

Assessments of Natural Disaster Preparedness on National and Regional Scales

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Premises.

Assessments of a nation's preparedness for *natural* disasters do not differ basically for those of *technological* or *environmental* disasters. The latter two may require different teams of professionals, but the organizational principles and methods of assessment are largely the same.

The focus on a nation-wide scale needs some qualifiers. Disaster preparedness takes place in a political, constitutional, legal, regulatory, cultural and economic context. To the extent that this context can vary within a country, or be similar for groups of countries, some flexibility in scaling up or down from the regional scope of assessments according to these contextual circumstances may be called for.

Major Steps and Principles.

Assessments of the disaster preparedness of a region or country require some basic steps, which usually are undertaken in a sequence of progressively more detailed and refined phases.

1. Initial Phase: Quick Surveys of Major Vulnerabilities and Coping Options.

In a country with a past history of disaster preparedness and existing emergency management structures and legislation, part of this initial phase may be skipped and the assessment may proceed directly to the Main Phase. The necessary information may be readily available. However, it may be advisable to use the list to check which -if any- elements are missing in existing preparedness efforts or which elements require revisions and strengthening.

1. 1. Choice of an Assessment Core Team. One of the first steps is to form an initial Assessment Core Team (ACT) that is large enough to cover the important professional, social / political / scientific and technical bases that are needed for the assessment to have the expected impact. At the same time the ACT must remain as small as possible for it to act with efficiency and to allow it to exert strong leadership. The core team may grow or shrink as the assessment advances. The formation and composition of the core team is crucial. It is almost necessary for the results of the assessment to be available at the outset to know which team members or organizations are needed to cover the most important bases. Hence, an iterative process may be formalized with different phases of the assessment requiring different team compositions. It is important that the team be given the necessary statutory powers to report to the highest level to be effective if it is a government-appointed assessment and team. If it is an NGO that carries out the

assessment in a less formal setting, it is still important that it involve major stakeholders from the public and private sectors, and does so right from the outset, at least as observers if not players. This inclusiveness, while procedurally more cumbersome, will nurture the consensus process that is crucial if the team's recommendations are expected to find public acceptance.

1.2. Task List. A minimum task list for the core team to consider may consist of the following items, subject to modifications as needed. The tasks may be addressed not necessarily in the sequence listed here. This initial phase of preliminary assessments may take only a few weeks to months. Its main purpose is to allow setting priorities and securing the necessary resources for the major assessments and follow-up actions.

- 1.2.1. Survey of the Constitutional / Legal / Political Context. What laws and regulations -if any- pertain to emergency situations, and who is in charge of public safety and of pertinent information on different governmental and geographic scales, and for what type of disasters?
- 1.2.2. Survey of the Major Knowledge Stakeholders in the Public, Private, Professional, Academic/Scientific and Technical Sectors. The survey must address the current capabilities of agencies, organizations and sectors, their past and future roles, and what organizations and capabilities may be missing or are absent from the process?
- 1.2.3. Preliminary Survey of the Economic Sectors that are critical to the survival of the country, the major players in these sectors and their perceived vulnerability (for detailed assessments see below).
- 1.2.4. Preliminary Assessment of the Types of Hazards (Earthquakes, Volcanoes, Riverine and Coastal Floods, Land and Mud Slides, Storms, Draughts, Wildfires etc.) and of their Perceived Importance in various regions and for the basic threats they pose to the key economic sectors (for detailed hazard mapping see below).
- 1.2.5. Preliminary Survey of the Vulnerability of Critical Facilities and Institutions. A preliminary survey is needed of the vulnerability of critical facilities that must be available and functional during a major disaster or are critical for the public safety and economic survival of the country. This list may become important for establishing time and resource priorities during the later phases of detailed assessments.
- 1.2.6. Preliminary Survey of the Order of Magnitude of Losses that may occur during Worst-Case Disasters. This list should provide rough estimates of fatalities, injuries and economic/financial losses without claiming high confidence in the accuracy of estimates obtained, as is the goal during later phases of the assessment of disaster preparedness.
- 1.2.7. Preliminary Coping Resources and Options. This initial survey should list the resources the nation itself can bring to bear. It also should address possible mechanisms for accepting external assistance if this should become necessary.
- 1.2.7. A Preliminary Survey of Risk Distribution Mechanism such as insurance, reinsurance, and/or contingency contracts with providers of goods or emergency services etc. in a national and international context.
- 1.2.8. A Preliminary Survey of Mitigation Measures and Policies -if any- and of their efficacy.

- 1.2.9. Phase 1 Summary Report. The Report will summarize the preliminary findings, recommendations and will outline the program priorities for the Main Phase of the Assessment. This report should be presented in a briefing to the authorities that commissioned it (if applicable) with room for discussion of the next steps to be taken to implement some or all of the recommendations

2. Main Phase of Disaster Preparedness Assessment.

Disaster, emergency and risk management in any country takes place in a social and political context. The following elements need to be considered and must be an integral part of the solutions aimed at achieving effective disaster preparedness and an overall societal resilience to natural disasters. On a global scale it is a truism that a nation's vulnerability is often strongly linked to levels of poverty and other social or political stresses. But the sheer attention to disaster preparedness can make a difference, even if these other stresses cannot be eliminated in the short run. These are the major elements that play a role in advancing towards a nation's resilience against natural disasters:

2.1 Issues to be Addressed.

- Constitutional - Legal - Political - Economic Framework
- Managing the Current Risk Situation:
 - Disaster Planning
 - Disaster Preparedness (Pre-Event Implementation of the Plan)
 - Event Response Operations (Keeping track of what happens)
 - Post-Event Recovery
 - Risk Distribution
- Managing Future Risks:
 - Mitigation and the Building of Disaster-Resilient Communities
(e.g. in the U.S.: FEMA's former "Project Impact");
 - Landuse, Zoning, Codes
 - Education, Communication,
 - Providing the Scientific/Technical/Engineering/Professional Infrastructure
 - Risk Distribution, Securing Access to Resources.

2.2 Elements of a Disaster Preparedness Plan

- i. Hazard Identification and Quantitative Assessment (Mapping).
This includes the issues of resolution (national or state scale vs. microzonation, and the regulatory context of each). Each hazard such as earthquakes, floods, volcanoes, etc. needs its own effort with specialized expertise.
- ii. Assess Critical Assets, their Fragilities, & Activities at Risk.
The assets include the infrastructures and lifelines, general building stock, and critical facilities, industries, and essential production centers or areas.
This is largely an engineering-dominated effort.
- iii. Develop and Implement Loss Estimation Technologies. In addition to Earth & computer scientists, engineers, and emergency managers it requires economic input and modeling efforts.

- iv. Combine i, ii & iii into an Overall Vulnerability Assessment; Economists and Social Scientists play a major role together with the more technical professions.
- v. Use Benefit / Cost Analysis and Decision Support Tools to measure Economic Impacts and then develop Optimized Mitigation Strategies. Risk perception and decision theory can play an important role.
- vi. Risk Reduction Measures:
 - Avoid Hazards,
 - Create Early Hazard Warning and Communication Systems
 - Reduce Fragilities,
 - Increase Resilience;
 - Create/Improve Codes/Regulations/Incentives;

These efforts require multidisciplinary teams in which natural, engineering and social scientists and representatives of the public in large work on integrated solutions that are acceptable to and supported by the public.
- vii. Create and Train Response Teams / Special Tasks - Simulations
- iix. Communication / Education / Outreach (may require educators in addition to above mentioned specialists).
- ix. Distribution of Remaining Risks by Insurance, Reinsurance and Other Cat-Instruments. Secure Emergency Service Retainers