

1

Introduction to Disaster Management

A question that may be raised is why study disaster at all? A good answer may be found in the novella written by Heinrich von Kleist, *The Earthquake in Chile* (1807). The novella draws on two disaster events: the 1647 earthquake in Santiago, Chile, and the in 1755 earthquake in Lisbon, Portugal. The author used these events as a social laboratory to examine whether they lent little if any support to the hypothetical State of Nature, which was praised by the eighteenth-century political philosopher Jean-Jacques Rousseau as a normative guide of “uncorrupted morals.” The State of Nature was used as a thought experiment to develop the hypothetical conditions that preceded authority by consent or governance. The disaster was supposed to serve as a “state of nature” to build a society with no institutionalized religion or government, which led to the unavoidable conflict between individual morality versus society’s conventions. As Kleist described it,

In the minds of Jeronimo and Josefa strange thoughts began to stir. When they found themselves treated with so much familiarity and kindness they did not know what to think of the recent past: of the place of execution, the prison and the bells; or had all these been merely a dream? It seemed that in everyone’s mind, after the terrible blow that had so shaken them all, there was a spirit of reconciliation. Their memories seemed not to reach back beyond the disaster.

However, during the recovery efforts, survivors soon became nasty, brutish, and egoist. No cooperation or empathy came from the momentum of the disaster.

An answer to the question previously raised seems obvious in this context. Disasters can be found to produce cultural, social, economic, and psychological consequences for individuals and communities.¹ Viewed in this way, disasters provide opportunities to reflect on social structures and processes that lie behind daily functioning of societies, since disasters are “nonroutine events in societies . . . that involve conjunctions of historical conditions and social definitions of physical harm and social disruption.”² Thus, an abnormal phenomenon offers the means for identifying certain normal features of the structure and functioning of societies. In short, the study of disaster as disruption of routines and threats of disruption is a well-established tool for advancing the understanding of the mechanisms that build and rebuild personality and social structures.³

Thus, the second practical justification for the study of disasters lies in our very nature to enlarge our understanding of these catastrophic events in order to be able to lessen their devastating consequences. Disasters then function as a catalyst for collective action that permeates a community’s social structure, producing social responses that are both emergent and constraining.

Definitions of Disaster

In recent decades, it has become increasingly clear that large-scale disasters will be persistent features of social life. According to the 2010 World Disaster Report, natural disasters of the last fifty years are taking tolls in human life, property damage, and social and economic disruption.⁴

The root of the word *disaster* is derived from Greek astrological study in which this term was used to refer to a destruction or deconstruction of a star “dus-aster” (“bad star”). Disaster is defined as a sudden event causing great damage and loss of life and property that far exceeds our capabilities to recover.

Although there is little consensus among scholars on the definitions of *disaster*,⁵ Quarantelli offered a comprehensive definition that bears on the shared defining component of disaster, that is, of the negative consequences of the disruption of the accustomed routines of daily functioning at the collective level. According to Quarantelli, disasters are

those crisis occasions generated by the threat of or the actual impact of relatively sudden natural and technological agents (such as

earthquakes, floods, hurricanes, volcanic eruptions, tornadoes, and tsunamis as well as toxic chemical spills, radiations fallouts, large-scale explosions and fires, structural failures, massive transportation wrecks and crashes, etc.) that have significant negative social consequences. Basically we include only those instances where everyday community life is disrupted and where local resources cannot handle the demands of the situation.⁶

The United Nations International Strategy for Disaster Reduction (UN/ISDR) suggests viewing disaster:

A disaster is a sudden, calamitous event that causes serious disruption of the functioning of a community or a society causing widespread human, material, economic and/or environmental losses which exceed the ability of the affected community or society to cope using its own level of resources.⁷

Such definition focuses on the immeasurable losses caused by disasters, which vary with regional location, climate, and the degree of vulnerability. For a disaster to be considered under the database of the UN's International Strategy for Disaster Reduction (ISDR), at least one of the following features must be met:

- a report of 10 or more people killed;
- a report of 100 people affected;
- a declaration of a state of emergency by the relevant government; and
- a request by the national government for international assistance.

Most definitions of disaster include common main features, such as unpredictability, unfamiliarity, promptness, urgency, uncertainty, and hazard. Based on these shared characteristics, we can define disaster as a hazard causing great losses to life, property, and livelihood, and uncertainty.

Types of Disasters

Disasters can be distinguished as natural disasters, often regarded as “acts of God,” such as earthquakes, floods, landslides; and man-made

disasters or technological disasters, such as war, bomb blasts, and chemical leaks. However, such typology has resulted in continuous debates among scholars. Those who claim a distinctive nature of human/technological disasters bring the evidence that “Technological disasters create a far more severe and long lasting pattern of social, economic, cultural and psychological impacts than do natural [disasters].”⁸ Others argue that such a distinction is theoretically and practically specious, since disasters have no single root cause and result from human failure to introduce appropriate emergency-management measures.⁹

Although this debate still continues, it could be agreed by all that disaster caused by nature can have human origins. Natural disasters can result from the combination of a hazardous environmental process, susceptibility of a given population to that process, and inability to mitigate the potential negative consequences of this process when assessed in human terms. It follows that natural disasters often differ in quantity of damage caused or in quality of the type of negative consequences. Moreover, natural disasters that impose a great risk to one particular society may not be assessed in a similar way by a different society with different susceptibility and capacity features (see fig. 1.1).

Natural Disasters

Based on the outlines of the UN Office for the Coordination of Humanitarian Affairs, natural disasters can be divided into three main groups: hydrometeorological, geophysical, and biological.

- Hydrometeorological disasters originate from natural processes or phenomena of an atmospheric, hydrological, or oceanographic nature that may lead to personal injuries or losses of life, property damage, social and economic disruption, or environmental degradation. These include floods and wave surges, storms, landslides, avalanches, and droughts and related disasters (extreme temperatures and forest/scrub fires).
- Geophysical disasters are basically earth processes or phenomena that may also cause loss of life or injury, property damage, social and economic disruption, or environmental degradation. These include earthquakes, tsunamis, and volcanic eruptions.

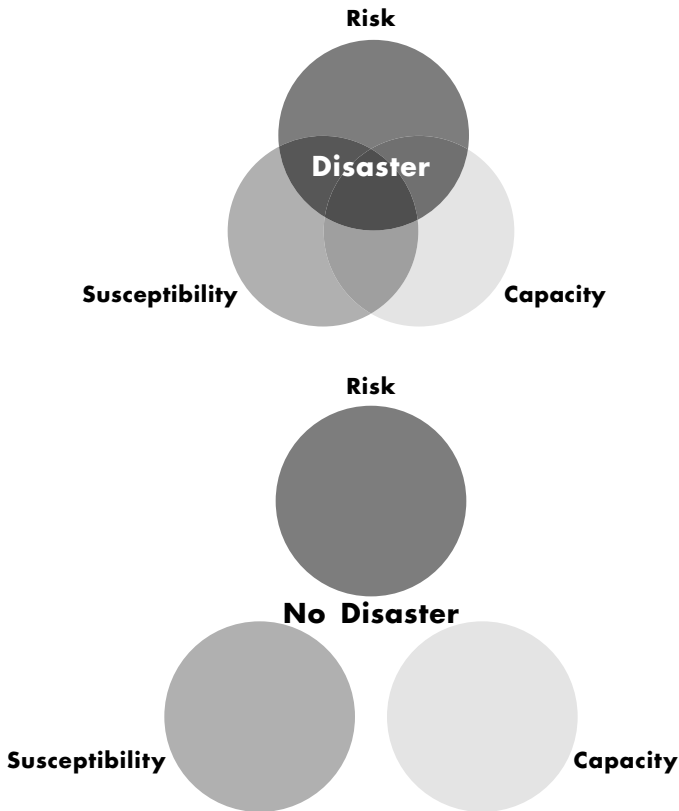


Figure 1.1: The interaction between risk, susceptibility, capacity, and disaster event

- Biological disasters are those processes that originate from biological vectors, including exposure to pathogenic microorganisms, toxins, and bioactive substances, which may cause loss of life or injury, property damage, social and economic disruption, or environmental degradation. These include epidemics and insect infestations.

Common to all types of natural disaster is the fact that the social and economic disruptions usually impose direct (e.g., damage to infrastructure, crops, housing) and indirect (e.g., loss of revenues, unemployment, market destabilization) impact on the local economy and social

structure. However, disasters are not totally discrete phenomena. Their occurrence, time, place, and intensity could be predicated to some extent in some cases by technological and scientific means. Thus, we can expect to retain at least some of the capacity to reduce the impact of disasters by adopting suitable mitigation means, though we cannot reduce the extent of damage and loss itself.

The History of Disaster Management

Ancient disaster management programs

Disaster emergency management is a modern discipline of dealing with and avoiding risks imposed by natural catastrophes such as fire, flooding, or earthquakes. However, ancient societies showed signs of disaster emergency programs. Before the eruption of Mount Vesuvius in 79 AD, local inhabitants from the districts of Rome, as well as historians who lived through the period, did not report earthquakes and fires since these disruptions were regarded as common features of social life at that time. Even when eruptions were reported, such as the Great Fire of Rome that began July 64 AD and was reported by Tacitus,¹⁰ they were often conceived as rumors and unreliable.

Local historians reported that the fire of 64 AD caused the destruction of three districts of Rome and ten other cities suffered serious damage.¹¹ Emergency relief efforts were organized and funded by Nero, the emperor at the time.¹² During the fire, Nero opened his palaces to provide shelter for the inhabitants who lost their houses during the fire, and organized a chain of food delivery to prevent starvation among the survivors.¹³ After the fire, Nero planned a new urban development program that included new building rules, such as spacing houses and to face porticos on wide roads. It is interesting to note that Nero's admirable relief efforts in the aftermath of the fire were debated by the historians of the time (and by Modern historians as well), as some say that it was Nero himself who set the fire to build himself a new palace complex, which is why he rushed to execute relief programs.

The eruption of 79 AD destroyed Pompeii, Herculaneum, Oplonti, and Stabiae. The Mount Vesuvius earthquake spread tons of molten ash. This eruption was recorded by Pliny the Younger, whose letters to his friend Tacitus provide an authentic description of the disaster:

Ashes were already falling, not as yet very thickly. I looked round: a dense black cloud was coming up behind us, spreading over the earth like a flood. . . . There were people, too, who added to the real perils by inventing fictitious dangers: some reported that part of Misenum had collapsed or another part was on fire, and though their tales were false they found others to believe them. A gleam of light returned, but we took this to be a warning of the approaching flames rather than daylight. . . . I could boast that not a groan or cry of fear escaped me in these perils, but I admit that I derived some poor consolation in my mortal lot from the belief that the whole world was dying with me and I with it.¹⁴

Relief efforts after the eruption were poor as most of the cities remained buried and undiscovered until excavation began during the eighteenth century. However, some recorded efforts were made by Emperor Titus, who appointed two expert counsels to manage the restoration plans of the damaged area.¹⁵

Selected Modern Disaster Management Programs of the Twentieth Century

The San Francisco earthquake of 1906

The 1906 San Francisco earthquake caused the largest urban fire in U.S. history. The earthquake and ensuing fire resulted in more than 3,000 deaths and the destruction of 492 city blocks.¹⁶ The city's fire chief, Dennis T. Sullivan, who was injured and later died from his injuries, realized that his men were untrained in the use of dynamite to demolish buildings to create firebreaks. For that, together with San Francisco's Mayor Schmitz, he called army troops (over 4,000 men) to assist in the relief efforts and in using dynamite to demolish buildings. The army played a great role in disaster relief as it became responsible for supplying food, shelter, and clothing to tens of thousands of homeless residents of the city. The army established eleven temporary camps, including 5,610 redwood and fir "relief houses" to accommodate 20,000 displaced people. During and after the earthquake, the residents who survived were homeless, and were maintained in place by receiving specific instructions on digging latrines in backyards and providing water in

tankers parked on street corners. However, this empirical and historical evidence should not be taken for granted. According to Quarantelli's critical discussion of statistical and empirical data on disasters,¹⁷ the historians, Hansen and Condon¹⁸ showed by careful analysis of the apparent prompt actions taken by the army and the local government leadership, that these efforts were not without criticism. In fact, allegations of political corruption and discriminatory practices to exclude Chinese residents were often said to play a role in recovery and reconstruction efforts.

The Yangtze River Flood in China of 1931

During late 1930, heavy snowstorms caused a series of floods during the Nanjing decade in the Republic of China era. The Yangtze River flood killed about 145,000 and affected 28.5 million residents.¹⁹ (Several sources argue for 3–4 million deaths.) The relief efforts, mainly by local organizations, began shortly after the flooding became destructive. In Hankou, local residents raised 800,000 yuan to fund relief efforts and set up temporary relief camps that served 300,000 people.²⁰ The provincial reconstruction commissions as well as national and international organizations provided relief assistance. During the disaster, the National Flood Relief Commission (NFRC) was initiated to provide coordination and constructive solutions for the disaster's effects. The members of the commission were mostly governmental who deliberately designed a cooperation program to control international support from abroad.

The Great Alaskan Earthquake and Tsunami of 1964

The Great Alaskan Earthquake and Tsunami of 1964 caused the death of 131 people and immense destruction that was estimated at over \$310 million.²¹ After the earthquake, the West Coast and Alaska Tsunami Warning Center was established to monitor seismic activity and to broadcast to the public, triggering alerts to local, state, and federal emergency officials, including the military and the Coast Guard. Other reconstruction efforts were held by the State of Alaska, the U.S. Army Corps of Engineers, and the federal government as a whole to rebuild roads and completely destroyed villages such as the native village of Chenega and the town of Valdez.

The Bangladesh Cyclone of 1970

In 1970, the Bhola cyclone struck East Pakistan (now Bangladesh) and India's West Bengal. The tropical cyclone caused the death of 500,000 and great damage to villages and crops throughout the region. The Pakistani government was strongly criticized for its delayed handling of the relief efforts following the storm, both by local political leaders in East Pakistan and in the international media. Although the Indian government received many reports from ships containing meteorological information on the cyclone from the Bay of Bengal, such information was not passed on to the Pakistani government due to the rivalry in relations between India and Pakistan, costing thousands of lives.²²

After the storm, the Pakistani army used gunboats and a hospital ship to carry medical personnel and supplies for the damaged islands of Hatia, Sandwip, and Kutubdia; only one military transport aircraft and three crop-dusting aircraft were assigned to relief work by the Pakistani government. However, the government neglected to coordinate with international and national organizations. For example, the Pakistan Red Crescent decided to operate independently of the government as the result of a dispute that arose after the Red Crescent took possession of twenty rafts donated by the British Red Cross.²³ Moreover, the Pakistani government did not allow the Indians to send supplies into East Pakistan by air, forcing them to be transported slowly by road instead. The Indian government also criticized the Pakistanis for refusing to deploy military aircraft, helicopters, and boats from West Bengal to assist in the relief operation. The hostile relations between the two countries that were intensified during the disaster management efforts helped to trigger the Indo-Pakistani War of 1971 in December and concluded with the creation of Bangladesh.

The Tangshan Earthquake in China of 1976

The Tangshan earthquake of 1976 in China caused the death of at least 255,000 people. Before the quake, the county of Qinglong was prepared for the quake two years earlier, as the county officials engaged in periodic emergency meetings to prepare and instruct villagers to evacuate to safer areas when the earthquake struck. Although preparatory measures were taken, great loss of life caused by the earthquake was attributed,

among other causes, to the low quality and nature of building construction in China. During and after the quake, the Chinese government refused to allow foreign aid from the United Nations, the United States, or the Red Cross.²⁴ The Chinese government kept its self-reliance, and sent several medical teams to Tangshan in addition to the People's Liberation Army, who were assisting and engaged in rebuilding infrastructure immediately after the quake in Tangshan; the city was completely rebuilt.

Following the brief review of the selected emergency and relief efforts introduced in various natural disasters, it is argued that natural disasters can become the trigger of civil unrest and social and political criticism as the political, social, and technological environments are caught by the urgency and uncertainty of events or possible outcomes. Thus, key to disaster management is sensitivity to aspects of the dynamic between political and social institutions, in both managerial and normative terms. Although it is common to relate the main responsibility for emergency management to government agencies, emergency management is an integrative and complex process involving individuals, groups, communities, and professional scientific agencies. Thus, an effective emergency management results from the integration of emergency plans at all levels of government as well as nongovernment involvement (individual, group, and community).

Disaster Management Process

The disaster management process is defined as the possible actions taken by an organization to reduce the impact of disasters on humans, the built environment, or both. Although there is no agreed formula at the global level for how modern disaster management should be established and implemented, the following three aspects are mostly shared by distinctive disaster management programs:

- preparation for a disaster before it occurs by developing early warning devices;
- development of disaster response (e.g., emergency evacuation, and quarantine, mass decontamination); and
- support and rebuilding plans after natural or human-made disasters have occurred.

The Cycle of Disaster Management

The disaster management cycle can be broken into five main stages and phases of applied problem-solving as illustrated in fig. 1.2.

In this model, *disaster stage* refers to the process by which the event of the disaster takes place. The damage/loss of human life, loss of property, loss of environment, loss of health, and anything else is assessed by government agencies. This stage raises uncertainty and profound shock. The *response stage* refers to the process by which governmental and nongovernmental organizations, individuals, and communities respond to the disaster through first aid provisions such as food, medical aid, shelter, and counseling. This stage is likely to include first aid emergency services such as firefighters, police, and medical and ambulance crews. These organizations may be accompanied by secondary emergency services such as specialist rescue crews, NGOs, and local government agencies. The *recovery stage* involves rebuilding the affected area after immediate needs were met by the previous stage. This stage provides an opportunity for adopting social security efforts directed at restoration of damaged property, supplement of employment and educational solutions,

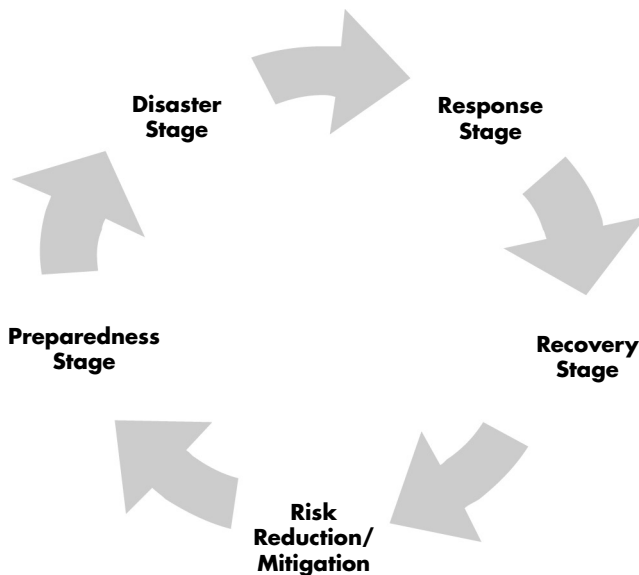


Figure 1.2: The disaster management cycle

and rebuilding essential infrastructures. The *risk reduction/mitigation stage* refers to the process by which the results of the recovery policies are monitored by both state and societal actors, the result of which may be reconceptualization of emergency management problems and solutions. For example, damages to property caused by an earthquake would lead to rebuilding resistant houses according to proper construction standards. In the case of tsunami, mitigation efforts would lead to preventing destruction of housing located close to the shore and the implementation of security measures such as a green belt—a thick, wide growth of trees bordering the coastline in order to reduce the impact of the tsunami waves on the land. During this stage, both governmental agencies and affected communities consider long-term measures for reducing the extent or impact of damage during the next similar disaster. This stage is thus built heavily on risk identification in order to address proper technological and planning devices based on probability and the level of impact of specific risk. In the *preparedness stage*, causality prediction and early warning options are formulated by the government. For this stage to be effective, the emergency management program of actions should cooperate with volunteers and effected communities to develop local capacities and coordination with government emergency teams when the disasters strike. The common measures used to mobilize resources are communication and telemedicine services, multiagency coordination, maintenance and transportation for emergency services, and local training of at-risk communities of warning measures, emergency shelters and evacuation options, and preparation of evacuation kits, commonly referred to as a 72-hour kit, which includes food, medicine, flashlights, candles, and money. Preparedness activities can be viewed as complementary to activities taken in the mitigation stage. For that, preparedness activities involve building coordination between the government and the private sector and nongovernmental organizations to improve prompt and efficient response and recovery efforts. It should be noted that in homeland security there is a clear preference to split the phase of risk reduction/mitigation to “prevention” and “protection” phases²⁵ in referring to these activities.

An important advantage of this disaster management model as set out above is that it facilitates understanding of the disaster management process by breaking the complexity and uncertainty created by disaster into a limited number of stages, each of which could be examined alone or in terms of its focus, measures, institutions, and actors. This model

can be applied for comparative studies of disasters occurring in different regional settings or different stages of a given disaster; in other cases it can support the distinguished nature of the disaster decision-making process in comparison to the “normal” policy-making cycle. In addition, the model can denote the role of the various actors involved in disaster management, not just governmental agencies, which formally take over the emergency efforts. However, this model does have certain shortcomings. One major disadvantage is that while the logic and consistency of the model may be sufficient in theory, in the real world, especially in times of adversity, stages are more often skipped or followed in a different order than that specified by the problem-solving phases.²⁶ In addition, this model offers no indication of who or what prompts disaster emergency to progress from one stage to another, an issue of importance especially for scholars working on emergency planning programs. This model also suffers from lack of causation as to which factors underlie the process and may lead to certain emergency management decision making. This model contains a rather simple description of activities that occur in mitigation and response to disaster. In fact, Waugh²⁷ has offered to replace the use of “phases” with “activities” and “functions,” which involve different types of professional expertise and skills as well as different types of agents. In this book we prefer to focus on agents involved in the emergency process. Policy making involves a multitude of actors, which can vary depending on how a vulnerability is defined, and facilitates the adoption of certain solutions to it. The next chapter seeks to capture the complexities by building deeper questions into the model and draws on the terms and concepts of contemporary political science in answering them.

Approaches to Disaster Management Policy Formulation

This section discusses the existing approaches to emergency management. As seen, studies on disaster management emphasizing policy formulation that has gone through a number of stages including preparedness, planning, mitigation, and recovery, reflect two well-known approaches—top-down and bottom-up.

The top-down approach refers to decisions made at the central-state level, and regulations are imposed in an exercise of top-down authority. This approach “assumes that we can usually view the policy process as a series of chains of command where political leaders articulate a clear

policy preference which is then carried out at increasing levels of specificity as it goes through the administrative machinery that serves the government."²⁸ The top-down approach underlies the assumption that it is the responsibility of state institutions to provide immediate assistance that is relevant and coherent on the level of objectives and orientations.²⁹

There is appreciation that policy design should be reduced to government decisions, focusing on the extent to which administrators carry out or fail to carry out the decisions.³⁰

Policy formulation is then theorized in terms of knowledge about institutions of government, including detailed empirical examination of legislatures, courts, and bureaucracies, while generally ignoring the normative aspects of these institutions. An example of a disaster management plan designed to meet top-down principles is the Czech Republic flood control project initiated after the floods in 1997, and again in 2002. During 1997, the countries in Central and Eastern Europe were struck by heavy flooding that caused the deaths of 105–115 people and property damage estimated at \$30 million.³¹ Five years later, the region suffered heavy flooding but experienced fewer deaths and less property damage. This could be partly explained by the improved disaster plan that was initiated after the flood of 1997. The disaster emergency plan included an improved warning system, an efficient supply system of food and medical care, and improved coordination to facilitate evacuation efforts. The Czech Hydro-Meteorological Institute introduced various reforms, including improving its forecasting and early warning system to provide timely information to the general public. Czech Republic Emergency Medicine was instituted after 1997 to enhance medical supplies and the number of first aid-trained physicians. In late 2000, the Czech Republic enacted three general laws related to evacuation efforts to efficiently enforce evacuation orders and provide security and shelter to effected residents.³²

Whatever the benefits, and there were many, these studies of the function of formal structures of political institutions in disaster management, for the most part remained descriptive, failing to generate the basis for evaluating the strengths, weaknesses, or purposes of such structures.

Thus, the major criticism of the top-down approach was that it offered little in the way of thinking about how policy problems should be approached, and it was virtually swept away by the concentration on senior decision-makers, who have a marginal role in making and implementing policies, compared to lower-level officials and private actors.

The contentless and contextless overtones of the top-down approach appealed enormously to policy makers as a clear-cut technical process that laid bare the essence of policy problems and the involvement of all private and public actors and institutions in the problem.

In sum, the most serious shortcomings of the top-down approach are as follows: The top-down approach demonstrates too narrow and static a picture of disaster management: policies are almost always related to “maintenance” and “protection,” and addressed by measures from specific sector policies (nature conservation and agriculture). These typically lead to a functional division of policy making and implementation, which fails to acknowledge limitations on governments, thus, constraining the range of options they can choose to carry out the decisions. Internal and external constraints on government make public-policy making, and efforts to understand it, difficult indeed. The government’s choice of a policy may be limited, for instance, due to shortage of resources, unclear understanding by implementers of the stated goals and activities, international and domestic pressure, or resistance to certain policy options. Thus, for example, we will not be able to achieve a comprehensive understanding of disaster management reforms across countries without recognizing powerful actors such as NGOs or grassroots organizations that are able to act against any government effort to maintain its centralization, to accelerate emergency activities.

Consequently, the top-down approach presents a lack of openness and responsiveness of policy decisions, objectives, and measures for public debate and bottom-up inputs. While participation should be enabled from the top down, and a large part of the responsibility for this lies with those in power (senior decision-makers), lower-level officials, administrators, private and public actors, and institutions also have crucial roles in administering these policy objectives and measures.

These shortcomings have been recognized by the bottom-up approach to management. This approach is based in the context of the longstanding mission of policy making as an agent of building social and state capacity, on the central importance of formal and informal interaction and communication between public and private actors and institutions, and those for whom the policy is intended. The policy making and implementing process reflects a more democratic structure that ensures that decisions made at the top include the interests of those at the bottom.³³

The policy formulation process is conceived as strongly related to different multilevel governance structures. This involves a vertical governance that deals with the cooperation, coordination, and collaboration activities between local, subregional, regional, and national actors, and requires a bottom-up approach in order to address citizens' needs. Further, there is a double horizontal governance that deals with the cross-over among sectors (e.g., social inclusion, accessibility, spatial planning, and economic development), and the cross-over among different types of actors (i.e., public bodies, the associational sector, and the private sector).

Application of the bottom-up approach to management in the policy implementation process establishes a system of collective social responsibility shared by various actors involved in implementing programs. Thus, a broad sense of collective social responsibility that guarantees both the state and local communities equal responsibilities and advantages requires great transparency in the distribution of resources, guarded by effective monitoring and accountability systems. Disaster management programs that were developed in both Mozambique (2000 and 2001) and to some extent in Iran (2003) met the principles of the bottom-up approach. In 2000, Mozambique, one of the poorest countries in the world, faced heavy rainfall that led to massive flooding, causing the death of approximately 800 people and great property damage.³⁴ Following the disaster, the Mozambique National Contingency Plan was developed to enforce a coordinated network comprised of communities, districts, and provinces as well as local, national, and international agencies involved in emergency training to mitigate future disasters. Local authorities and NGOs provided special training programs to strengthen community leaders in running evacuation centers and in making use of local capacity, such as community-based social and medical service organizations.³⁵ The 2003 earthquake that struck Bam and the Kerman province of southeastern Iran caused the death of approximately 30,000 people and massive destruction.³⁶ The disaster response of the Iranian government is of special interest when viewed nowadays as, due to the earthquake, the relations between Iran and the United States thawed. The Iranian government had relied heavily on foreign assistance and on the local capacity of affected communities. The Iranian government coordinated with the United Nations and the Iran Red Crescent Society (IRCS) to mobilize local rescue teams that were already familiar with affected communities' needs, instead of instituting centralized bureaucracy.³⁷

The latter exemplary practices in national disaster management reveal a shift of focus from a top-down approach to a bottom-up traditional approach in disaster management toward a mixed model in which the involvement of private and public actors in governance and management at the grassroots level becomes a vital component in disaster relief efforts. The spirit of this approach was admirably reflected by the Yokohama Strategy (1994), which addressed the guidelines outlined by the World Conference on Natural Disaster Reduction, held in Yokohama (Japan) in May 1994. The Yokohama strategy called for development of a “global culture of prevention” and improved risk assessment, broader monitoring and communication of warnings at the community and national levels, and at the regional and subregional levels. In 2000, the International Strategy of Disaster Reduction (ISDR) provided a framework to coordinate actions to address disaster risks at the local, national, regional, and international levels. It called for building resilient nations and communities as an essential condition for sustainable development. The Hyogo Framework for Action 2005–2015 (HFA), endorsed by 168 U.N. member states at the World Conference on Disaster Reduction in Kobe, Japan, in 2005, suggested a strategic and inclusive approach to reducing vulnerabilities and risk imposed by hazards. Among the principles for implementing disaster risk reduction guiding this ten-year plan are as follows:³⁸

- Effective disaster risk reduction relies on the efforts of many different stakeholders, including regional and international organizations, civil society including volunteers, the private sector, the media, and the scientific community.
- A multihazard approach involves translating and linking knowledge of the full range of hazards into disaster and risk management, political strategies, professional assessments and technical analysis, and operational capabilities and public understanding, leading to greater effectiveness and cost efficiency.
- Capacity-development is a central strategy for reducing disaster risk. Capacity development is needed to build and maintain the ability of people, organizations, and societies to successfully manage their risks themselves. This requires not only training and specialized technical assistance, but also strengthening of the capacities of communities and individuals to recognize and reduce risks in their localities.

- Decentralization of responsibility is crucial for disaster risk reduction. In order to recognize and respond to these locally specific characteristics, it is necessary to decentralize responsibilities and resources for disaster risk reduction to relevant subnational or local authorities, as appropriate. Decentralization can also motivate increased local participation along with improved efficiency and equitable benefits from local services.
- Effective disaster risk reduction requires community participation. The involvement of communities in the design and implementation of activities helps to ensure that they are well tailored to the actual vulnerabilities and to the needs of the affected people.
- Public-private partnerships are an important tool for disaster risk reduction. Public-private partnerships are voluntary joint associations formed to address shared objectives through collaborative actions. They may involve public organizations such as government agencies, professional and/or academic institutions, and NGOs, together with business organizations such as companies, industry associations, and private foundations.

Following our brief review of international exemplary practices, it is argued that despite the attention devoted to the bottom-up approach in disaster management, the top-down approach appears to remain side-by-side with the bottom-up approach. These are not competing approaches but alternatives in disaster management policy analysis. Thus, to strengthen the synthesis of both approaches we need to comprehend the way in which existing disaster management practices meet the category of disaster vulnerability. Thus, the remainder of the book will attempt to assess the extent to which disaster management practices address the key components of disaster vulnerability. For that purpose, we need first to reflect on the conceptualization of vulnerability to generate evaluative criteria for assessing the appropriateness of disaster management practices to improve public administration disaster management performance.