



Disaster Resilience

Overview

Effective disaster resilience necessitates strong governance in a number of areas and encapsulates disaster preparedness, rescue, relief and reconstruction. Governments are typically the primary decision-makers in the disaster management process and are the most empowered and accountable stakeholders in a crisis. National and local budgets should have designated emergency funds for disaster reduction, relief and reconstruction. Expedited decision protocols and procurement and flexible financial systems can accelerate efficient relief and reconstruction efforts. Inter-agency collaboration and accountability mechanisms facilitate the responsible and effective disbursement of aid. In addition, disaster resilience is not limited to rescue and rehabilitation but also to disaster preparedness and risk mitigation. As such, effective disaster resilience is defined by the following characteristics:

- 1. Comprehensive and integrative:** Disaster resilience is a multi-faceted and ongoing task of governance and should be integrated into national and local policies with the necessary legal, technical and financial support for their enforcement.
- 2. Flexible and responsive:** Due to the unpredictable nature of disasters, the systems and policies in place should allow for a certain degree of adaptability for quick and efficient decision-making.
- 3. Accountable and collaborative:** There should be a clear designation of rules and roles to ensure effectiveness and accountability and a broad range of stakeholders - citizens, NGOs, development institutions and the private sector — should be involved in disaster reduction, preparation and resilience.

Historically, the concept of disaster governance has evolved from one grounded in reaction and prevention to a comprehensive view of resilience. The evolution can be clearly traced across the most prominent international frameworks from the 1990s' International Decade for Natural Disaster Reduction to the prevention-focused Hyogo Framework of the early 2000s to the most recent Sendai Framework. Modern views of disaster governance stress that disaster

resilience is a shared responsibility by all sectors and that a holistic view of the types of disasters and the appropriate responses are necessary for effective disaster resilience.

Scope

The term “disasters” can encompass many different types of crises, for the purpose of the sourcebook, disasters will refer to emergencies or crises that represent large-scale shock events rendering a significant portion of the population vulnerable and without necessities such as water or shelter. Adapting a framework from the United Nations International Strategy for Disaster Reduction, the types of disasters covered in this note are as follows:¹

- **Natural:** Earthquake, landslide, tsunami, hurricane, cyclones, wildfire, flood, drought
- **Biological:** Pandemic, infestations of pests
- **Technological:** Cyberattacks, chemical substance, radiological agents
- **Societal:** Conflict, stampedes, acts of terrorism

Importance of Disaster Preparedness, Mitigation and Resilience

The relationship between governance and disaster risk is reciprocal and cyclical. Countries with poor governance tend to lack disaster resilience measures, while disasters can further weaken poor governance. The World Bank notes that “global losses due to adverse natural events were estimated at \$4.2 trillion between 1980 and 2014. During this period, such losses have increased rapidly, rising from \$50 billion a year in the 1980s to nearly \$200 billion a year in the last decade.”² While poorer communities are the most vulnerable to human and capital losses, these disasters have also derailed development and progress for a number of countries in all regions and at various economic levels.

Beyond natural disasters, other types of crises can also yield real and significant losses to human life and the economy. By the end

1. “Disaster Risk Management for Health,” World Health Organization and United Nations International Strategy for Disaster Reduction, May 2011, https://www.who.int/hac/events/drm_fact_sheet_overview.pdf.

2. “Disaster Risk Management Overview,” The World Bank, April 2020, <http://www.worldbank.org/en/topic/disasterriskmanagement/overview>.

of 2020, nearly 2 million people around the world had died of the novel coronavirus (COVID-19).³ This health crisis has caused reverberating effects on the global economy as millions have lost their jobs, companies have closed and stock markets drastically fell. The resulting economic downturn created an acute need for government services as many people lost their ability to provide food, shelter and healthcare for their families. During the COVID-19 crisis, citizens have turned to their governments to curb the pandemic, enact policy and economic measures and provide for their basic needs.

Modern Challenges and Opportunities

Climate change is harmful to disaster resilience efforts in two ways. First, it will continue to create highly volatile weather conditions that can strengthen disasters or increase their frequency. Secondly, climate change disproportionately affects the poorest countries and weakens their abilities to prepare and respond to disasters in the first place. As states continue to build their disaster resilience systems, it is crucial they consider the impact of climate change on disasters and the countries' abilities to respond to them.

The globalized nature of our world also leads to many crises being irrelevant to national borders. Disasters can begin due to regional or global ripple effects, and as such, typically necessitate a multilateral response. Governments must deeply consider how to interact with regional and global partners where they have no decision-rights but are impacted by other states' policies and responsive measures. The modern challenge of disaster response, therefore, necessitates diplomacy and cooperation in a way that was unrealized in decades prior.

Cross-cutting Themes

Infrastructure

Other than human deaths, the most visible impacts of disasters are seen in the destruction of infrastructure. Both public and private infrastructure can be damaged during a shock event, and governments must manage a complex path to reconstruction. After a disaster, large demand for infrastructure services and a dire need to rebuild as quickly as possible can lead to inflated prices and poor standards that are susceptible to future shocks. Governments must support and monitor the construction industry, expand opportunities for reconstruction and set acceptable standards so that rebuilt infrastructure will be able to withstand future crises.

Human capital and economic recovery

After a crisis, societies must grapple with rebuilding not only their physical infrastructure but also reigniting their human capital market. Effects on the human capital market can stunt the economic and social development of a state as much, if not more, than damage to physical infrastructure. The longer arc of this impact can draw policymakers to delay addressing human capital. On the contrary, these long-term effects require immediate action. Data and research have found that disasters typically impact the human capital system by reducing the working population due to casualties or injuries; pausing education and employment and shifting overall employment dynamics; and creating heavy migration outflows, particularly of the highly educated.

Inclusion and poverty reduction

Disasters can disproportionately affect the poor and exacerbate existing vulnerabilities. Marginalized or poor communities typically live with more insecure infrastructure, have unstable employment and lack shock-mitigating measures such as crop or health insurance. These unique risks necessitate a pro-poor approach in both disaster preparedness and recovery. Some steps governments can take to better incorporate inclusive pro-poor policies include:

- Develop and disseminate low-cost technologies and methodologies to help quickly revitalize income sources
- Ensure that reconstruction is inclusive by breaking the isolation of rural areas and engaging minority groups
- Promote pro-poor land, housing and ownership rights
- Ensure that work programs are accessible to women and older girls

Sub-functions or Elements

While often spoken interchangeably, there are key sub-functions of disaster resilience that necessitate distinct capacities, mandates, skillsets, structures, attention and financing. Without established mechanisms to create distinctions in these functions, various lines of effort can cannibalize each other's resources.

Mitigation and prevention

Disaster mitigation and prevention are often seen as the first step in disaster resilience. Done effectively, they can have significant cost-minimizing and lifesaving impacts for a state. A 2018 report studied 23 years of grant funding from various US agencies including the Federal Emergency Management Agency (FEMA), the Economic Development Agency and the Department of Housing and Urban Development (HUD). The report found that "every \$1 invested in disaster mitigation by three federal agencies saves society \$6."⁴ Similar studies in

3. "COVID-19 Dashboard by the Center for Systems Science and Engineering," Johns Hopkins University & Medicine, 2020, <https://coronavirus.jhu.edu/map.html>.

4. Lori Lightbody and Matthew Fuchs, "Every \$1 Invested in Disaster Mitigation Saves \$6," Pew Charitable Trusts, January 2018, <https://www.pewtrusts.org/en/research-and-analysis/>

different countries exhibit various ratios, but the underlying premise remains that mitigation and prevention can be effective mechanisms for government to reduce the human, environmental and economic impacts of future disasters. Today, public opinion has shifted to view mitigation and prevention less as an effective government strategy but rather as a core government obligation. From the annual forest fires in California to isolated events such as the 2020 explosion in Beirut, disasters are often viewed as failures of government responsibility. As such, governments must consider disaster prevention as a core function. It is the government's central duty to ensure mitigation and that actions taken are not only safe but also proactive in their pursuit of a safer well-being for citizens.

Rescue, relief and recovery

Often seen as the most public-facing component, disaster rescue, relief and recovery call for the prompt and efficient delivery of life-saving services. Emergency management forms the core of this sub-function and requires keen consideration of standby capacity, contingency planning and logistics. Expediency is critical as the majority of loss of life occurs in the 24-48 hours directly following a catalytic shock event.⁵ The need for quick response is hampered by the complexity and ever-changing nature of an emergency context. Communication and information channels are compromised, and the logistical networks can be damaged to the point of being unusable. Establishing contingency plans and clear authorities and policies are essential to saving valuable time in an emergency. Many countries form an Emergency Management Agency or Emergency Operations Centers to act as the primary authority for disaster response.⁶

Long-term reconstruction

In addition to the immediate needs following a disaster, governments are tasked with rebuilding physical infrastructure, revitalizing the economy, and returning society to a state of relative normalcy. These tasks, though brought on by a catalytic shock event, are typically long-term projects that require significant resources and time. The needs and timespan of relief efforts are fundamentally different from those of reconstruction. Governments should rebuild towards social development, economic vitality and climate resilience, not to the return of the status-quo. The needs of post-disaster contexts can be dire but represent a distinct opportunity to rebuild a stronger and more resilient society. The implementation of higher construction

standards, increased homeownership and promotion of skills training and industry expansion are not only critical to reconstruction efforts but can spur longer-term economic growth and social development. Key considerations of the reconstruction process include:

- Rebuild major infrastructure assets such as roads, bridges, government buildings, community utilities
- Address joblessness and the new needs of the human capital market
- Promote return migration
- Cater to the mental and psychological impacts on the population

Institutional Arrangements

Institutional governance arrangements for disaster response and resilience should be structured around the needs of the state and the existing gaps in current government institutions. A World Bank assessment of global lessons from post-disaster contexts found that “a fully empowered reconstruction agency with delegated powers of government on procurement, financial management, etc., and staffed with capable technical specialists is critical for success.”⁷ The needs of each country, each disaster and each catastrophic event are distinct but must be taken into consideration when developing an appropriate structure of the reconstruction authority. These agencies are centrally responsible for the reconstruction and therefore expected to deliver visibly and quickly. In practice, reconstruction agencies can become inefficient, ineffective and further gridlock government capacity. Many of these failures can be attributed to the fact that these agencies are typically new structures with an ambiguous mandate that runs parallel to existing institutional processes. Building a successful reconstruction agency requires clear structures that are complementary to existing institutions and well-attuned to the needs of the people.

Roles and responsibilities

Creating clear lines of agency and responsibility are critical in disaster response. Typically, states create a reconstruction agency or assign a specific committee to oversee management efforts. This agency must be given the legal, political and budgetary authority to make expedient decisions and be a clear point of contact for response and reconstruction. To the extent possible, the agency should have a clear legal mandate with well-defined functions, funding mechanisms and responsibilities. Establishing guidelines on the responsibilities

articles/2018/01/11/every-\$1-invested-in-disaster-mitigation-saves-\$6.

5. “Disaster Preparedness for Effectiveness Response: Guidance and Indicator Package for Implementing Priority Five of the Hyogo Framework.” United Nations Secretariat of the International Strategy for Disaster Reduction (UNISDR) and the United Nations Office for Coordination of Humanitarian Affairs, 2008, https://www.unisdr.org/files/2909_Disasterpreparednessforeffectiveresponse.pdf.

6. “Emergency and Disaster Management,” United Nations Office for Outer Space Affairs, 2020 <http://www.un-spider.org/risks-and-disasters/emergency-and-disaster-management>.

7. Abhas Jha, “Rebuilding communities after disasters – four and a half lessons learned,” World Bank Blogs, The World Bank Group, 2019, <https://blogs.worldbank.org/sustainablecities/rebuilding-communities-after-disasters-four-and-half-lessons-learned>.

of agencies and their requirements to act are also foundational to a coordinated reconstruction effort. This includes clear responsibilities and roles of various agencies, as well as a process to determine responsibility when assets or hazards cut across jurisdictional boundaries. Clarity of process not only facilitates efficient delivery but can also provide governments the necessary structure to explain how decisions were made when the public inevitably asks questions about reconstruction priorities.

Coordination

The reconstruction authority should have proper representation from relevant agencies and sectors to facilitate expedient decision-making and information sharing. As disaster response and reconstruction requires cooperation from various government agencies and internal and external actors, establishing a coordinated governance structure at the outset can improve efficiency early on in a crisis.

Budgets and resourcing

Disaster resourcing can consist of both established financing mechanisms and responsive financing made available at the onset of the disaster. It is important to consider both types of mechanisms and leverage a diversity of financial instruments to provide adaptability in resourcing.

- **Internal reconstruction budgets:** Allocating a specific reconstruction budget provides the government with a pre-defined amount of readily available resources.
- **Responsive external financing:** It is important to develop appropriate coordination mechanisms and assess the various streams of international and regional financing to understand their distinct features and limitations.

Accountability

Rebuilding after a disaster can be a highly contentious period for a state. While the government faces a diminished capacity to deliver, citizens need their governments more than ever. Promoting transparency can help governments deter corruption and foster trust between the state and citizens. This trust is critical to building momentum and inclusiveness in the reconstruction process. Financial allocations must be traceable and verifiable. The influx of financing from a wide diversity of donors can create a vulnerable environment for corruption and inefficiency. As such, whether through a transparent budget process or a tracking interface for citizens, allocations to the reconstruction effort should have proper accountability mechanisms. The system

should include both government and private allocations and track reconstruction allocations across different delivery milestones - design, financing, delivery and evaluation. The traceability of financing is vital to sustaining citizen trust in the reconstruction process.

Operational elements

Risk assessments

Assessing and planning responses to any potential disaster involves two aspects. First, by examining the probability and impact of different potential events, governments gain an understanding of which of these should be prioritized in terms of budgetary and human resources. Secondly, the governance and institutional arrangements for those departments assigned to respond to potential disasters need to fit into an overarching national risk management strategy for issues including natural hazards, diseases, major accidents and malicious attacks.⁸ States must develop a systemic yet dynamic risk assessment framework to recognize and mitigate a vast array of threats effectively. The results of risk assessments must be tied to actionable decision-making and financing mechanisms to be effective. The UNISDR states that “a holistic risk assessment that considers all relevant hazards and vulnerabilities, both direct and indirect impacts, and a diagnosis of the sources of risk will support the design of policies and investments that are efficient and effective in reducing risk.”⁹

When conducting a risk analysis, it is imperative to consider the government’s systems as well as the risks to the private sector, specific communities and individuals. The private sector has developed several different risk analysis and mitigation frameworks to assist in identifying organizational or sector-specific vulnerabilities. Governments should work closely with these partners to ensure that these risks are recognized and prepared for as they can do as much, if not more, damage to critical infrastructure than direct shocks to public systems.

Prioritization and sequencing

In the aftermath of a natural disaster, governments are faced with a number of critical needs and diminished capacity to deliver. Developing a national framework and sector-specific recovery plans can greatly assist countries that must sequence the numerous and competing priorities of a crisis context.¹⁰ Global lessons demonstrate that the most successful reconstruction efforts are those that recognize that they cannot do it all and establish a mechanism by

8. United Kingdom Cabinet Office National Register, National Risk Register of Civil Emergencies, 2017 edition, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/644968/UK_National_Risk_Register_2017.pdf.

9. “Words into Action Guidelines: National Disaster Risk Assessment – Governance System, Methodologies, and Use of Results,” United Nations Office for Disaster Risk Reduction, 2017, https://www.unisdr.org/files/52828_nationaldisasterriskassessmentwiagu.pdf.

10. Becky Carter, “Lessons learned for national state entities for recovery and reconstruction.” Governance, Social Development, Humanitarian, Conflict, August 2015, <https://gsdrc.org/publications/lessons-learned-for-national-state-entities-for-recovery-and-reconstruction/>.

which to prioritize and sequence efforts efficiently. While there is an inclination to focus solely on the rebuilding effort after a disaster, a national framework is needed to guide the coordination of efforts and establish guidelines for future catastrophes. As outlined in the Sendai Framework, “developing national recovery frameworks in advance of disasters...is necessary to avoid the post-disaster political pressures, financial constraints, knowledge gaps and responsibility confusion that so often impedes the recovery process.”¹¹ Informed by a post-disaster assessment of needs and assets, the framework should outline the vision and prioritized goals for the reconstruction, as well as how it relates to the country’s broader development and progress.

Financing

Natural disasters can strain budgetary resources and further aggravate a country’s debt dependence. Accessing and managing a diversified funding pool is critical to delivering on the reconstruction effort. While states typically retrofit their standard budgetary process to the reconstruction effort, this can lead to lengthy delays and leakage vulnerabilities. Setting the financial terms early on creates greater efficiency and promotes accountability in the distribution and delivery of resources.¹²

- **Government budgets:** Developing legal mechanisms to streamline access to financing is central to supporting the recovery and reconstruction process. This includes integrating disaster risks into the government’s medium-term fiscal framework, developing clear rules for in-year adjustments and allowing reallocation across and within the budgets.
- **Multi-donor trust funds:** Many governments have used multi-donor trust funds to facilitate the discussion and distribution of finances in a coordinated yet agile manner. These pooled funds bring multiple stakeholders under a single programmatic vision and results framework while reducing transaction costs and risk exposure.
- **Community block grants and social investment funds:** Social investment funds or community block grants can provide governments a way to decentralize the prioritization process and keep financing flexible based on citizens’ needs.

Supply chain and platforms of delivery

Supply chains are critically important to disaster response. At the onset of a disaster, transportation and logistical networks can be disrupted by physical blockages or the lack of information and communication brought on in a crisis scenario. Building supply chain resilience is necessary to ensure that the delivery of critical goods and services

continues.¹³ Delivery during disasters must be low cost, highly efficient and adaptable to the changing environment. To do so, governments must review what currently exists in the logistical ecosystem, use what can be made available and build capacity where needed. The private sector can be important partners in supply chain resilience, as many companies have already built and refined their networks. Fortifying the supply chain requires not only an understanding of road networks and topography but an awareness of the supply and demand flows of products and people in emergencies, including bottlenecks and dependencies.¹⁴ Governments must also consider the supply chains available to access the most marginalized – as in many cases, these communities are most in need. While these networks may be based on low-tech modalities and rely on societal relationships, they are every bit as important as understanding how to navigate the major highway networks. As such, supply chain planning must consider how to reach all vulnerable populations efficiently and effectively.

Communication and information flows

Communications is typically a missing element of many reconstruction efforts. Governments usually view transparency and communications as a reactionary or secondary function of government, while in reality, it is critical to the success of reconstruction. Governments should actively communicate progress to citizens through both specific releases and by establishing a mechanism for citizens to review the status and progress of reconstruction activities. In many countries, this is done through reconstruction portals or citizen councils. Increased transparency on the status of the reconstruction can prevent duplication of efforts, foster coordination among ministries and organizations and promote greater government accountability.

Stakeholders

The nature of crises necessitates a multi-stakeholder response, and many states see an influx of involved actors and agencies at the onset of a crisis. In many cases, defining a clear partnership framework that clarifies roles, responsibilities and terms is central. Reconstruction efforts can be fragmented due to the urgency to deliver. There is a strong imperative to clearly define the terms of engagement, financing and investment. Experiences from past disasters show that absent a government-led coordination mechanism, NGOs, private donors, multilaterals and others can create parallel systems and fragmented efforts. Engaging with agencies early in the process can

11. “Bringing Resilience to Scale,” Global Facility for Disaster Reduction and Recovery, 2015, <https://sustainabledevelopment.un.org/content/documents/1948GFDRR%20ANNUAL%20REPORT%202014.pdf>.

12. Abhas Jha. “Rebuilding communities after disasters – four and a half lessons learned.” World Bank Blogs, World Bank Group. 2019.

13. “Supply Chains Need to Develop Immunity to Natural Disasters,” The London School of Economics and Political Science, 2020, <https://blogs.lse.ac.uk/businessreview/2020/05/15/supply-chains-need-to-develop-immunity-to-natural-disasters/>.

14. “Supply Chain Resilience Guide,” United States Department of Homeland Security - Federal Emergency Management Agency, November 2010, <https://www.fema.gov/sites/default/files/2020-07/supply-chain-resilience-guide.pdf>.

improve coordination and leverage the distinct specialties of different groups to fill gaps in government capacity and complement localized knowledge with global expertise and best practice (see Table 1).¹⁵

Conclusion

In a disaster, the conditions in which a state can perform its core functions and duties are compromised, but the necessity of it to do so is amplified. Improving disaster resilience requires addressing the fundamental challenges at play. While international movements support the comprehensive and collaborative nature of disaster response, it is also important to highlight the unequivocal role of the state. As of today, the state is still the first line of defense and offense when

tackling issues around natural disasters. As such, it must recognize disaster reduction, relief, and rehabilitation as an immutable function of the state. The link between disasters and development supports this view and demands complementary yet independent laws, authorities and systems. The idea that states must adapt what they do and how they do it in a disaster context undermines the ability of the state and underplays the inevitability of disasters. For if the state fundamentally exists to provide for the protection and sustained development of its constituents, its responsibility is to create a system that is robust, adaptive and, overall, resilient.

Table 1: Roles of Government and Non-Government Stakeholders for Disaster Response and Resilience

Actors	Typical Roles
Government	<ul style="list-style-type: none"> • Manage the overall disaster effort • Develop disaster policies, plans, authorities and protocols • Sequence and prioritize actions in line with development agendas • Build domestic capacity for risk mitigation, emergency management, etc. • Communicate timely and accurate information to citizens • Sustainably deliver immediate and long-term services to communities
Private Sector	<ul style="list-style-type: none"> • Supplement government efforts through provision or donation of goods, resources, supply chain access and communication systems • Ensure continuity of essential services such as electricity, telecommunication networks and transportation networks • Assist in a return to normalcy through the revival of the local economy and employment
Banking & Finance Institutions	<ul style="list-style-type: none"> • Provide access to risk financing and insurance mechanisms • Offer financing and/or lines of credit to individuals and businesses • Facilitate government housing grants, cash-for-work programs, etc.
NGOs or Charities	<ul style="list-style-type: none"> • Deliver rapid and responsive support for immediate needs (food, water, shelter, emergency services, etc.) • Deploy human capital and resources where government services may be lacking • Raise awareness and funding from regional and international benefactors • Disperse small grants for specific priorities, communities or crisis needs
Regional and Multilateral Organizations	<ul style="list-style-type: none"> • Offer knowledge on global best practices • Supplement government efforts and support broader development objectives with financing, expertise and capacity building • Provide larger grants to significant needs or long-term development projects

15. "Embracing Innovation in Government: Global Trends 2018." Observatory of Public Sector Innovation, June 2018, <https://oecd-opsi.org/embracing-innovation-in-government-global-trends-2018/>.