of multiple actors
- Diversification of activities needed to establish relevance of the purpose of the organisation
- Long term benefits to the communities and the State in building resilience and disaster preparedness

Community Engagement for Resilience Building – Total Sanitation Programme in Mandi

Dhanapal G

IIHS Case # **09**

Geography

Mandi, Himachal Pradesh

Forms of Leadership

Self-governing/ Organising common interests and motivating local leaders to take ownership and lead the initiative at the community level

Case Focus

(1) Community Engagement (2) Socio-cultural change (3) Local Governance (4) Low-cost sanitation

Trigger

Outbreak of water-borne diseases due to faecal contamination caused by open defecation.

Actions taken

Community led programme implementation by engaging local NGOs and Panchayati Raj Institutions (PRIs) through behaviour change and awareness creation.

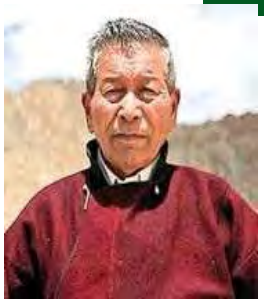
Learning Objectives

- Decision making in case of a programme shifting from subsidy driven model to behaviour change model.
- Innovative approaches towards community engagement and creating awareness
- Identifying key partners in programme implementation
- Peer reviewed monitoring and evaluation framework

Individual Leadership for Disaster Resilience: An Analysis of Five Initiatives from Western and Northern India

TISS Case #
01




Geography
Maharashtra, Rajasthan, Punjab, Jammu and Kashmir

Forms of Leadership
Exceptional Individuals

Case Focus
a) Leadership emergence, leadership practices, and outcomes for building disaster resilience
b) Leader-follower life cycle

Trigger
Water scarcity and management malpractices leading to loss of livelihoods, social unrest and conflicts.

Actions taken
Revival of traditional water conservation and sharing practices in drought hit regions (Rajendra Singh, Laxman Singh, and Vilasrao Salunke). Cleaning polluted river to manage water scarcity (Balbir Singh). Developing artificial glaciers to store glacial water for lean period farming (Chewang Norphel).

Methodology
Cases were developed on five pioneering initiatives of individuals towards building disaster resilience. Primary data was collected through in-depth interviews with the leaders (except Late Vilasrao Salunke) and other key stakeholders in the initiative, including community representatives. Secondary data from newspaper reports, previously published cases, and photographs of the initiative too were collated to develop the case.

Learning Objectives
- To explore the leadership styles and approaches in the conception and implementation of disaster resilience initiatives.
- To understand leadership strategies to engage and involve the followers in working towards collective goals.
- To understand the role of individuals to contextualise and operationalise sustainable disaster resilience building initiatives.

Bureaucratic and Political Leadership for Disaster Resilience: A Case of Five Public Sector Actors as Agents of Change

TISS Case #
02

Geography
West Bengal, Jharkhand, Sikkim, Maharashtra

Forms of Leadership
Structured and Shared

Case Focus
a) Windows of Opportunity for public good emerging from Disasters
b) Motivation and rewards for pursuing public good in the context of disaster
c) Challenges faced and strategies used by public sector actors.

Trigger
The community's demand to deal with disasters and crises situations like water scarcity, loss of livelihoods, life and property due to recurrent disasters

Actions taken
The government has taken up various programmatic interventions to mitigate disaster impacts on community and also contribute to the development of the state economy and environment. The case is inclusive of such programmatic interventions by the state of Jharkhand for building the capacities of fishermen, Sikkim to rejuvenate springs to address water scarcity, West Bengal in mitigating river bank erosion, and Maharashtra in post landslide rehabilitation by the district administration and drought management by local self-governance.

Methodology
Primary data from field visits and in-depth interviews of key leads and community representatives, along with secondary data from reports, government documents, training material, newspaper clippings, video clips etc., was used to develop the case.

Learning Objectives
- To understand the role of public actors in building community resilience utilising public resources.
- To understand the pitfalls and possibilities for a successful navigation of disaster risk reduction.
- To understand strategies of public actors located or embedded within a network of economic, political, policy and social actors.

Leadership for Disaster Resilience: A Case of Drought Proofing Initiatives in Maharashtra

TISS Case # **03**

Geography
Maharashtra
Forms of Leadership
Exceptional Individuals, Structured and Shared
Case Focus
a) Innovation for Drought Mitigation in the drought affected regions
b) Impacts and sustainability of programmatic interventions

Trigger

Recurring droughts in the state leads to chronic water scarcity and failure of agriculture. The drought of 1972 proved to be a key catalyst for drought management interventions in the state of Maharashtra.

Actions taken

The case captures the efforts since 1972 taken by the Government of Maharashtra, Individuals and NGOs to build community resilience to droughts. These steps helped in providing benefits at the short and immediate term but turned futile in providing a sustainable solution towards drought proofing. The case includes efforts by individuals like Vilasrao Salunkhe (Pani Panchayat), Popat Rao Pawar (Ideal Village of Hiware Bazaar), a project with bilateral collaboration, Indo-German Watershed Development Project, and a state level project by the Government of Maharashtra (Jal Yukt Shivar).

Methodology

Primary data has been collected through in-depth interviews with the key stakeholders and corroborated using the secondary data from sources such as newspaper clips, reports, documents, etc.

Learning Objectives

- To understand the pre-requisites for a sustainable and up-scalable intervention for building disaster resilience
- To understand the complexities while designing interventions for building resilience in a disaster-prone region
- To explore the role and interface of Governmental and Non-Governmental Organizations, Individuals and community in building disaster resilience.

Collective Identity and Leadership for Disaster Resilience: A Case of Vistapit Mukti Vahini

TISS Case # **04**

Geography
West Champaran, Bihar (Plain - Flood prone region)

Forms of Leadership
Shared

Case Focus
a) Role of collective identities and movements in building disaster resilience
b) Approaches for ensuring inclusivity
c) Process, challenges, and strategies for rehabilitation

Trigger
Inability of the Government of Bihar in rehabilitating the population displaced due to riverine erosion, especially the marginalised communities, through a legal mechanism. Movement started for the rehabilitation of the displaced people

Actions taken
Vistapit Mukti Vahini - follows the path of Gandhi Satyagraha to fight for the rights of disaster affected communities. It draws support from the 'interests group', i.e. the ones benefiting from the movement and the 'critical mass', i.e. individuals not directly benefitting from the movement but critical for strategizing and sustaining the movement. The movement also has the presence of the third group called the external or outsider and fights against the administration and the local landlords illegally hoarding government land.

Methodology
In-depth key informant interviews and Focused Group Discussion (FGD) with community representatives. Key informants include individuals from both the interest groups and critical mass. Secondary data include documents collated by leaders, newspaper articles, brochures, pamphlet, and government notifications.

Learning Objectives
- To understand the leader's qualities in initiating and sustaining a struggle which is an organic movement.
- Micro-mobilisation through the constitution of collective identity having similar or shared experiences.
- Evolution of leaders within the community along the process involving critical thinking and consciousness.

Ethnic Identity and Leadership for Disaster Resilience: A Case of Young Mizo Association

TISS Case # **05**

Geography
Aizawl, Mizoram (Hilly terrain)
Forms of Leadership
Shared
Case Focus
a) Contextual approaches to building disaster resilience
b) Role of traditional ethics and values in building disaster resilience

Trigger
Weakening ethnic identities among the Mizo community leading to fading of social cohesion.

Actions taken
Young Mizo Association (YMA) is the largest non-governmental organization in the state of Mizoram, established in the year 1930's to preserve Mizo culture and tradition by a Welsh Missionary. The organisation intervenes across sectors through the coordinated efforts of Mizo youth, cutting across gender, age, religion, class and region. The case highlights the decentralised efforts of the organisation towards building disaster resilience.

Methodology
In-depth key informant interviews with stakeholders from the organisation and secondary data from reports and documents were used to understand the history of the organisation, leadership and their modes of operation.

Learning Objectives
- To understand the role of traditional ethics and values in contextualising disaster resilience interventions
- To understand the evolution of a collective into an established organisation and its pro-active engagement in disaster response and resilience building

District Level Leadership for Disaster Resilience: A Case of Post Landslide Reconstruction and Rehabilitation of Malin Village, Maharashtra

TISS Case #
06

Geography
Malin village, Pune district, Maharashtra
Forms of Leadership
Structured
Case Focus
a) Approaches and processes involved in relief and rehabilitation in a localised disaster.
b) Emerging Community dynamics in the process of rehabilitation...

Trigger
In 2014, a landslide affected a village located in the ecological sensitive zone in Western Ghats leading to loss of life and property.

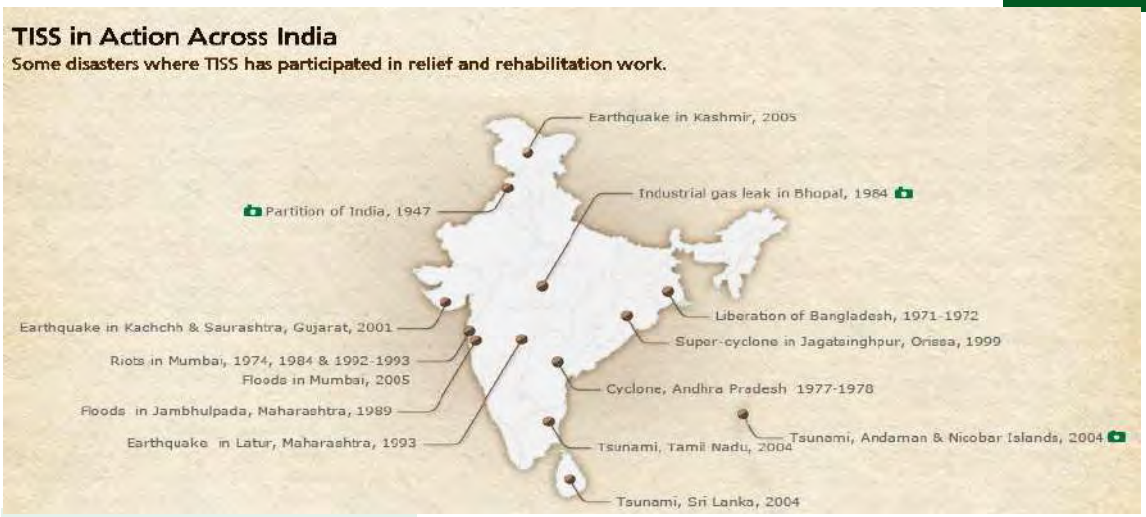
Actions taken
The post landslide reconstruction and rehabilitation of a tribal community located in an ecological sensitive zone required a scientific and participatory process for planning and implementation. The case highlights the rehabilitation process, capturing the efforts by different stakeholders, the (in) adequacies and the challenges faced during implementation. Based on this process of reorganisation and regeneration that took over three years, the case deliberates upon issues of administrative, social, economic and political challenges; conflict of interests between different stakeholders; and community engagement.

Methodology
Primary data collection involved field visits to rehabilitated village and in-depth interviews with the affected communities and key officials. Secondary data collated from the district administration such as reports, and minutes of meeting were analysed along with newspaper clips and other organisation reports to understand the multiple perspectives on the rehabilitation process

Learning Objectives
- To understand the rehabilitation process and challenges involved in a localised disaster
- To explore the event-centric approach towards disaster risk reduction
- To understand the significance of community engagement and emerging community dynamics in post disaster reconstruction and rehabilitation process.

Academic Leadership for Disaster Resilience: A TISS Case of University Environment Interface

TISS Case #
07



Geography
Pan India

Forms of Leadership
Structured

Case Focus
a) The university environment interface in the context of disasters
b) Factors contributing to the emergence of an Institutional form for Disaster Studies in a public university
c) University contribution to building disaster resilience.

Trigger
TISS first responded to issues that arose in the aftermath of partition of India in 1947 and subsequently responded in every major disaster in India. This engagement called for a need to strengthen the competencies of professionals involved in disaster management.

Actions taken
The case presents the university's engagement with disasters, the value and knowledge base structuring the nature of engagement, the consolidation of years of practice and academic contemplation into an institutional form for disaster studies and its contribution to building disaster resilience. The setting up of the Jamsetji Tata School of Disaster Studies, the initiation of academic programmes, disaster research, policy advocacy, and field action are the key contributions of the public university.

Methodology
Primary data collection involved in-depth key informant interviews with the TISS faculty and alumni. Secondary data sources such as annual reports, presentation, concept notes and research papers were also used.

Learning Objectives
- To understand the evolution and role of academic institution in building disaster resilience
- To understand the significance of university environment interface and its implications for building curriculum for disaster studies

Corporate Leadership for Disaster Resilience: A Case of Tata Group's Engagement with Disasters and its Evolution

TISS Case #
08

Geography
Pan India
Forms of Leadership
Structured
Case Focus
a) Role of corporates in building disaster resilience
b) Emergence and impact of managerialism in disaster management

Trigger
Disasters and Developmental gaps across the country and the corporate ethos of giving back to communities

Actions taken
The work of the Tata group and its trust goes back to 1934, making it a pioneering corporate initiative in building disaster resilience. The Tata group through its companies, trusts and committees are one among the first stakeholders to provide aid to the affected and engage with response, reconstruction, rehabilitation and developmental initiatives in the context of disasters. The group's various enterprises work in parallel as well as in tandem with each other, under the banner of Tata to reach out in the context of disasters.

Methodology
Primary data from in-depth interviews with key stakeholders and secondary data from Tata's websites and annual reports were used to develop the case.

Learning Objectives
- To understand the motivation, challenges and strategies adopted by corporates in addressing disasters
- To explore the transitions in the role of grant makers as agents of change
- To understand the emergence of managerialism and its implications for building disaster resilience

Institutional Leadership for Disaster Resilience: A Case of Gujarat Disaster Management Authority

TISS Case # **09**

Geography
Gujarat

Forms of Leadership
Structured

Case Focus
a) Role of special institutions to pursue public interest in the context of disasters
b) Evolution of an organisation amidst changing needs and demands in the context of disasters
c) Implications of centralized institutional approach to building disaster resilience.

Trigger
A massive earthquake in 2001 with its magnitude, spread and complexity posed a massive challenge to the people, the community, and the government.

Actions taken
The framework for the recovery phase chalked out in the immediate aftermath of the disaster led to the formation of the Gujarat State Disaster Management Authority (GSDMA). Many other agencies like the Gujarat Institute of Disaster Management (GIDM) and Institute of Seismological Research (ISR) too emerged in the post disaster context. More comprehensive policies in the state, district and village levels were formed for effective management of disasters, mitigation and preparedness.

Methodology
Primary data collected through in-depth interviews with deputy director, sector managers and ISR representatives, along with secondary data collated from annual reports, published cases, websites and photographs informed the development of the case.

Learning Objectives
- To understand the need for dedicated institutions or authorities to build resilience.
- To explore how the vision, mission, and programs of an authority evolves under different leaders over the years.
- To understand the effectiveness of resilience initiatives amidst different levels of administration and the decentralised approach.

Women Centred Leadership for Disaster Resilience: A Case of NGOs Led by and Working with Women in the Context of Disasters

TISS Case # **10**

Geography
Rural (ANANDI) and urban (SEWA) areas in Gujarat

Forms of Leadership
Shared Leadership

Case Focus
a) Role of NGOs in building disaster resilience.
b) Approaches for gender and social inclusion
c) Importance of equity and equality for building a resilient community.

Trigger
Lack of access to resources to marginalised sections and gender inequality had a significant impact on rate of post-earthquake recovery in the state of Gujarat.

Actions taken
The two organizations – SEWA and ANANDI were setup to address the issues of women and the under privileged sections in urban and rural Gujarat. The two organisations were started by women, for the welfare and wellbeing of women as their central theme. Over the years both organisations developed programs to empower poor and underprivileged women for full employment, increased income, food, nutrition, secured health and access to child care. After the Gujarat earthquake, the two organisations extended their work among women and other marginalized groups affected by disasters.

Methodology
Primary data from in-depth key informant interviews with CEOs from both the organizations, staff, and community representatives, along with secondary data from annual reports, websites and published cases, were collated to develop the case.

Learning Objectives
- To explore the contributions of NGOs to building disaster resilience
- To understand the rights-based approach to social inclusion in the post Gujarat earthquake context.
- To understand the evolution and transition of NGO's in the Indian context and its implication for varying approaches and strategies for social inclusion

TISS Case #
11

Scientific Institution's Leadership for Disaster Resilience: A Case of Indian Meteorological Department Systems for Cyclone Early Warning

Geography
The Indian Sub-continent and North Indian Ocean region, with special focus on the states of Kerala, Tamil Nadu, and Orissa

Forms of Leadership
Structured

Case Focus
a) Role of scientific institutions in building disaster resilience
b) Importance of scientific technology in facilitating disaster risk reduction
c) Challenges emerging from scientific technology - society interface and strategies for holistic preparedness and mitigation of disasters.

Trigger
After devastation of two successive severe cyclonic storms on Indian East Coast in 1864, a storm warning system was established in Kolkata, and later in 1875 the government of India had established the IMD to bring all the meteorological work in the country under a central authority.

Actions taken
Establishment of Cyclone warning centres and Area Cyclone warning centres to issue cyclone advisories, and conduct research on storm surge, intensity and track prediction techniques on a continuous basis.

Methodology
Analysis of secondary literature and primary stakeholder interviews from IMD, state disaster management authority, community and academic experts.

Learning Objectives
- Role of science and technology in providing disaster risk reduction services to the society.
- Role and evolution of institutional leadership in providing efficient cyclone advisories in India, and to other meteorological organisations in Asia Pacific region.
- Need for holistic preparedness and mitigation to contain economic losses.
- Challenges and gaps in putting cyclone early warnings to actions.
- Need for early warning dissemination to the last mile.
- Needs and opportunities for effective cyclone disaster risk reduction.

6. Cross-case patterns and reflections

This section describes the cross-case analysis and emerging patterns, by contrasting the findings with the existing literature and offering some departures from the current understanding of disaster resilience leadership.

(Refer to Annexure 1 and 2 for Summary Statistics of the Primary Case Studies)

Dominant Actors Role

One significant cluster emerging from the leadership case studies are the types of actors involved in designing the initiatives. The key actors range from individuals (social entrepreneurs, career bureaucrats, political representatives, informal actors within public institutions), people's collectives, formal non-governmental organisations, associations of NGOs, and other formally recognised institutions (scientific/academic/corporate/ government).

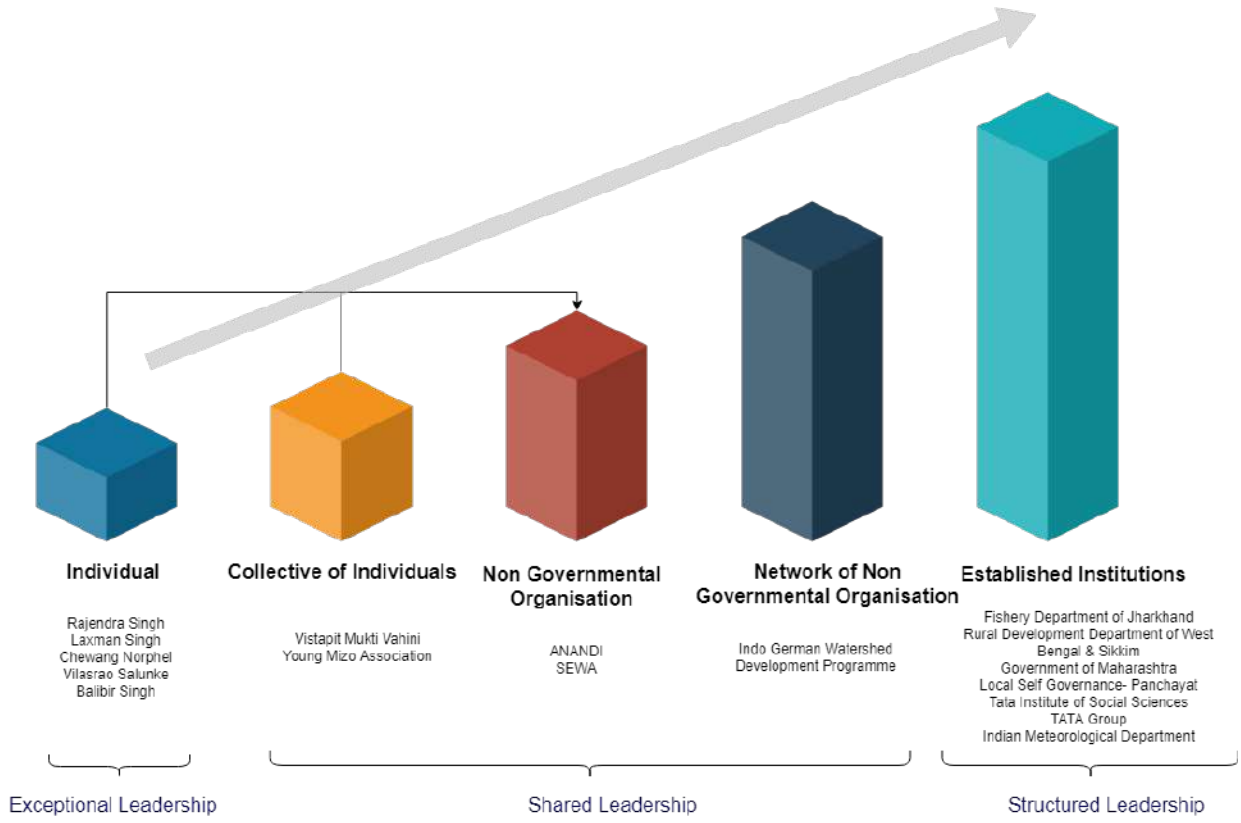


Figure 3: Generalising type of leadership by type of actor

The cases highlight the role and the different strategies of key actors involved in building resilience to disasters. The analysis reflects on the roles that these actors play, their interface, similarities and dissimilarities in their strategies, and complementarities between the actions. The individuals from within the communities, bureaucracy, or political system follow a comprehensive strategy to achieve the objectives. They possess good interpersonal and networking skills to gain support from the communities as well as other stakeholders. The

initiatives they contributed to, helped bringing a change on ground and also proved to bring a significant advancement in their respective careers. However, with the lack of support and resources, especially in case of individuals from within the communities, the initiatives were not successfully translated into policy formulations.

Disasters offer a window of opportunities for individuals from the bureaucracy to innovate and bring about a policy transition, since they are already embedded within a network of economic, political, policy and social actors and have the availability of resources. However, in the cases studied, these actors tried to utilise existing approaches and presented them as technologically-driven 'new' ideas or approaches, which created a dependency among the stakeholders, especially the communities.

The other category of actors, the collective of individuals, demonstrates the importance of groups of individuals and organisations possessing varied skills. While some may possess good interpersonal skills required, for example, to gain community support and their mobilisation, the others may help in strategizing the initiative to make it suitable for the needs of the region and communities. As observed from the cases, since such a collective is based on the common understanding and willingness to take actions for the issue, the cohesion is much stronger. This not only addresses the social and ecological sustainability but also enhances the economic sustainability as the external dependency for funds diminishes when members are inclined to invest their resources to bring a change.

The NGOs, individually or in a collective, use a bottom-up approach, as they identify and understand the risks and vulnerability of the regions and the communities. The context-specific, focussed, and participatory approaches help in translating a visible impact on the ground. Their focus is mainly towards a) generating awareness and mobilising the communities, b) ideas that do not deviate from traditionally accepted social and cultural, norms and are easy to comprehend and use, c) making available the resources to undertake the activities through their networks, and d) advocacy towards a policy change to bring a long-lasting transition.

The established institutions, public and private, crafted for learnings or for realising changes, are embedded within multiple complexities. These complexities arise due to institutional hierarchy, protocols, policies, and institutions' vision and mission that obstruct the innovation. The public institutions that were established to manage disasters, from cases studied, proved to have become redundant over time due to inability of leadership to question or move beyond the status quo. Therefore, the successful agents of change who are part of public institutions adjust their strategies to align them with institutional contexts and exploit the opportunities that these systems put forth.

Similar is the case of private institutions, especially the for-profits who are often viewed as the donor agencies. These organisations, while adhering to their basic structure that is comprised of market-oriented, managerial, and target-oriented approach, venture into implementation of initiatives towards disaster resilience building. Even though their role in the sector is crucial

as they provide the implementing agencies with the required capital, as implementers they often meet with challenges, especially to get a buy-in from the communities. These institutions' top-down approach often lacks the ground realities and therefore the translation into practice face failures. However, from few cases it is evident that a coalition between different actors and a collective approach provides a comprehensive, and holistic transition to disaster resilience building initiatives. A combination of top-down and bottom-up approach results in bringing the aspects required to bring a sustainable and balanced socio-ecological system resilient to cope with future disasters.

Box 1: Cases with evolving 'actor type' over time

In the primary case studies, transformations from one category to another (as a means for course correcting or scaling) over time is also observed. Some individuals like Rajendra Singh, Laxman Singh, and Vilassrao Salunkhe, to continue their activities established organisations. Similarly, once established, Young Mizo Association, what started as a collective of individuals evolved into a Non-Governmental Organisation. mHS that started as a for-profit private entity, registered itself as a foundation to access a larger pool of funds. Boond, on the other hand that started out as a social enterprise, registered itself as a for-profit private company to make financial sustainability integral to its operations.

Box 2: Cases where formal institutions (private sector, NGOs, public institutions) have demonstrated Exceptional Leadership

Cases such as Boond and RVC, were once led by exceptional individuals, and demonstrated the traits of Exceptional Leadership. Overtime, these individuals have moved on, but the value systems they created in the institution have left behind a pattern that continues to resemble that of exceptional leadership, with many more emerging leaders in the process.

Box 3: Cases showcasing interface between actors within formal and informal institutions

The case 'Leadership for Disaster Resilience: A Case of Drought Proofing Initiatives in Maharashtra' reflects the role of various actors and their interface in realising policy and strategy changes to mitigate drought. The case provides evidence of the crucial roles of individuals and organisations to blend the 'top-down' and 'bottom-up' approaches towards building resilience to droughts. Some initiatives taken up by the individuals at local level managed to get streamlined into policies and guidelines and in the approaches of public institutions. Others witnessed a collaborative effort of actors ranging from individuals, NGOs, other established institutions (formal and informal) to achieve the common goals of drought proofing the state of Maharashtra.

Leadership

As postulated by Clarke (2014), leadership could be understood through three approaches. First, exceptional leadership that relies on the personal qualities and attributes ensuring the successful implementation of set out tasks. The second approach, structured leadership, creates clear hierarchies and formalised procedures. They work on the tried and tested ways of addressing problems. The procedures remain the same and the implementation works according to the hierarchy and what the leaders say. The third approach, shared leadership, is very open and offers a more strategic and planning function to a group of people.

This shared-leadership in a way creates a sense of vision among its stakeholders and ensures that a group acts collaboratively. Across the cases studied, exceptional and structured leadership show strikingly opposite approaches. The leadership that emerged from the ground follow an inclusive approach where beneficiaries of the proposed intervention are the major stakeholders. To implement the plan, they have to work more as an 'enabler' than a leader. Their initial steps involve sensitising the community about the risks, vulnerabilities and expected outcomes of the proposed intervention. The nature of community participation in such an initiative is 'interactive' thus the formulation plans for design and implementation and execution of these plans function in a participatory mode. The focus is more on the process to achieve the vision with which the initiative was conceived.

In structured leadership, the leader/ actor generally has a plan for the initiative to be undertaken, and the decisions regarding the implementation lies with them. It has been observed that under this 'leader-centric' approach leadership the community (and other informal actors) often participate as beneficiaries of the proposed activities, although, there may be other formal partners who may be involved more integrally. They have a little or no say in the structural design of the initiative. The approach followed is mostly target oriented where objectives are set during the formulation of the plan and steps are taken to achieve those objectives.

However, since all the cases studied have been contextualised and operationalised within different temporal and spatial boundaries, a few anomalies have been observed. The patterns discussed emerged from the characteristics of the majority of the case studies within each category.

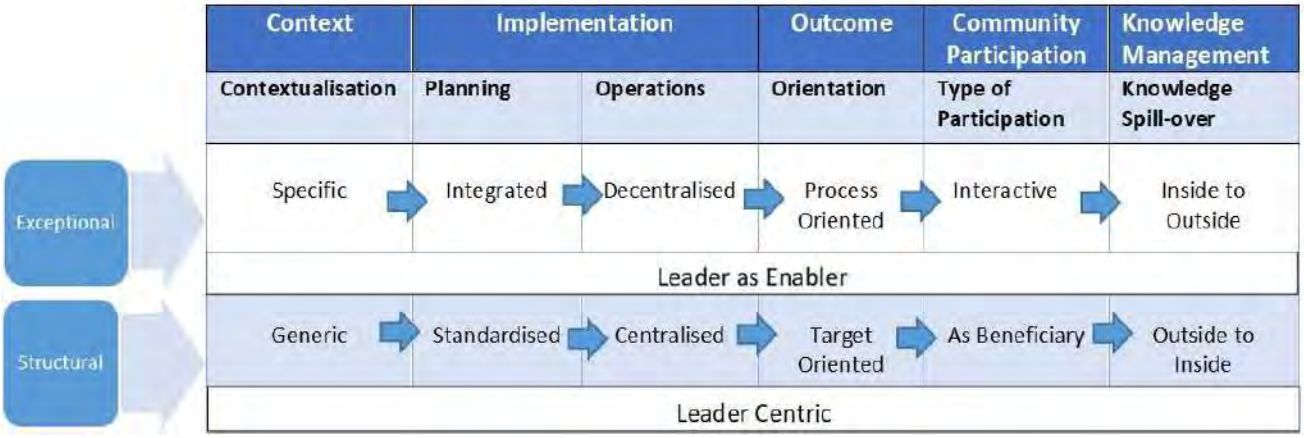


Figure 4: Relationship of Leadership type with process of implementation and outcome

Box 4: Cases where traditional formal institutions have demonstrated Shared Leadership with flexibilities built-in to enable greater participation and improve two-way knowledge sharing

Cases such as OSDMA, where a formal institution was formed within an existing institutional framework, with no precedence of a regulatory structure. No prior history of such an institution in the country enabled the people involved in setting the OSDMA to make innovations such that public participation and working with partner organisations became integral to its governance structure. They have also continually supported collaborative work with local NGOs, community groups, and funding agencies and other development agencies. They have also demonstrated improvements over time in self learning as well sharing their lessons both nationally and internationally.

The TISS case (Resilience Building through Academic Institution: Experience of Tata Institute of Social Sciences) presents a situation where a decentralised university transformation process laid the base for an institutional form, that specifically focusses on disaster studies. The traditional value and knowledge base of a university served as a foundation for guiding the transformation of TISS. The consolidation of an institution for disaster studies within the university system primarily emerges from the long years of engagement of key actors (academics) with different stakeholders in the context of increasing disaster.

Context-Implementation-Outcome

The crucial assumption underlying the process of contextualisation is that an intervention that has been successful in one setting may turn out to be effective somewhere else, based on contextual factors. Before drawing lessons from other countries, or contextualising evidence from one setting into another, it is important to differentiate between certain often repeated terms –applicability, feasibility, transferability and generalisability. Whether an intervention is successful in one country or a specific disaster setting is capable of being replicated or transferred in another country or disaster setting can be determined by (i) understanding the local contextual factors, and (ii) attributes of applicability or transferability in the primary setting.

Attributes of applicability specific to the intervention and context may include political environment, characteristics of target population, capacity of key actors, organisational structures, social and cultural adaptability, and scale of the problem (Tyagi, 2017). Drawing from the concepts by Wang et al., 2005, the interventions selected for the detailed study have been grouped under the two categories, 'disaster' and 'development'. The first group consists of initiatives where the focus was entirely to manage or mitigate the risks of disasters and the interventions, while the second is where the objective was the overall development of a region or a community and disaster management emerges out of the activities implemented.

The interventions are also grouped into 'contextual', 'generic' and specific' approaches. In a contextual approach, the management solutions to a risks or disaster are formulated keeping in mind the socio-economic, geographical, environmental conditions or an existing solution is contextualised to suit the region. In a 'generic' approach, existing solutions are replicated or modified and implemented, such as already existing blueprints for managing a disaster. In a 'specific' approach, the disaster management objective is undertaken by individuals and actors' within shared leadership with a locale-specific, integrated and decentralised bottom-up mode of implementation Actions taken within structured leadership are generally shown to have a generic approach with a centralised top down approach.

A pattern has also been observed when the context is viewed along with the categories of outcome, however the anomalies still exist. An intervention or a program outcome that occur from a leadership/organisational development program may be episodic, developmental, or transformative. The episodic results in actions of the participants/ communities, which are well defined and time-bound. The developmental results occur across time and at different speeds and are represented as steps taken by an individual who may reach some challenging outcomes, such as sustained change in behaviour or a new strategy. The transformative area is where fundamental shifts occur in behaviour or performance.

These three outcomes may be identified in the model on the individual, organisational and community level initiatives. Some disaster-specific initiatives have an episodic outcome. It

could be assumed that the interventions were focused on activities around managing outcomes of disasters. Such initiatives are often time-bound and lack the holistic understanding of the future risks, and therefore need a vision towards a developmental or transformative outcome for building disaster resilience. The initiatives where disaster management emerged as part of developmental activities shows outcome with a change in behaviour and change in strategies according to the context, risks, need and vulnerabilities, thus transformative in nature.

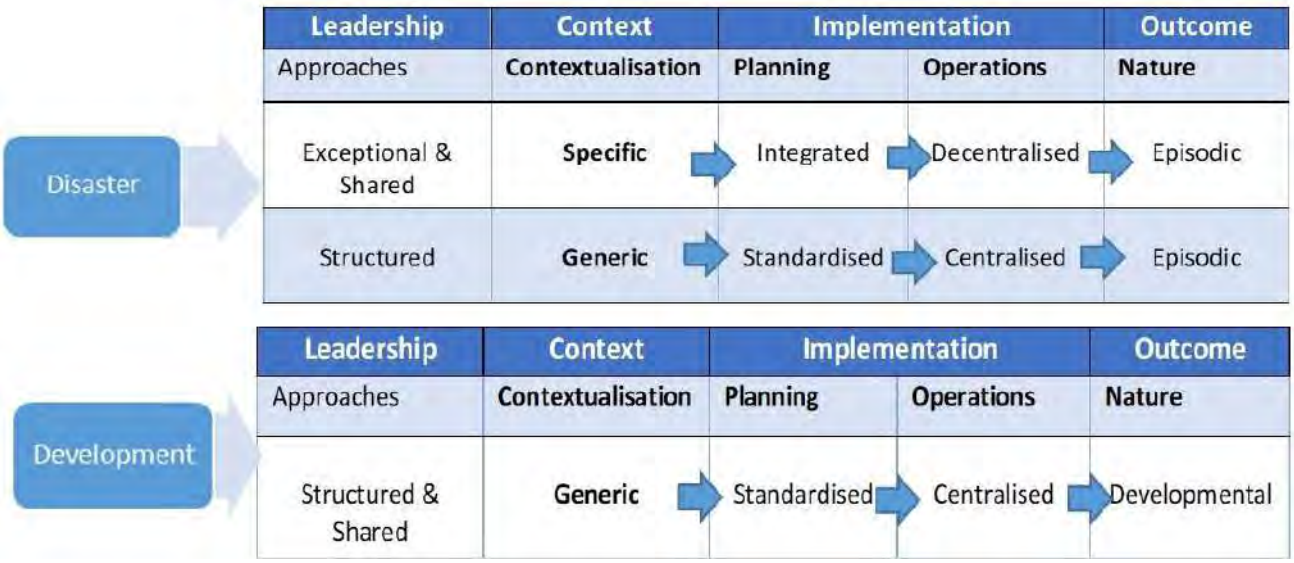


Figure 5: Leadership emerging for disaster vs developmental context

Box 5: Cases where post-disaster actions turned into long-term recovery processes

Cases such as BEDROC and Assam RVC started with a view to respond to post-disaster needs of relief and rehabilitation, but soon the actors involved recognised the need for long-term actions to improve the pre-existing and newly created vulnerability conditions. The work that was originally disaster relief oriented, took a wider developmental frame over time. They have now been working on issues such as livelihood diversification and women empowerment, which are traditionally seen as developmental approaches of action, but are now helping build community-level resilience to disasters.

Box 5: Cases that started as developmental actions, but had direct co-benefits for disaster resilience

Cases such as Boond, Timbuktu Collective and Total Sanitation Project were primarily intervening to improve developmental conditions of energy, economic failures, and poor sanitation respectively. But over time, with these outcomes have also transpired other co-benefits for disaster risk reduction such as reduction in fire deaths, better air quality, drought-relief, and better public health results. Similarly, cases like Matsya Mitra (TISS Case 2) and initiatives by established institute like TATA, and NGO like Young Mizo Association, Anandi and SEWA started with an objective to meet the developmental needs like livelihoods and social inclusion. But these initiatives also helped in reducing the risks of the regions and communities with-in, and strengthening their resilience for recurring disasters. This indicates that there could be a direct relationship between disaster risk reduction and developmental gains.

Knowledge Management

The analysis revealed that the dominant knowledge system across the initiatives studied is technical. Though many interventions that involved soil and water conservation works to mitigate the impacts of drought involve traditional practices, they are integrated with the evolving technologies, thus dominated by the 'technical knowledge system'. These initiatives, with a few exceptions, have a knowledge spill over from within the community to external communities and have faced no significant limitations in leveraging external knowledge to address the pertaining local issues. This is corroborated by Shaw (2008) who states that a complete reliance on modern technologies would make communities dependent on external resources, reducing their capacities and coping abilities. Thus, the new scientific technologies have to be introduced into the community only when necessary, and also in a minimalistic way adding value to traditional systems. The key focus should be not only on introducing scientific technology into a community, but on transfer of knowledge on the technology to the community. The philosophy-led initiative (Vitapit Mukti Vahini, Case 4) is the kind of initiative where the fundamental approach is bringing together a group of individuals, share the philosophy held by the leader and work for a common goal benefiting the collectives.

It is also observed that initiatives undertaken by government institutions is dominated by their base in scientific or external knowledge, i.e. technical knowledge. These initiatives depended on bringing external knowledge to the region during the initial implementation stages. The initiatives or organisations which do not have geographical boundary such as IMD, TATA and TISS have shown a two-way knowledge spill over, where the organisation find its strength in knowledge from external knowledge system and contributes its expertise back to the external knowledge system.

Box 6: Cases where the action emerged from the communities and technical and traditional knowledge was brought in as required

Cases like the Alappuzha waste management, Timbuktu Collective, and initiatives by Rajendra Singh and Laxman Singh emerged from the local needs and gathered momentum around the traditional knowledge systems they had access to. Over time, they built networks and brought in technical knowledge on waste management, organic urban farming, drought-resilient agriculture, soil and water conservation and management, etc.

Sustainability

Sustainability of the initiatives to a large extent depends on community participation and ownership. Communities are at the forefront of dealing with disasters, therefore their participation in the projects meant for disaster management is crucial for sustainability. The key aspects of community participation in the project revolves around partnership, participation, empowerment and ownership by the community. While people should own the problems, consequences and challenges of any mitigation and/or preparedness initiative, it is necessary to take people's involvement further, into policy and strategy. The greater the number of people recognising the effectiveness of the project, the greater is the probability of its sustainability (Shaw and Okazaki, 2003, Pandey & Okazaki, 2005).

Top-down decisions are generally based on the authorities' perception of needs of people, where the communities are just the beneficiaries or 'victims'. This approach has proved to be ineffective and therefore the major reason for lack of sustainability. Effective community participation is an educational and empowering process whereby communities identify the problems and needs and assume responsibility to plan, manage, control and assess the collective action that are necessary (M.M.,2014).

Sustainability also includes the economic sustainability i.e. availability of financial resources to ensure the maintenance of structures. Linkages with the government schemes and/or programs, increases the dependency of the communities and/or organisations, sustainability of such projects is ensured until the existence of the scheme. For example, in case of the initiatives led by public institutions, Matsya Mitra, Sabujayan, Dhara Vikas, Jal Yukt Gaav Abhiyan, the funds were arranged from the existing schemes like MGNREGA or converging various schemes. The initiatives also do not ensure alternative sources and therefore the program will cease to function in case the schemes are called off. In a developing country like India, the goals, objectives and changing political scenarios make the future of such schemes questionable. Therefore, initiatives where an assured source of financial resources (either through communities or members of the movements) are categorised as high-sustainable.

The cases studied reflected the same patterns discussed above. Wherever the community participation was assured from the inception and planning of the project and were seen as stakeholders rather than beneficiaries, the initiatives show a high sustainability. In these cases, people were made aware of the expected outcomes of the project and trained to be part of the implementation/ functioning of the project. The sustainable cases also didn't have external dependency in terms of financial resources and have self-financing mode of operations. This was evident from cases like initiative by Balbir Singh, Young Mizo Association and the Vistapit Mukti Vahini movement. The communities, in these interventions were part of the planning as well as the implementation phases and motivated and sensitised towards the objectives and outcomes. In order to strengthen the economic sustainability, they had a self-financing mode of operation where the members contributed to implement the actions.

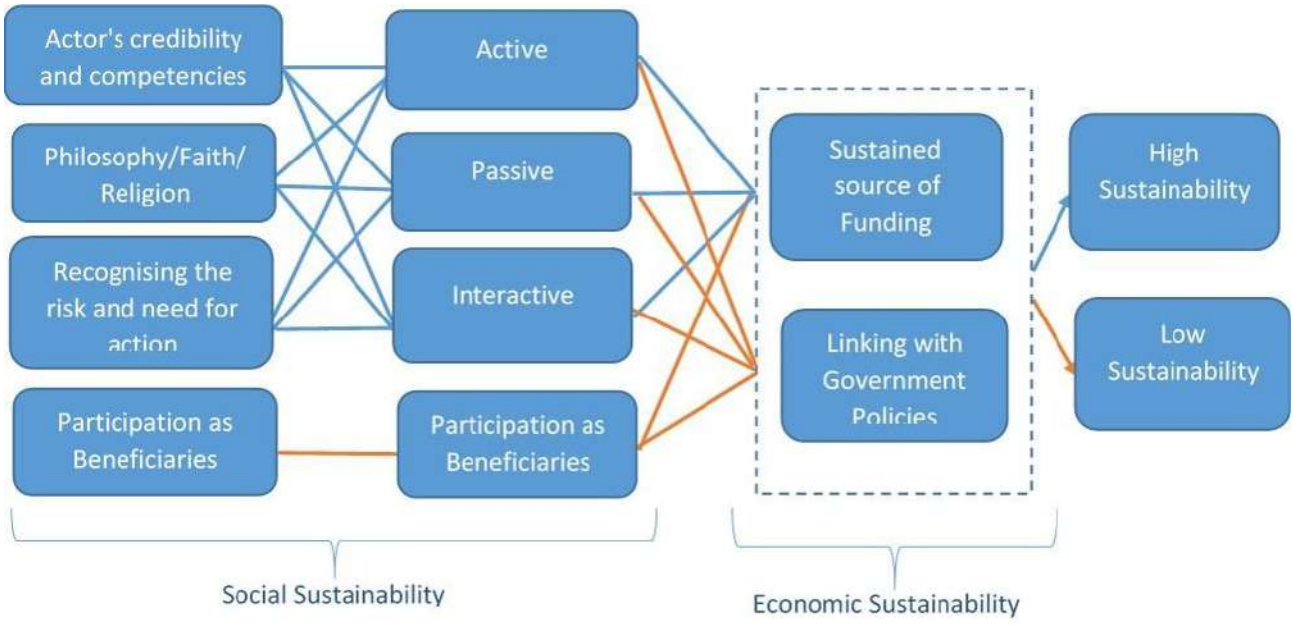


Figure 6: Elements of Sustainability and Outcomes

Box 8: Cases where limited risk perception defeats the technical evidence available unless supported by significant investments made towards behaviour change

Cases such mHS City Lab have experienced a strong resistance in uptake of their actions despite technical evidence showcasing the need for them. This was primarily founded in the limited risk perception among the people living in a scenario with no prior experience of such a disaster. Although the organisation has course corrected to some extent they cannot invest in building awareness due to limited resources. Instead, they are innovating in integrating their actions with other perceived developmental need of housing upgradation. There are also lessons for mHS to be taken from initiatives such as the Total Sanitation Project (see **Box 9**).

Box 9: Case where a public-sector initiative was evolved into a Community-led initiative

The Total Sanitation project (CLTS) which was a structured top-down resource intensive model for delivering improved sanitation outcomes, through its course turned into a community-led initiative. This involved key decisions made at the policy and programmatic level, and funds were diverted to improve people's perceptions of risk. Eventually, people took complete charge of assessing their needs and resources, implementation and long-term monitoring of the use of the toilets they had built. This has not just resulted in immediate results of significant reduction in open defecation but has sustained it over several years. There are issues that continue to exist regarding less technically sound approaches taken by people, but there are also lessons from other cases such as Timbuktu Collective, where technical knowledge could also be shared with people in time to take mitigate this risk.

Scalability

In the current set of cases scaling up has been observed to be a major challenge for most initiatives. Those that emerged as voluntary initiatives (Exceptional Leadership and Shared Leadership) show a horizontal scaling up, i.e. either an increase in the number of beneficiaries or expansion of the activities being undertaken. The efforts put up by individuals either by propagating the idea or by setting up an institution did not spread across the geographical boundaries of the pilots. However, the thematic horizon were widened with work on other developmental initiatives, thus scaling up horizontally. Movements and associations that are formed when people share the common objective were found to be increasing in size and capacity as more people associate themselves with the cause. The already established institutions have a slight edge in terms of availability of resources, therefore show both types of Horizontal Scaling-up.

Venturing into new geographical and administrative boundaries needs support from the local institutions and administration, the absence of which leads to diversion from the parent activity to the ones that provide assured funds. Interventions that have political or governance support through policies and guidelines from the beginning were also found to get up-scaled both horizontally and vertically. Therefore, pilots that emerged out of structured leadership mostly the government-led initiatives follow a set protocol and/or a blueprint have been implemented in the area with same agro-ecological and socio-economic conditions.

Box 10: Cases where an active decision is made to curtain scalability to sustain quality and ongoing impact

Cases such as Timbuktu collective, have actively taken a decision to not scale up, either geographically or increasing the number of members in their collective. They have, over the years, increased their sectoral diversity of work with new needs emerging from the community and changing local context. Many new associations and collectives have also emerged under the larger umbrella of Timbuktu collective led by local community members, thus improving local capacities over time to take charge of their challenges. Yet, they have actively decided to not scale up, and rather focus on holistic development and greater resilience in a place-based approach.

7. Emerging Framework of Disaster Resilience Leadership

The analysis of individual case studies, and cross-case analysis has shown certain patterns and common themes and structuring these themes as a framework could be a useful way to understand the forms of leadership in practice, beyond the context of India. This framework can be a useful way to understand the similarities and departures between different initiatives, thereby recognising the potential reasons for differential outcomes.

The direct characteristics involve direct actions, understanding the context in which these actions took place, and the following processes of decision-making, implementation, knowledge management systems, and scaling up. Processes and forms of participation have emerged as an integral theme which affects the overall outcomes and perceptions of the initiative. There are also various challenges which could be beyond control and enabling factors that are leveraged, all of which may be unique to a certain context and have direct implication on the outcomes of the initiatives. Yet, these can also be understood as a generalizable set of themes. These direct processes have implications on the outcomes, the long-term sustainability of the actions, and on the institution or initiative itself. Understanding these in light of specific leadership characteristics eventually gives a full view of the leadership approach and process.

Therefore, the characteristics of disaster resilience leadership initiatives can be understood in two broad categories: (1) those pertaining normatively to the leadership dimension, and (2) those pertaining to the story of impact. Characteristics that describe the decisions-making processes, participation, implementation design, knowledge management systems and the unique characteristics of the individuals involved form part of the first category. The varied objectives of affecting the entrenched risks, imaginations of achieving scale, outcomes and their sustainability, all of which are also affected by external challenges and enablers, could be understood as part of the second category of characteristics.

The following section briefly describes each of the components of this framework, following which a table (Table 11) describes the various forms these components could take across different initiatives. Figure 3 illustrates the relationship between these various components that have emerged as the framework of disaster resilience leadership.

1. *Context and triggers*: The understanding of the entrenched risks, vulnerabilities and capacities to cope or respond in a particular socio-political, physical and economic context is critical to the foundation of any initiative. Often, it is this recognition that triggers the actions. Sometimes, could be alternate reasons for making a move, and these triggers affect the way initiative is set up. The time and scope of actions are other key characteristics which influence the initiative, especially when it is towards building disaster resilience. Contextualising the initiative (either specific to the region or customised for the specific needs in a region) could also have implications for the scalability as well as sustainability of the outcomes.

2. *Decision-making processes*: The key decisions and the structure of the decision-making processes sets another strong foundation for the organisational values and design. This stage is also when participation is envisioned, and processes are set in place to enable shared value systems and spread of ownership. The form of knowledge accessed to inform various decisions may also have implications for the design of the initiative and the processes and target set out to be achieved.

3. *Participation*: Inclusion of stakeholders from various fronts---community, within the organisation, partners and the administration---strengthens the efficacy and sustainability of an intervention. Participation of community and marginalised sections of the society, who are the key stakeholder in any disaster resilience building programs, inculcates a sense of ownership, strengthens social cohesion within a region and also empowers people to respond to the challenges, individually or collectively. But it is also critical to understand the stage of the initiative at which these perspectives are included. An inclusive approach right from the inception, decision-making, planning, implementation and longer-term operations of the initiative ensures equal access to all including marginalised sections of the society (including women, the elderly, children, people with disabilities, people from lower castes, etc.) who often suffer the implications of power dynamic within a community. There are certain factors that may trigger participation, and the participation itself may take forms that are a result of the flexibilities inculcated in the initiative design.

4. *Implementation*: The procedural processes of operations and resource management within the context of participation and other constraints are also critical to understanding the outcomes of a certain initiative. Implementation of a long-term intervention often face challenges and may require mid-term modification in order to address these challenges and risks.

5. *Knowledge management*: Drawing from literature (Sunassee & Sewry, 2002; Cash, 2003; Shaw, 2008; Seneviratne, 2010) which discuss different types of knowledge systems prevalent in the field of disaster management, we have categorised the dominant knowledge system in the studies into technical, traditional, combination and philosophical. Forms of knowledge systems govern the information accessed and utilised. In order to build up or strengthen the resilience of a socio-ecological system, actors have to focus on enhancement of the knowledge and innovation. This knowledge may emerge either from the indigenous and/ or traditional knowledge of the region, or based on new, innovative techniques and technologies. The management of knowledge also helps in creating modified or new knowledge amalgamating scientific and traditional knowledge. The role played by the initiative could also be that of a knowledge broker, where information from elsewhere is accessed and transferred to the relevant set of people or institutions, thereby affecting change. The knowledge generated through the initiative could also be documented and disseminated, affecting change in the immediate or larger context.

6. *Scaling*: The initiatives that emerge from the regional often have localised benefits but fail to transcend when scaled-up. The initiative could scale across the sectoral scope or could remain in the same sector but widen the geography and people reached. The initiative could also scale upward, where it aligns with the larger policy and planning framework affecting long-term institutional approaches. Some initiatives could increase in scale as a combination of these approaches or remain an episodic action with no intention or outcome of scaling. Scaling decisions are either dependent on the demands of the context, or experience-based active decisions despite it.

7. *Challenges and Enablers*: Certain external or internal factors could act as critical challenges during the course of the actions, while some others can come forth as critical enabling factors leveraging which the leadership can affect the continuity and even growth of the initiative. These factors could be related to individual power and agency, resources available including people, networks, finances and technology, or the wider socio-political, regulatory, physical or economic context. Understanding leadership approaches in the context of these challenges and enablers is critical to shed light on the various decision-making and implementation processes, including those related to course correction.

8. *Outcomes*: The outcomes of the actions taken could be understood in contrast to the original entrenched vulnerabilities and risks that existed before the set of actions were taken. These can be in the form of socio-political, environmental, physical, economic, or regulatory changes. There could also be certain capacity development outcomes for the institution created itself, through the experience gained locally and lessons learnt in the process. The initiative's outcomes could be episodic in nature, or more developmental. But some outcomes could have larger transformative outcomes that have second or third order impacts beyond the original scope of the initiative. There could, therefore, be some

co-benefits that are achieved through the direct actions that although not envisioned originally as core objectives, could have developmental or transformational value. The outcomes broadly include the impacts and changes observed after the implementation of an intervention. It includes measurement of the effectiveness and efficiency of the intervention towards achieving benefits, changes in processes and behaviours. While some may follow an approach to meet the objectives planned during the inception of the project, other may operationalise the activities to meet the overarching goal or vision. Some may bring in short term changes while some may contribute towards long term systemic changes in the region.

9. *Sustainability*: Many projects and interventions often are successful in the short terms, mainly during the project period, but fail to bring a sustainable impact. They lack the provision in continuing the benefits of the activities undertaken. The structures and institutions built could collapse after facing internal or external risks. In order to build the resilience to disasters, it is imperative to have sound exit strategies with provision for allocation of human and financial resources for maintaining the benefits created in the intervention. Besides the sustainability of the initiatives and their impacts, initiative's long-term impacts on the environment and its contribution towards the sustainable development also needs to be considered.

10. *Leadership-Specific Characteristics*: The actors' role and strategies towards ideation of the intervention and meeting the defined objectives plays a key role right from the inception to implementation and maintenance. Aspects of leadership include identification of the factors that make leaders and their leadership successful through their relational and functional qualities. The leader's personal qualities, strategic skills, communication skills, risk taking abilities, organisational, management qualities, as well as ability to manage the risks and challenges needs to be analysed.

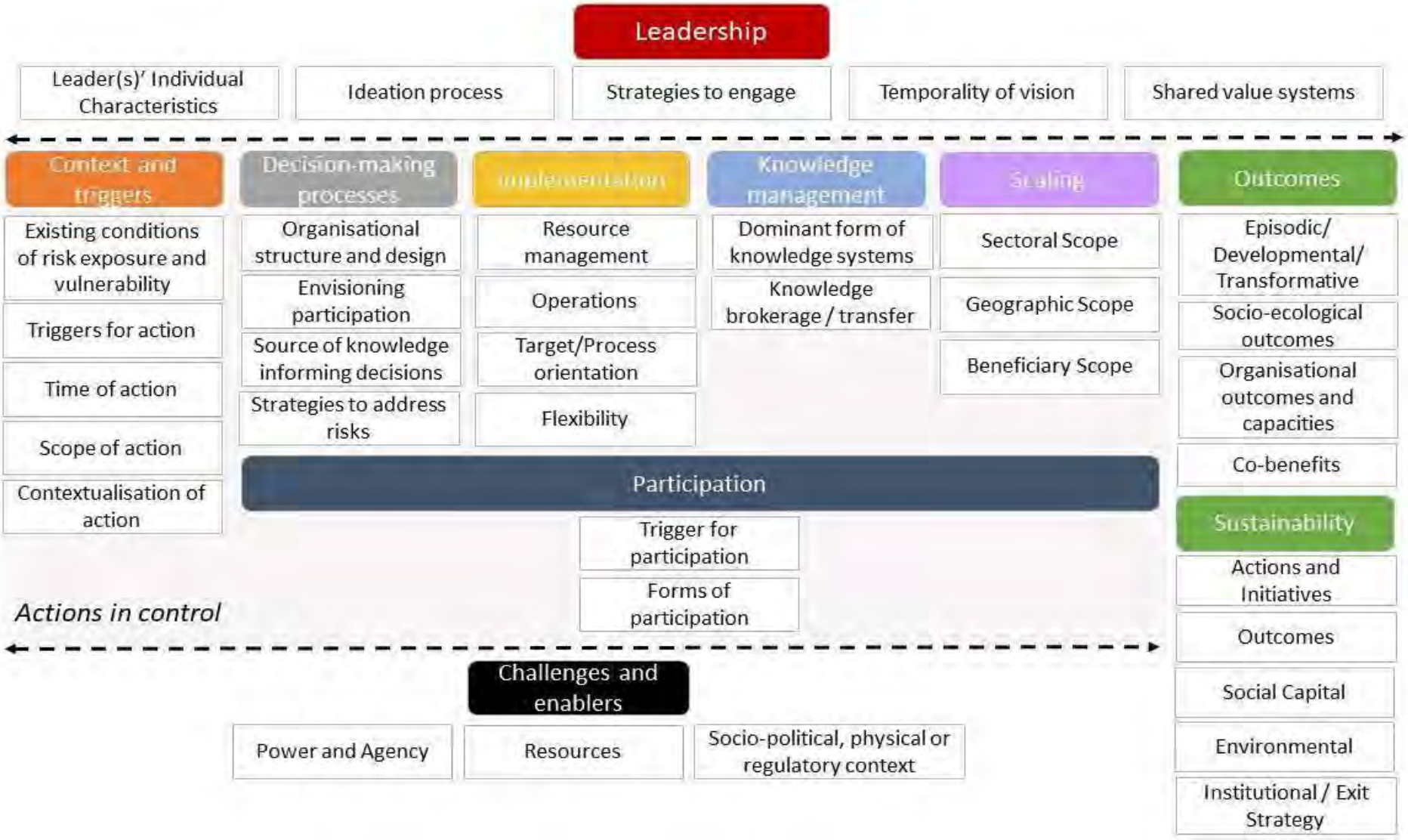


Figure 7: Framework of Disaster Resilience Leadership

Table 12: Characteristics within the Framework of Disaster Resilience Leadership

1. Context and triggers	
Existing conditions of risk exposure and vulnerability	
Physical exposure to risk	There is known hazard exposure to either intensive (high intensity low frequency) or extensive (low intensity high frequency) risks
Socio-economic or cultural/religious conditions	There are underlying conditions of persistent extreme poverty and inequality, and vulnerabilities to disaster risk arising out of these. This may include regional, cultural, behavioural or religious conditions that have given rise to risks
Capacities to cope	There are limited capacities (of institutions and/or communities) to respond to the existing/arising risks and vulnerabilities
Triggers for action	
Post-disaster urgency	An extreme event's occurrence triggers the action (either in the form of post-disaster response or longer-term engagement)
Role/Job requirement	Taking actions is part of the role played by an/set of individual (s)
Personal motivation	Taking actions (often despite a role/job constraint) on personal motivation
Community based dearth of leadership	Actors taking initiatives in a context where there are no evident leaders/institutions taking actions
Climate adaptation	Actions are taken in response to ongoing climate risk exposure (including water shortage/drought, heat waves, etc.) which may be towards coping in the short-term or long-term adaptation
Occurrence of a disaster elsewhere	An occurrence of a disaster in a similar context elsewhere triggers preventative actions
Risk Perception	Knowledge of existing risk. This knowledge could also be asymmetrical, for e.g. knowledge within the exposed community vs. the experts
Availability of funds / programmatic requirement	A programmatic requirement making funds available for action could also be an apparent trigger for action, although the underlying reasons could be a combination of above

Time of action	
Mitigation and planning	The actions taken primarily focus on risk mitigation and planning, having the knowledge of existing risk
Preparedness and Early warning	The actions taken primarily focus on preparedness and investment in improving early warning systems and communication
Post-disaster response, rescue, and relief	The actions taken are limited to post-disaster response, rescue and relief but which may have long-term implications on resilience
Rehabilitation	The actions taken focus on rehabilitating disaster affected/exposed people and communities, and may have long-term implications on developmental outcomes as well as resilience
Recovery	Actions taken are geared towards long-term recovery & resilience building
Scope of actions	
Disaster	Main objectives of the initiatives taken are specific to disaster risk reduction, with co-benefits for developmental outcomes
Development	Main objectives of the initiatives taken are for developmental needs, with disaster risk reduction outcomes achieved as co-benefits
Contextualisation	
Specific	The intervention is formulated to address the risks that the region and communities were facing and contextualised to suit the region
Generic	The intervention represents an umbrella-programme that was modified as per the context and implemented. Existing solution was either replicated or modified and implemented

2. Decision-making processes	
Organisational structure / design	
A collective	The initiative is designed to be led by a set of people acting as a group. These members could be from among the affected community or other informed individuals.
A for-profit private sector enterprise	The initiative is designed to be a for-profit enterprise (often to take advantage of the financing models available)
A not-for-profit private sector enterprise	The initiative is designed to be a not-for-profit enterprise (often to access grants and aids)
Designed within an existing organisational structure (public or private)	The initiative is structured within an existing institutional and/or regulatory framework to enable long-term sustainability (often to take the advantage of the existing institutions reputation, resources available, etc.)
A new formal public-sector initiative	The initiative is designed as a new formal public-sector institution supported by regulatory innovation and structures.
No apparent organisational structure	The initiative is loosely structured (often as an informal set up)
***Envisioning* participation**	
Conception Level	The affected people are integral to the initiative from the conception stage itself. This is often seen in local-level initiatives but is rarer in scaled up programmatic interventions.
Design Level	The affected people are integral to the initiative at the design stage.
During Implementation	The initiative is conceived and designed, and the participation of affected people is enabled during implementation.
Planned actions in the future	The affected communities are envisioned as owners of the initiative in the future.
Combination of levels	The affected communities are involved at a combination of above stages

Knowledge informing decisions	
Evidence-based	Technical data and information valid for the specific context is used to inform the actions
Knowledge-based	Actions are informed by knowledge gained from other contexts & practices
Policy-based	Higher-level policy and programmatic needs informing actions
Needs-based	Local-level needs giving rise to actions and gathering of relevant data and information otherwise not available
3. Participation	
Trigger for participation	
Actor's credibility and competencies	The beneficiaries are aware of the leader's efforts in prior regions or his/her competencies and skill and therefore participate in the process
Philosophy/Faith/ Religion	The beneficiaries share the same philosophy and/or belong to the same faith or religion and therefore participate
Risk Perception	The beneficiaries participated as they were aware or made aware of the risks of the disaster and realised the urgent need to address it.
Participation only as Beneficiary	The community was regarded only as beneficiaries of the program
Type of Participation	
Active	In active participation, stakeholders are responsible for design, analysis and actions leading to ownership (decision).
Passive	Passive participation is characterised by information flowing in one direction from experts/decision-makers to stakeholders (information) OR information flows from local stakeholders, usually lay people, to the experts/decision-makers (extraction of local/indigenous knowledge).
Interactive	The information flow is arranged in both direction from stakeholders to expert and vice versa resulting in collaborative design (co-design) of actions.
Participation only as a ‘beneficiary’	The community was regarded only as beneficiaries of the program

4. Implementation	
Orientation	
Target Oriented	The strategy of the program focuses on the target/results. The objectives are set during the project formulation phase and efforts are made largely to achieve the targets. A fixed target has been assigned in the project proposal.
	The program is designed and operationalised to achieve target
Process Oriented	The strategy of the program focuses on processes to achieve the desired outcome. The focus is largely on the overall goal of the project
	The program is designed and operationalised to achieve the vision
Operations	
Centralised	Implementation of the initiative is carried out by one line of stakeholders. A government agency involving (only)other government agency, an NGO bringing its own resources for implementation
Decentralised	The responsibility of intervention lies with the multiple stakeholders at various levels, communities, CBOs, etc.
Resource Management	
Financial Resources	When the excess or dearth of financial resources are integral to the implementation strategy / its modification overtime
Networks and Partners	When new partnerships are fostered and employed overtime for the functioning of the initiative
Technology	When the use of technology and science is integral to the initiative
Communication	When inter- and/or intra- organisation communication strategy is evidently used in sharing values and information about the initiative

5. Knowledge Management	
Dominant Knowledge	
Traditional	The initiative is based on the traditional knowledge of the region and the communities, it has been applied at. Even after bringing modification for improvement in it, the traditional practices/Knowledge and skills dominates the initiative.
Technical	The initiative is based on the scientific knowledge or improved technology/techniques introduced in the region. It includes either the complete modification of the traditional practices or introduction of new practices/technology/skills etc.
Philosophical-Ethic values or Rights based	The initiative is either based on the values or belief. The approach here replicates or entirely uses an age-old belief/faith/ethnic values)
Combination of traditional and Technical	This includes a combination of both traditional and scientific knowledge such that blend of both shows no dominance over one over other
Knowledge Brokerage / Transfer	
Inside to Outside	The knowledge and ideas that are used in the initiative are generated within organisation/ individual as part of the initiative and are transferred to external communities/ other programs to take up similar kind of initiatives
Outside to Inside	The knowledge and ideas that are used in the initiative are generated outside the organisation/ individual and are taken by the initiative to cater to the needs of program implementation based on local needs
Sharing	The initiatives have used the knowledge and ideas that generated outside the organisation in creation of new knowledge that are used by external communities/other programs
6. Scaling deep vs. wide	
Types of Scalability	
Horizontal-Scope	Increasing the scope and types of activity undertaken within the same geographical area, covering the same communities
Horizontal-Beneficiary	Increased geographical spread and expansion to include more people and communities within the same scope of work

Horizontal- Scope and Beneficiary	Widening the scope of work both as types of activities across sectors as well as reaching out to more people in a larger geographical reach.
Vertical Scaling	The interventions or projects are aligned or mainstreamed with the governmental frameworks, policies, guidelines and plans. The systems and structures are aligned and adapted, and resources redistributed to build the institutional mechanisms.
Both	Horizontal as well as Vertical
None	Episodic actions, and no scaling up, either geographically or in sectors
7. Challenges and Enablers	
Power & Agency	When power dynamics (due to gender, age, caste, income, conflicting interests) have evident implications on the agency of the key actors (positive or negative)
Resources	When resources available (people, networks, finances, technology, etc.) have evident implications on the course of the initiative (positive or negative)
Context	When changing context (regulatory, socio-political, physical access, etc.) has implications for the course of the initiative (positive or negative)
8. Outcome	
Type of Outcomes	
Episodic	Episodic changes are of the cause-and-effect variety. An intervention is made, and predictable results ideally follow. Episodic changes are typically well-defined, time-bound results stimulated by actions of the program or its participants and graduates
	They include, as examples, counts of people reached and types of services provided, dates and descriptions of events of note, comparisons of pre-tests and post-tests, and reports of new changes
	They can be assessed through surveys, participant ratings of the services provided, feedbacks from the informants

Developmental	Developmental changes occur across time; include forward progress, stalls, and setbacks; and proceed at different paces and with varied rhythms for participating individuals, groups, and communities.
	Results are open-ended and are represented as sequences of steps taken by an individual, team, organisation, or community that reach toward and may actually achieve some challenging outcomes.
	Examples include a sustained change in individual behaviour, a new organisational strategy that is used to guide operations, and implementation of an economic development program.
	Developmental results can be documented equally through achievement of markers (evidential) and associated stories or case studies (evocative)
Transformative	Results represent fundamental shifts in individual, organisational, or community values and perspectives that seed the emergence of fundamental shifts in behaviour or performance.
	Transformative results represent a crossroads, or an unanticipated new road taken for the individual, organisation.
	Examples of transformative results include substantial shifts in viewpoint, vision, or paradigms; career shifts; new organisational directions; and fundamental socio-political reforms.
	They are immediately captured through personal reflections (evocative) of those with first-hand knowledge of what has occurred and, for 'harder, results, through documentation of shifts in indicators (evidential) of health or life status of individuals, organisations, or communities affected
9. Sustainability	
Aspects of Sustainability	
Sustained actions	The actions set out under the initiative remain sustained over time with practices and resource outlays
Sustained outcomes	The long-term outcomes for the benefitting communities are sustained over time
Social capital formation	The alliances formed between groups with different ideologies/experiences/resources/knowledge during the initiative

(relationships, alliances, knowledge)	sustain themselves and go beyond the initiative over time. New knowledge is created, and shared, and new interests are generated through this process
Environmental Sustainability	Steps taken/provisions are made to ensure sustainable development/ extraction of the natural resources and structures developed for the same, with no harm done to the environment
Institutional Sustainability	The value-structures, resource viability and diversity of actions for current and future risks ensure long-term sustainability of the initiative
None	No provision for ensuring sustainability are evident
10. Form of Leadership	
Leadership Approaches	
Exceptional Individuals	Possess personal qualities and attributes that ensure successful implementation of the task
	The individuals worked in their own individual capacities without any structural or institutional support
	Their work contributed towards an innovation
Structured	There exist clear hierarchies, distribution of tasks and responsibilities, and formalised procedures
	They up-scaled already demonstrated initiative
	They worked on the tried and tested ways of addressing problems.
	The implementation works according to the hierarchy and what the leader says.
	Partnerships or collaborations are formed during the course of intervention of the program
Shared	Involves a group of stakeholders that act in collaboration or partnerships right from planning to the implementation of the initiative
	It creates a sense of vision among its stakeholders and ensures a group act collaboratively
	It doesn't have hierarchies and actors act as one team

Leader-Actors-Beneficiary Relations	
Leader-centric	Beneficiaries merely follow orders from the leaders to produce outcomes
	They do not have influence on the overall performance
Leader as enabler	Leader motivates the beneficiaries to work towards the cause
	Leader helps building capacities of beneficiaries and make beneficiaries contribute to the initiatives
	Leader has the plan and beneficiaries are involved in operationalising and implementing the initiative
Participative/Relational	Once the issue has been identified, the beneficiaries and leaders work together towards finding solutions, contextualising, operationalising and implementation of the implementation

Annexures

Annexure 1: Case Studies across the Typology of Disaster Resilience Leadership

Table 13: Case Patterns

			Context and Triggers				
Case No.	**Initiative**	**Actor**	Scope of Project	Contextualisation	Existing conditions of risk and vulnerability	Triggers for action	Time of Action
1	Lakshman Singh	Individual- Laxman Singh	Disaster	Specific	Physical exposure to risk	Risk perception	Mitigation and Planning
2	Hiware Bazaar	Individual part of administration (Local) - Popat Rao	Disaster	Generic	Physical exposure to risk	Community based dearth of leadership	Mitigation and Planning
3	Norphel	Individual, though part of administration implemented the idea at individual capacity- Chewang Norphel	Disaster	Specific	Physical exposure to risk	Risk perception	Mitigation and Planning
4	Seechewal Initiative	Individual - Balbir Singh	Disaster	Specific	Physical exposure to risk	Risk perception	Mitigation and Planning
5	Rajendra Singh	Individual - Rajendra Singh	Disaster	Specific	Physical exposure to risk	Risk perception	Mitigation and Planning
6	Pani Panchayat	Individual - Vilasra Salunkhe	Disaster	Specific	Physical exposure to risk	Post disaster urgency	Mitigation and Planning

			Context and Triggers				
Case No.	**Initiative**	**Actor**	Scope of Project	Contextualisation	Existing conditions of risk and vulnerability	Triggers for action	Time of Action
7	Matsya Mitra	Fishery Department	Development	Generic	Socio-economic or cultural/religious conditions	Risk perception	Mitigation and Planning
8	Dharavikas	Individual, part of administration (Rural Development) - Sandeep Tambe)	Disaster	Generic	Physical exposure to risk	Risk perception	Mitigation and Planning
9	Sabujayan	Individual, part of administration (Rural Development) - (Babul Mahato)	Disaster	Generic	Physical exposure to risk	Risk perception	Preparedness and early warning
10	Jal Yukta Gaav Abhiyan	Individual, part of administration (Water Resouces Department) - (Vilasrao Deshmukh)	Disaster	Generic	Physical exposure to risk	Availability of funds/programmatic requirement	Mitigation and Planning
11	Malin	District Administration	Disaster	Generic	Physical exposure to risk	Post disaster urgency	Rehabilitation
12	IMD	Government Institution	Development	Generic	Physical exposure to risk	Availability of funds/programmatic requirement	Preparedness and early warning
13	GSDMA	Government Institution	Disaster	Generic	Capacities to cope	Post disaster urgency	Complete Management Cycle

			Context and Triggers				
Case No.	**Initiative**	**Actor**	Scope of Project	Contextualisation	Existing conditions of risk and vulnerability	Triggers for action	Time of Action
14	TATA	Corporate Institution	Development	Generic	Physical exposure to risk	Availability of funds/programmatic requirement	Complete Management Cycle
15	TISS	Acaedemic Institution	Development	Specific	Physical exposure to risk	Risk perception	Complete Management Cycle
16	IGWDP	Non Governmental Institution	Disaster	Specific	Physical exposure to risk	Risk perception	Mitigation and Planning
17	Young Mizo Association	Non Governmental Institution	Development	Specific	Socio-economic or cultural/religious conditions	Risk perception	Complete Management Cycle
18	Vistapit Mukti Vahini	Individual efforts resulting in a movement	Disaster	Specific	Physical exposure to risk	Post disaster urgency	Rehabilitation
19	ANANDI	Non Governmental Institution	Development	Generic	Socio-economic or cultural/religious conditions	Personal motivation	Complete Management Cycle
20	SEWA	Non Governmental Institution	Development	Generic	Socio-economic or cultural/religious conditions	Personal motivation	Complete Management Cycle
21	Assam RVC	Non Governmental Institution	Disaster	Specific	Physical exposure to risk	Post disaster urgency	Recovery
22	Timbaktu Collective	Non Governmental Institution	Development	Specific	Socio-economic or cultural/religious conditions	Climate adaptation	Complete Management Cycle

			Context and Triggers				
Case No.	**Initiative**	**Actor**	Scope of Project	Contextualisation	Existing conditions of risk and vulnerability	Triggers for action	Time of Action
23	mHS	Non Governmental Not-for profit Institution	Disaster	Generic	Physical exposure to risk	Personal motivation	Mitigation and Planning
24	Boond	Private for-profit company	Development	Specific	Socio-economic or cultural/religious conditions	Personal motivation	Mitigation and Planning
25	Surat Health	Government Initiative	Disaster	Specific	Physical exposure to risk	Post disaster urgency	Complete Management Cycle
26	Alappuzha waste management	Individual	Development	Specific	Physical exposure to risk	Role/Job requirement	Mitigation and Planning
27	NCRC	Non Governmental Institution	Disaster	Specific	Physical exposure to risk	Post disaster urgency	Recovery
28	OSDMA	Government Institution	Disaster	Specific	Capacities to cope	Post disaster urgency	Complete Management Cycle
29	CLTS	Government Initiative	Development	Specific	Physical exposure to risk	Availability of funds/programmatic requirement	Mitigation and Planning

		Decision making processes			Participation (Designing, Planning, Operations, Execution)	
Case No.	**Initiative**	Organizational structure/design	Envisioning participation	Type of input informing decisions	Trigger for Participation	Type of Participation
1	Lakshman Singh	No apparent organizational structure	Conception level	Needs-based	Actor's credibility and competencies	Interactive
2	Hiware Bazaar	Designed within an existing organizational structure	During Implementation	Needs-based	Actor's credibility and competencies	Passive
3	Norphel	No apparent organizational structure	Combination of levels	Needs-based	Actor's credibility and competencies	Interactive
4	Seechewal Initiative	No apparent organizational structure	During Implementation	Needs-based	Philosophy/Faith/Religion	Interactive
5	Rajendra Singh	No apparent organizational structure	Conception level	Needs-based	Actor's credibility and competencies	Interactive
6	Pani Panchayat	No apparent organizational structure	Conception level	Needs-based	Recognising the risk and need for action	Interactive
7	Matsya Mitra	Designed within an existing organizational structure	During Implementation	Needs-based	Participation as Beneficiary	Participation as Beneficiary

		Decision making processes			Participation (Designing, Planning, Operations, Execution)	
Case No.	**Initiative**	Organizational structure/design	Envisioning participation	Type of input informing decisions	Trigger for Participation	Type of Participation
8	Dharavikas	Designed within an existing organizational structure	At all levels	Needs-based	Participation as Beneficiary	Participation as Beneficiary
9	Sabujayan	A new formal public sector initiative		Evidence-based	Participation as Beneficiary	Participation as Beneficiary
10	Jal Yukta Gaav Abhiyan	Designed within an existing organizational structure		Evidence-based	Participation as Beneficiary	Participation as Beneficiary
11	Malin	Designed within an existing organizational structure		Evidence-based	Participation as Beneficiary	Participation as Beneficiary
12	IMD	A new formal public sector initiative		Knowledge-based	Actor's credibility and competencies	Passive
13	GSDMA	A new formal public sector initiative		Knowledge-based	Actor's credibility and competencies	Passive
14	TATA	A for-profit private sector enterprise		Knowledge-based	Actor's credibility and competencies	Passive

		Decision making processes			Participation (Designing, Planning, Operations, Execution)	
Case No.	**Initiative**	Organizational structure/design	Envisioning participation	Type of input informing decisions	Trigger for Participation	Type of Participation
15	TISS	A not-for-profit private sector enterprise	Combination of levels	Needs-based	Actor's credibility and competencies	Passive
16	IGWDP	A not-for-profit private sector enterprise	Design Level	Knowledge-based	Actor's credibility and competencies	Interactive
17	Young Mizo Association	A not-for-profit private sector enterprise	Conception level	Needs-based	Philosophy/Faith/Religion	Active
18	Vistapit Mukti Vahini	A collective	Conception level	Knowledge-based	Recognising the risk and need for action	Active
19	ANANDI	A not-for-profit private sector enterprise	Combination of levels	Needs-based	Recognising the risk and need for action	Passive
20	SEWA	A not-for-profit private sector enterprise	Combination of levels	Needs-based	Actor's credibility and competencies	Active
21	Assam RVC	A collective	At all levels	Needs-based	Recognising the risk and need for action	Interactive
22	Timbaktu Collective	A collective	At all levels	Knowledge-based	Recognising the risk and need for action	Active
23	mHS	A not-for-profit private sector enterprise	During Implementation	Evidence-based	Participation as Beneficiary	Participation as Beneficiary

		Decision making processes			Participation (Designing, Planning, Operations, Execution)	
Case No.	**Initiative**	Organizational structure/design	Envisioning participation	Type of input informing decisions	Trigger for Participation	Type of Participation
24	Boond	A for-profit private sector enterprise	Combination of levels	Evidence-based	Actor's credibility and competencies	Interactive
25	Surat Health	Designed within an existing organizational structure	Conception level	Evidence-based	Recognising the risk and need for action	Interactive
26	Alappuzha waste management	Designed within an existing organizational structure	At all levels	Needs-based	Recognising the risk and need for action	Active
27	NCRC	Designed within an existing organizational structure	Combination of levels	Knowledge-based	Actor's credibility and competencies	Interactive
28	OSDMA	A new formal public sector initiative	Combination of levels	Knowledge-based	Recognising the risk and need for action	Active
29	CLTS	Designed within an existing organizational structure	Design Level	Evidence-based	Recognising the risk and need for action	Active

		Implementation			Knowledge Management		Scaling deep vs. scaling wide
Case No.	**Initiative**	Planning	Operations	Resource Management	Dominant Knowledge System	Knowledge Brokerage/transfer	
1	Lakshman Singh	Integrated	Decentralised	Combination	Traditional	Outside to inside	Horizontal-Scope
2	Hiware Bazaar	Standardised	Decentralised	Combination	Technical	Outside to inside	None
3	Norphel	Integrated	Decentralised	Combination	Technical	Inside to Outside	Horizontal- Beneficiary
4	Seechewal Initiative	Integrated	Decentralised	Combination	Technical	Inside to Outside	Horizontal-Scope
5	Rajendra Singh	Integrated	Decentralised	Combination	Traditional	Inside to Outside	Horizontal-Both
6	Pani Panchayat	Integrated	Decentralised	Combination	Technical	Inside to Outside	Vertical
7	Matsya Mitra	Standardised	Centralised	Combination	Technical	Outside to inside	Horizontal- Beneficiary

		Implementation			Knowledge Management		Scaling deep vs. scaling wide
Case No.	**Initiative**	Planning	Operations	Resource Management	Dominant Knowledge System	Knowledge Brokerage/transfer	
8	Dharavikas	Standardised	Centralised	Combination	Technical	Outside to inside	Both
9	Sabujayan	Standardised	Centralised	Combination	Technical	Outside to inside	Both
10	Jal Yukta Gaav Abhiyan	Standardised	Centralised	Combination	Technical	Outside to inside	Both
11	Malin	Standardised	Centralised	Combination	Technical	Outside to inside	None
12	IMD	Standardised	Centralised	Combination	Technical	Two Ways spill over	Both
13	GSDMA	Standardised	Centralised	Combination	Technical	Two Ways spill over	Horizontal-Scope
14	TATA	Standardised	Centralised	Combination	Combination of traditional and Technical	Two Ways spill over	Horizontal-Both

		Implementation			Knowledge Management		Scaling deep vs. scaling wide
Case No.	**Initiative**	Planning	Operations	Resource Management	Dominant Knowledge System	Knowledge Brokerage/transfer	
15	TISS	Integrated	Decentralised	Combination	Combination of traditional and Technical	Two Ways spill over	Both
16	IGWDP	Integrated	Decentralised	Combination	Technical	Two Ways spill over	Both
17	Young Mizo Association	Standardised	Decentralised	Combination	Technical	Two Ways spill over	Horizontal- Beneficiary
18	Vistapit Mukti Vahini	Integrated	Decentralised	Combination	Philosophical-Ethnic values or Rights based	Two Ways spill over	Horizontal- Beneficiary
19	ANANDI	Standardised	Centralised	Combination	Technical	Outside to inside	Horizontal-Scope
20	SEWA	Standardised	Decentralised	Combination	Technical	Inside to Outside	Horizontal-Both
21	Assam RVC	Integrated	Decentralised	Communications	Technical	Insular	Horizontal-Scope
22	Timbaktu Collective	Integrated	Decentralised	Financial resources	Combination of traditional and Technical	Inside to Outside	Horizontal-Scope
23	mHS	Standardised	Centralised	Combination	Technical	Outside to inside	None

		Implementation			Knowledge Management		Scaling deep vs. scaling wide
Case No.	**Initiative**	Planning	Operations	Resource Management	Dominant Knowledge System	Knowledge Brokerage/transfer	
24	Boond	Integrated	Decentralised	Combination	Technical	Outside to inside	Horizontal- Beneficiary
25	Surat Health	Integrated	Decentralised	Combination	Combination of traditional and Technical	Two Ways spill over	Horizontal-Scope
26	Alappuzha waste management	Integrated	Decentralised	Combination	Technical	Outside to inside	Both
27	NCRC	Integrated	Decentralised	Networks and partners	Combination of traditional and Technical	Two Ways spill over	Horizontal-Scope
28	OSDMA	Integrated	Decentralised	Combination	Technical	Two Ways spill over	Both
29	CLTS	Integrated	Decentralised	Communications	Technical	Outside to inside	Horizontal- Beneficiary

		Challenges and Enablers		Outcome	
Case No.	**Initiative**	Challenges	Enablers	Type or Nature	Orientation
1	Lakshman Singh	Resources	Context	Episodic	Process Oriented
2	Hiware Bazaar	Context	Power & Agency	Transformative	Process Oriented
3	Norphel	Resources	Context	Episodic	Process Oriented
4	Seechewal Initiative	Context	Power & Agency	Developmental	Process Oriented
5	Rajendra Singh	Resources	Context	Episodic	Process Oriented
6	Pani Panchayat	Resources	Context	Episodic	Process Oriented
7	Matsya Mitra	Context	Power & Agency	Developmental	Target Oriented
8	Dharavikas	Context	Power & Agency	Episodic	Target Oriented

		Challenges and Enablers		Outcome	
Case No.	**Initiative**	Challenges	Enablers	Type or Nature	Orientation
9	Sabujayan	Context	Power & Agency	Developmental	Target Oriented
10	Jal Yukta Gaav Abhiyan	Context	Power & Agency	Episodic	Target Oriented
11	Malin	Context	Power & Agency	Episodic	Target Oriented
12	IMD	Context	Power & Agency	Developmental	Target Oriented
13	GSDMA	Context	Power & Agency	Developmental	Target Oriented
14	TATA	Power & Agency	Resources	Developmental	Target Oriented
15	TISS	Context	Resources	Transformative	Process Oriented
16	IGWDP	Context	Resources	Developmental	Target Oriented

		Challenges and Enablers		Outcome	
Case No.	**Initiative**	Challenges	Enablers	Type or Nature	Orientation
17	Young Mizo Association	Power & Agency	Context	Developmental	Process Oriented
18	Vistapit Mukti Vahini	Resources	Context	Transformative	Process Oriented
19	ANANDI	Resources	Context	Episodic	Process Oriented
20	SEWA	Resources	Context	Transformative	Process Oriented
21	Assam RVC	Context	Resources	Transformative	Process Oriented
22	Timbaktu Collective	Resources	Context	Transformative	Process Oriented
23	mHS	Resources	Context	Episodic	Target Oriented
24	Boond	Resources	Power & Agency	Developmental	Target Oriented
25	Surat Health	Context	Power & Agency	Transformative	Target Oriented

		Challenges and Enablers		Outcome	
Case No.	**Initiative**	Challenges	Enablers	Type or Nature	Orientation
26	Alappuzha waste management	Context	Resources	Transformative	Process Oriented
27	NCRC	Power & Agency	Resources	Developmental	Process Oriented
28	OSDMA	Context	Power & Agency	Transformative	Target Oriented
29	CLTS	Power & Agency	Resources	Episodic	Process Oriented

		Sustainability			Leadership	
Case No.	**Initiative**	Aspects of Sustanability	Socio-economic Sustainability	Environmental Sustainability	Leadership Approaches	Leader-Actors-Beneficiary relations
1	Lakshman Singh	None	Low	None	Exceptional	Leader as Enabler
2	Hiware Bazaar	Provision of maintaining structures and addressing the risks.	High	Sustainable development	Structured	Participative/Relational
3	Norphel	None	Low	Sustainable development	Exceptional	Leader as Enabler

		Sustainability			Leadership	
Case No.	**Initiative**	Aspects of Sustanability	Socio-economic Sustainability	Environmental Sustainability	Leadership Approaches	Leader-Actors-Beneficiary relations
4	Seechewal Initiative	Provision of maintaining structures and addressing the risks.	High	Sustainable development	Exceptional	Leader as Enabler
5	Rajendra Singh	Provision of maintaining structures and addressing the risks.	Low	Sustainable development	Exceptional	Leader as Enabler
6	Pani Panchayat	None	Low	None	Exceptional	Leader as Enabler
7	Matsya Mitra	Provision of maintaining structures and addressing the risks.	Low	Sustainable development	Structured	Leader-Centric
8	Dharavikas	Provision of maintaining structures and addressing the risks.	Low	None	Structured	Leader-Centric
9	Sabujayan	Provision of maintaining structures and addressing the risks.	Low	Sustainable development	Structured	Leader-Centric
10	Jal Yukta Gaav Abhiyan	Provision of maintaining structures and addressing the risks.	Low	None	Structured	Leader-Centric
11	Malin	Provision of maintaining structures and addressing the risks.	None	None	Structured	Leader-Centric

		Sustainability			Leadership	
Case No.	**Initiative**	Aspects of Sustanability	Socio-economic Sustainability	Environmental Sustainability	Leadership Approaches	Leader-Actors-Beneficiary relations
12	IMD	Provision of maintaining structures and addressing the risks.	High		Structured	Leader-Centric
13	GSDMA	Provision of maintaining structures and addressing the risks.	High		Structured	Leader-Centric
14	TATA	Provision of maintaining structures and addressing the risks.	High	Sustainable development	Structured	Leader-Centric
15	TISS	Provision of maintaining structures and addressing the risks.	High		Structured	Participative/Relational
16	IGWDP	Provision of maintaining structures and addressing the risks.	Low	None	Shared	Leader as Enabler
17	Young Mizo Association	Provision of maintaining structures and addressing the risks.	High		Shared	Participative/Relational
18	Vistapit Mukti Vahini	Provision of maintaining structures and addressing the risks.	High		Shared	Participative/Relational
19	ANANDI	None	Low		Shared	Leader as Enabler
20	SEWA	Provision of maintaining structures and addressing the risks.	High		Shared	Participative/Relational

		Sustainability			Leadership	
Case No.	**Initiative**	Aspects of Sustanability	Socio-economic Sustainability	Environmental Sustainability	Leadership Approaches	Leader-Actors-Beneficiary relations
21	Assam RVC	Sustained outcomes	High	Sustainable development	Structured	Participative/Relational
22	Timbaktu Collective	Institutional sustainability	High	Sustainable development	Shared	Leader as Enabler
23	mHS	Social capital formation	Low	Not Applicable	Structured	Leader-Centric
24	Boond	Provision of maintaining structures and addressing the risks.	High	Sustainable development	Structured	Leader as Enabler
25	Surat Health	Provision of maintaining structures and addressing the risks.	High	Sustainable development	Shared	Participative/Relational
26	Alappuzha waste management	Social capital formation	High	Sustainable development	Structured	Leader as Enabler
27	NCRC	Social capital formation	High	Sustainable development	Shared	Leader as Enabler
28	OSDMA	Provision of maintaining structures and addressing the risks.	High	Not Applicable	Shared	Leader as Enabler
29	CLTS	Environmental sustainability	None	Sustainable development	Shared	Leader as Enabler

Annexure 2: Summary Statistics of the Primary Case Studies

Type of Actors	Count of Initiative
Non-Governmental not-for profit Institution	8
Individual part of administration	5
Government Initiative	4
Individual	4
Government Institution	3
Private for-profit company	2
Academic Institution	1
Individual efforts resulting in a movement	1
Political Leader	1
Grand Total	**29**

Context and Triggers

Scope of project	Count of Initiative
Disaster	18
Development	11
Grand Total	**29**

Contextualisation	Count of Initiative
Specific	17
Generic	12
Grand Total	**29**

Existing Risk Conditions	Count of Initiative
Physical exposure to risk	21
Socio-economic or cultural/religious vulnerability	6
Capacities to cope	2
Grand Total	**29**

Primary Triggers for action	Count of Initiative
Risk perception	10
Post disaster urgency	8
Personal motivation	4
Availability of funds/programmatic requirement	4
Climate adaptation	1
Role/Job requirement	1
Community based dearth of leadership	1
Grand Total	**29**

Time of Action	Count of Initiative
Mitigation and Planning	14
Complete Management Cycle	9
Rehabilitation	2
Recovery	2
Preparedness and early warning	2
Grand Total	**29**

Decision-making Processes

Organisational Structure	Count of Initiative
Designed within an existing organisational structure	9
A not-for-profit private sector enterprise	6
No apparent organisational structure	5
A new formal public-sector initiative	4
A collective	3
A for-profit private sector enterprise	2
Grand Total	**29**

Envisioning Participation	Count of Initiative
Combination of levels	7
Conception level	6
During Implementation	4
At all levels	4
Design Level	2
Others	6
Grand Total	**29**

Type of Knowledge informing actions	Count of Initiative
Needs-based	14
Knowledge-based	8
Evidence-based	7
Grand Total	**29**

Participation

Triggers enabling participation	Count of Initiative
Actor's credibility and competencies	12
Recognising the risk and need for action	9
Participation as Beneficiary	6
Philosophy/Faith/Religion	2
Grand Total	**29**

Type of participation	Count of Initiative
Interactive	10
Active	7
Passive	6
Participation as Beneficiary	6
Grand Total	**29**

Implementation

Type of planning	Count of Initiative
Integrated	16
Standardised	13
Grand Total	**29**

Operational design	Count of Initiative
Decentralised	19
Centralised	10
Grand Total	**29**

Key Resource Management Strategy	Count of Initiative
Combination	25
Communications	2
Networks and partners	1
Financial resources	1
Grand Total	**29**

Orientation	Count of Initiative
Process Oriented	16
Target Oriented	13
Grand Total	**29**

Knowledge Management

Dominant Knowledge System	Count of Initiative
Technical	21
Combination of traditional and Technical	5
Traditional	2
Philosophical-Ethnic values or Rights based	1
Grand Total	**29**

Brokerage / Transfer	Count of Initiative
Outside to inside	12
Two Ways spill over	10
Inside to Outside	6
Insular	1
Grand Total	**29**

Scaling

Deep vs. Wide	Count of Initiative
Horizontal-Scope	8
Both	8
Horizontal- Beneficiary	6
None	3
Horizontal-Both	3
Vertical	1
Grand Total	**29**

Challenges and Enabling Factors

Key Challenges	Count of Initiative
Context	15
Resources	10
Power & Agency	4
Grand Total	**29**

Key Enabling Factors	Count of Initiative
Power & Agency	12
Context	10
Resources	7
Grand Total	**29**

Outcomes

Nature of Outcomes	Count of Initiative
Developmental	10
Episodic	10
Transformative	9
Grand Total	**29**

Sustainability

Key Aspect of Sustainability	Count of Initiative
Provision of maintaining structures and addressing the risks.	19
None	4
Social capital formation	3
Environmental sustainability	1
Sustained outcomes	1
Institutional sustainability	1
Grand Total	**29**

Socio-Economic Sustainability	Count of Initiative
High	16
Low	11
None	2
Grand Total	**29**

Environmental Sustainability	Count of Initiative
Sustainable development	14
Resource management	7
None	6
Not Applicable	2
Grand Total	**29**

Leadership Forms

Leadership Approaches	Count of Initiative
Structured	14
Shared	10
Exceptional	5
Grand Total	**29**

Leader Actor Beneficiary Relationship	Count of Initiative
Leader as Enabler	13
Leader-Centric	9
Participative/Relational	7
Grand Total	**29**

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