Disaster Preparedness

Study Guide and Course Text
Disaster Preparedness

Study Guide

Prepared by Paul Thompson and Eric Heggen

To be used in conjunction with Disaster Preparedness Course Text

UW-DMC
Disaster Management Center
University of Wisconsin-Madison
Acknowledgments

Many individuals and organizations contributed to the realization of this self-study course. At the Office of Foreign Disaster Assistance, the foresight and collaboration of Frederick Cole, Gudren Huden, Denise Decker and Fred Cole have been invaluable. From INTERTECT, the guidance of Paul Thompson brought a cohesive text out of many disparate ideas, with added help from Jean Parker and Deborah George. At the University of Wisconsin, Linda Hook, Darrell Petska, Laura Jahnke, Kate Olle, and Kristen Baer must be thanked for their efforts in preparing and editing the manuscript; and at Artifax, Val Parish and Susan Kummer for layout and design. The course development process is never over, and each of these people understands that very well.
Introduction

How to get started

This self-study course is designed to assist those responsible for managing postdisaster situations with tools and techniques that will permit them to carry out meaningful assessments. It is designed for voluntary agency professionals, experienced field staff, and government agency personnel. It will also be useful for those who are studying disaster relief techniques for the first time.

This course provides information about how to prepare for both rapid onset and long-term disasters. Disaster preparedness is examined for all relevant sectors of a country or region.

The course is based primarily on the technical text Disaster Preparedness published by the Disaster Management Center of the University of Wisconsin–Madison.

The procedure for self-study is:

- Complete and score the pretest. Do not be disappointed if you have a low score. If you had a high score, you probably do not need this course.
- Read the learning objectives to get a general idea of what you are expected to learn from the course.

Turn to lesson 1: Introduction

- Review the study guide section for a brief description of the lesson and any special suggestions on how to study.
- Again read the learning objectives.
- Carry out the learning activities listed.
- Complete the self-assessment test at the end of the lesson and score it using the answer key provided. If you have not answered most of the questions correctly, re-study the Lesson.

If you score well on the self-assessment test, proceed to lesson 2.

Continue to study each lesson and complete each self-assessment test until you have finished the course of study.

When you have completed all the self-assessment tests to your satisfaction, you should request the final examination package.
Pretest

Multiple Choice

Circle the correct answer(s):

1. Who should be responsible for setting disaster preparedness program policy?
   a. relief agencies  
   b. donor organizations  
   c. national governments  
   d. Red Cross or Red Crescent Societies  
   e. The United Nations

2. The best way to supply funds to government authorities charged with directing or carrying out relief operations is to:
   a. create a permanent emergency reserve fund  
   b. keep careful records and make compensations during the rehabilitation phase  
   c. borrow in anticipation of increased tax bite after reconstruction  
   d. arrange for immediate delivery of foreign disaster relief aid  
   e. requisition the necessary materials and supplies

3. Put the following steps for developing a preparedness program into chronological order.
   a. develop a disaster preparedness plan  
   b. develop strategic placement of resources to be used  
   c. develop strategies and approaches  
   d. develop objectives to be met in each affected sector

4. The most important element of disaster preparedness planning is:
   a. money  
   b. information  
   c. international expertise  
   d. government cooperation  
   e. personnel

5. Planes, helicopters, mobile hospitals, bulldozers and qualified personnel are required for search-and-rescue operations. What is the first resource disaster managers should use to locate these items in an emergency?
   a. legislation  
   b. military  
   c. preparedness plans  
   d. international organizations  
   e. stockpile

6. Simply stated, the best definition of disaster preparedness is:
   a. identification and mitigation of various risks  
   b. coordination and organization of governmental and non-governmental relief agencies  
   c. development and implementation of an overall plan  
   d. creation and assignment of international aid organizations  
   e. hiring and training emergency personnel

7. Each of the following is likely to be a requirement of an emergency preparedness plan except that it:
   a. contains a sequence of activities  
   b. is comprehensive and balanced  
   c. assigns specific tasks to specific organizations  
   d. contains specific deadlines  
   e. reflects policies of the implementing agencies
8. Where in the government should the organization which coordinates disaster response not be placed?
   a. military  
   b. paramilitary  
   c. social service office  
   d. executive office  
   e. planning department

9. Disaster preparedness should be linked to development because:
   a. they are adjacent on the disaster continuum  
   b. failing to do so can set back years of progress  
   c. the lessening of storm damage is important  
   d. it improves the community’s ability to absorb the impact of a disaster  
   e. alone it only accounts for a small percentage of the disaster continuum

10. Practical experience has shown that ______ organizations are best equipped to assume responsibility for disaster preparedness.
    a. medical  
    b. scientific/research  
    c. operational  
    d. meteorological  
    e. special

11. A(n) ______ disaster assistance organization is responsible for preparing adequately for disasters, and if a disaster occurs, for mobilizing necessary resources and coordinating effective disaster assessment, rescue and rehabilitation.
    a. private  
    b. international  
    c. national  
    d. local  
    e. none of the above

12. Of the following training methods at the policy direction level, which is most inappropriate?
    a. post-disaster review  
    b. skills training courses  
    c. overseas training courses  
    d. seminars  
    e. workshops

13. The effectiveness of a preparedness plan is jeopardized by
    a. emphasizing relief activities over preparedness activities  
    b. relying on electronic communications, especially telephones  
    c. carefully sequencing post-disaster activities  
    d. determining mechanisms for delivering aid at the appropriate times within the disaster continuum  
    e. delegating the authority to local levels

14. Of the disaster training policies that follow, which one is not beneficial?
    a. training must be in accordance with the disaster plan  
    b. different training programs must be prioritized in relation to the overall training needs  
    c. covering the material as deeply as possible will assure adequate training  
    d. programs must be straightforward  
    e. training must progress logically so that an overall pattern emerges

15. A predisaster planning process for non-governmental organizations involves carrying out the following steps in a logical order. Place them in the proper order.
    a. identify gaps in existing resources for postdisaster assistance  
    b. estimate existing resources in the community for postdisaster assistance  
    c. develop a plan to provide needed services  
    d. identify sectors to be affected by a disaster  
    e. none of the above
16. In the development of a disaster preparedness program, experts are most needed to:
   a. provide technical materials and support
   b. write the disaster preparedness plan
   c. prepare lines of communication and authority
   d. repair and operate equipment (radios, transport equipment, etc.)
   e. teach their technical skills to local people

17. In general, a public education program should
   a. be structured as a series of short-term goals
   b. be in addition to a national disaster plan
   c. teach both specialists and the general public
   d. focus on elementary schools
   e. rely fully on the mass media

18. The following four functions—
   a. discouraging unqualified individuals from lending their presence
   b. directing inappropriate aid into non-harmful channels
   c. discouraging misguided organizations from sending inappropriate aid
   d. mediating disputes between helping organizations
— are best served by
   a. local or regional relief bureau
   b. national disaster committee
   c. largest aid donor
   d. territorial governor
   e. government-appointed arbitrator

19. The quality and speed of the public’s response to a warning is best influenced by
   a. general applicability of the announcement
   b. day of the week
   c. reliability of the source
   d. danger level as perceived by the population
   e. tone of voice of the spokesperson

20. In general, public education methods used for agricultural improvements, family planning and the like have shared certain traits that contribute to their success. One of those traits is:
   a. the use of mass printed media to reach rural populations
   b. the use of the official language
   c. professional producers, writers, and actors
   d. unsophisticated printing techniques
   e. preparation for very specific populations

21. The text of a disaster warning should include
   a. general broad statements about conditions in the country
   b. a low-key approach to avert mass panic
   c. the consequences of not heeding the warning
   d. the approximate probability of a disaster occurrence
   e. limited amounts of information so as not to confuse people

True or False
Indicate T or F:

   ____ 22. Within the disaster continuum, disaster preparedness is a broadly defined phase encompassing wide-ranging objectives and activities.
23. Planning and disaster response agencies can assume immunity to the effects of a disaster.

24. Uniform implementation of its policies or guidelines, and minimum standards can reduce the inequitable delivery of materials and services by various relief organizations.

25. Information on past disasters is only marginally helpful to planners who are creating preparedness plans.

26. The methodology and authority for government agencies to spend public funds as needed while carrying out relief operations should be included in legislation dealing with disaster response.

27. A fundamental aspect of a disaster preparedness plan is the identification of resources in the community and the agencies involved in disaster preparedness.

28. A general plan is the skeleton upon which the body of all disaster-related activities are supported/COORDINATED.

Identify whether the following statements about the National Disaster Committee are true or false;

29. The committee consists of middle-management workers.

30. The committee should have a permanent staff working in both planning and operations.

31. The committee is responsible for the success and implementation of the entire disaster preparedness program.

32. Committee members are selected from various private funding sources.

33. It is the committee members’ responsibility to see that the plans are fully coordinated and supported within their respective agencies.

34. It is unlikely that a national plan would do much to support the development goals of a country.

35. Proclamations that have been prepared in advance for use at the time of a state of emergency should include a provision for price control at wholesale and retail levels.

36. Ruptured gas mains, downed power lines, polluted water, and fire are examples of disasters that are considered secondary.

37. The first step for a disaster manager in the development of any disaster preparedness plan is to identify the natural hazards of the region and the degree of risk.

38. Directing traffic is important in keeping community order after a disaster.

39. Promoting self-reliance at the community level must be done with care to prevent local groups from usurping authority from the national disaster assistance organization.

40. Problems stemming from lack of coordination during a disaster can be partially mitigated through the establishment of an emergency operations center. An emergency operations center should be the site from which overall disaster relief activities can be controlled.

41. It is necessary that certain telecommunications links are reserved for emergency use only.

42. Transition from relief operations to unavoidable long-term actions are delayed as long as possible.

43. Disaster assessment needs diminish rapidly after the initial damage reports.
The following are two of the basic types of training needed in relation to disaster preparedness and response.

_____ 44. Disaster response training for general public.

_____ 45. Disaster response training for people with specific roles to play during disasters.

Indicate T or F:

_____ 46. An action plan contains lists of consecutive activities.

_____ 47. The best use of seminars and preparedness training is teaching people in professions affected by disasters how to cope with and/or respond to post-disaster needs.

_____ 48. Awareness is the first step in training because information leads to action.

_____ 49. Nations should never implement an off-the-shelf or generic preparedness plan without modification.

_____ 50. Preparedness assistance should focus on facilitating aid by international donors.

_____ 51. It is important to plan ways for the prime minister or president of the nation to act during the disaster without his or her interfering with the disaster preparedness plan.

_____ 52. Small voluntary groups are among the best able to work within communities at the local level to promote various aspects of disaster preparedness.

_____ 53. It is likely that different means of communication and different approaches will have to be used to inform urban and rural populations.

Planning in advance is important to coordination because it can:

_____ 54. increase the coherence of disaster relief operations

_____ 55. set out the benefits and sacrifices involved in working together

_____ 56. remove the need for crisis decision making

_____ 57. uncover differences of opinion in methodology before the fact

_____ 58. set up rigid chains of command

Answer Key—Pretest

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. c</td>
<td>21. c</td>
<td>41. T</td>
</tr>
<tr>
<td>2. a</td>
<td>22. T</td>
<td>42. F</td>
</tr>
<tr>
<td>3. d,c,a,b</td>
<td>23. F</td>
<td>43. F</td>
</tr>
<tr>
<td>4. b</td>
<td>24. T</td>
<td>44. T</td>
</tr>
<tr>
<td>5. c</td>
<td>25. F</td>
<td>45. T</td>
</tr>
<tr>
<td>6. c</td>
<td>26. T</td>
<td>46. T</td>
</tr>
<tr>
<td>7. d</td>
<td>27. T</td>
<td>47. T</td>
</tr>
<tr>
<td>8. c</td>
<td>28. T</td>
<td>48. T</td>
</tr>
<tr>
<td>9. b</td>
<td>29. F</td>
<td>49. T</td>
</tr>
<tr>
<td>10. c</td>
<td>30. T</td>
<td>50. F</td>
</tr>
<tr>
<td>11. c</td>
<td>31. T</td>
<td>51. T</td>
</tr>
<tr>
<td>12. b</td>
<td>32. F</td>
<td>52. T</td>
</tr>
<tr>
<td>13. a</td>
<td>33. T</td>
<td>53. T</td>
</tr>
<tr>
<td>14. c</td>
<td>34. F</td>
<td>54. T</td>
</tr>
<tr>
<td>15. d,e,b,a,f,c</td>
<td>35. T</td>
<td>55. T</td>
</tr>
<tr>
<td>16. e</td>
<td>36. T</td>
<td>56. F</td>
</tr>
<tr>
<td>17. c</td>
<td>37. T</td>
<td>57. T</td>
</tr>
<tr>
<td>18. a</td>
<td>38. T</td>
<td>58. F</td>
</tr>
<tr>
<td>19. c</td>
<td>39. F</td>
<td></td>
</tr>
<tr>
<td>20. e</td>
<td>40. T</td>
<td></td>
</tr>
</tbody>
</table>
Outline of Content

Lesson 1  Introduction
• What is disaster preparedness?
• Relationship of preparedness to other parts of the disaster continuum
• Policies for disaster preparedness programs

Lesson 2  Prerequisites for Preparedness Planning
• Information requirements
• Institutional requirements
• Elements of preparedness planning for emergency response

Lesson 3  Preparedness Plans
• General plans
• The national plan
• Regional government plans
• International support arrangements
• Steps for developing a disaster program

Lesson 4  Action Plans and Procedures
• Specialized plans and procedures
• An organization plan
• Functional plan guidelines

Lesson 5  Training Issues and Models
• Need for training
• Simulation exercises
• Computer-aided exercises

Lesson 6  Issues in Preparedness Planning
• Common problems
• Issues on preparedness

Lesson 7  Preparedness Roles and Responsibilities
• Disaster organization and preparedness models and guidelines
• Non-governmental organizations
• Inter-agency cooperation

Lesson 8  Public Awareness and Warnings
• Need for public education
• Typical activities of public awareness programs
Course Objectives

Lesson 1  Introduction
- Recognize important aspects that make up disaster preparedness.
- Describe all phases of the disaster continuum.
- Indicate an understanding of issues of formulating policies for disaster preparedness programs.
- Know who is involved in formulating disaster preparedness policies and what their roles are.

Lesson 2  Prerequisites
- Outline the types and sources of information needed to describe the scope, content and purpose of a disaster preparedness plan.
- Recognize the basic requirements of institutions involved with disaster preparedness and response.
- Describe the process for creating an emergency response preparedness plan.

Lesson 3  Preparedness Plans
- Define general plans.
- Recognize the basic categories within a general plan.
- Identify the objectives and scope of the national plan.
- Differentiate the type of planning done by agencies at the community/village, national, regional, and international levels.

Lesson 4  Action Plans and Procedures
- Identify the principles of specialized plans and procedures.
- Identify elements of a government organization plan.
- Describe the development of an organization plan.
- Recognize the major elements of a functional plan.
- List the important elements of a communications functional plan.
- Recognize the elements of a specialized plan.

Lesson 5  Training Issues and Models
- Understand the overall need for training.
- Identify who should receive disaster-related training.
- List the beneficiaries of disaster preparedness training.
- Describe various training techniques, using examples of special programs that offer intense training in aspects of disaster management.
Lesson 6  Issues in Preparedness Planning

- Understand problems common to many preparedness activities.
- Recognize the benefits and limitations of stockpiling.
- Identify dangers associated with evacuation shelters.
- Explain the arguments for and against centralized disaster management.
- Assess the effectiveness of military organizations in disaster preparedness roles.
- Describe the role of international assistance agencies in promoting interest in disaster preparedness.
- Recognize the political elements of disaster preparedness.

Lesson 7  Preparedness Roles and Responsibilities

- Recognize criteria and guidelines appropriate for constructing disaster preparedness programs.
- Identify roles effectively filled by non-governmental organizations.
- Recognize the inherent advantages of small disaster-response organizations.
- Understand appropriate steps to fill gaps in the delivery of social services.
- Demonstrate the necessity of inter-agency coordination.

Lesson 8  Public Awareness and Warnings

- Understand the need for public education programs.
- Outline the difficulties inherent in public education.
- Recognize what public education techniques have been used successfully.
- List activities basic to public awareness programs.
- Describe elements that make public warnings and information effective.
Lesson 1

Introduction to Preparedness

Study Guide Overview
This lesson defines disaster preparedness, explains its relationship to the disaster continuum and discusses the formulation of policies for guiding disaster preparedness programs.

Learning Objectives

• Recognize important aspects that make up disaster preparedness.

• Describe all phases of the disaster continuum.

• Indicate an understanding of issues of formulating policies for disaster preparedness programs.

• Know who is involved in formulating disaster preparedness policies and what their roles are.

• Identify the basic goals of disaster preparedness and what the most important resources are for achieving these goals.

Learning Activities
Read Chapter 1.

Evaluation
Complete the self-assessment test.
Lesson 1

Self-Assessment Test

Multiple Choice

*Circle the best answer(s):*

1. Practical experience has shown that ______ organizations are best equipped to assume responsibility for disaster preparedness.
   a. medical
   b. scientific/research
   c. operational
   d. meteorological
   e. special

2. Many actions taken during and after a disaster are considered preparedness measures because advanced planning creates the:
   a. automatic-type response to a disaster
   b. confusion during this period which makes disaster response impossible
   c. a more efficient organization and supervision of the response organization
   d. assignment of duties and promotes the training of personnel in advance of the disaster

3. Realistically, the basic goal of disaster preparedness is the attainment of the postdisaster conditions that are ______ those which existed before.
   a. far superior to
   b. equal to
   c. worse than
   d. better than
   e. not quite equal to

4. The most important resources for achieving disaster preparedness are:
   a. foreign expertise and materials
   b. people in the community
   c. military hardware and discipline
   d. voluntary relief organizations
   e. the local educational organizations

5. In general, the best way to assure appropriate and equitable assistance to disaster victims is through the development of:
   a. general guidelines and minimum standards
   b. restrictive, compliance policies
   c. stockpiles of essential supplies
   d. disaster assistance contract
   e. investment incentives and job-creating programs

6. Simply stated, the best definition of disaster preparedness is:
   a. identification and mitigation of various risks
   b. coordination and organization of governmental and non-governmental relief organizations
   c. development and implementation of an overall plan
   d. creation and assignment of international aid organizations
   e. hiring and training emergency personnel

7. Disaster preparedness should be linked to development because:
   a. they are adjacent on the disaster continuum
   b. failing to do so can set back years of progress
   c. the lessening of storm damage is important
   d. it improves the community’s ability to absorb the impact of a disaster
   e. alone it only accounts for a small percentage of the disaster continuum
8. All groups with ______ in the stricken area should be involved in formulating disaster preparedness policies.
   a. financial interests
   b. disaster leadership and managerial roles
   c. usable skills and training
   d. technical data pertaining to relief operations
   e. all of the above

True or False

Indicate T or F:

_____ 9. Uniform implementation of policies or guidelines, and minimum standards can reduce the inequitable delivery of materials and services by various relief organizations.

_____ 10. Disaster preparedness activities set the groundwork for necessary action to take place during the emergency and postdisaster phases.

_____ 11. Disaster planners need not worry about a disaster relief program creating a state of dependency or apathy among the affected people if they had been self-sufficient before the disaster.

_____ 12. The rehabilitation period is dramatic and traumatic and therefore should receive the greatest share of attention.

_____ 13. Normally, the national government is responsible for preparedness planning and the implementation of policies and standards, but all major organizations, especially those providing substantial relief, should participate in developing those documents.

Answer Key

Lesson 2

Prerequisites for Preparedness Planning

Study Guide Overview
The development of a program that allows for quick and appropriate disaster response requires considerable groundwork. Lesson 2 lays out this groundwork by identifying the kind of information to be collected and processed, describing the necessary institutional requirements and outlining the legal and fiscal authority needed as part of legislation.

Learning Objectives

• Outline the types and sources of information needed to describe the scope, content and purpose of a disaster preparedness plan.

• Recognize the basic requirements of institutions involved with disaster preparedness and response.

• Describe the process for creating an emergency response preparedness plan.

Learning Activities
Read Lesson 2 and Appendix I.

Evaluation
Complete the self-assessment test.
Lesson 2

Self-Assessment Test

Multiple Choice

Circle the correct answer(s):

1. At what stage in the creation of a disaster preparedness program is it important to research government legislation?
   a. advanced planning stage
   b. conceptual stage
   c. plan implementation stage
   d. disaster response stage

2. The most general information needed in disaster preparedness is the:
   a. number of possible casualties
   b. location of available resources
   c. geographical distribution of people and property
   d. nature of the hazards
   e. number of officials with previous experience

3. The groundwork that must be put in place before development of a disaster preparedness plan includes each of the following except:
   a. legislation that clearly spells out the government’s expectations of the plan and the process
   b. a legal and monetary plan for handling the disaster response
   c. stockpiles of commonly needed emergency supplies
   d. well organized institutions with charters which define their roles in disaster planning
   e. the gathering and processing of appropriate information

4. Each of the following is likely to be a requirement of an emergency preparedness plan except that it:
   a. contains a sequence of activities
   b. is comprehensive and balanced
   c. assigns specific tasks to specific organizations
   d. contains specific deadlines
   e. reflects policies of the implementing agencies

5. A charter or governing regulation which allows streamlined decision-making, clear lines of communication and authority and a complete description of an agency’s role in disasters is necessary if it is to:
   a. respond to disaster victims’ needs
   b. keep the media informed
   c. incorporate volunteers
   d. coordinate with the overall disaster program
   e. meet emergency obligations

6. The following is a list of steps leading to the formulation of a disaster response program. Place them in correct order.
   ____ a. develop tools (communication networks, etc.)
   ____ b. establish strategies and approaches
   ____ c. identify objectives to be met in each affected sector
   ____ d. create an implementing instrument (general plan)
   ____ e. train and drill relief workers and the population
   ____ f. put resources in place (maps, stockpiles)
True or False

Indicate T or F:

7. Researching the existing legislation on disaster preparedness should be done to help put the finishing touches on the disaster preparedness plan.

8. Creating a scenario of possible losses and needs allows the disaster manager to estimate required responses.

9. Information on past disasters is only marginally helpful to planners who are creating preparedness plans.

10. The methodology and authority for government agencies to spend public funds as needed while carrying out relief operations should be included in legislation dealing with disaster response.

11. It is usually expedient for disaster managers to assume that most agencies operating within an area can assume disaster response duties as necessary.

---

Answer Key

1. b
2. d
3. c
4. d
5. a, d, e
6. c, b, d, a, f, e
7. F
8. T
9. F
10. T
11. F
Lesson 3

Preparedness Plans

Study Guide Overview
This lesson describes the several types of preparedness plans—general, national and local. It also explores the variety of organizations involved in preparedness planning and examines their unique roles.

Learning Objectives

• Define general plans.

• Recognize the basic categories within a general plan.

• Identify the objectives and scope of the national plan.

• Differentiate the type of planning done by agencies at the community/village, national, regional, and international levels.

Learning Activities
Read Lesson 3, Appendix II and VI.

Evaluation
Complete the self-assessment test.
Lesson 3

Self-Assessment Test

Multiple Choice

Circle the correct answer(s):

1. Ruptured gas mains, downed power lines, polluted water, and fire are examples of disasters that are considered
   e. primary
   f. secondary
   g. minor
   h. unexpected
   i. nuisances

2. With advanced warning, the most important response to disaster threat can be
   a. evacuation
   b. education
   c. stockpiling
   d. communication
   e. search and rescue

3. When planning for emergency shelter for evacuees, the most important factor is
   a. location
   b. easing the transition from disaster response to rehabilitation
   c. camp organization
   d. sanitation
   e. the use of indigenous materials

4. Where in the government should the organization that coordinates disaster response not be placed?
   a. military
   b. paramilitary
   c. social service office
   d. executive office
   e. planning department

5. Which agency is probably best for placement of a country’s preparedness system?
   a. bureau of economic affairs
   b. national disaster assistance agency
   c. central housing authority
   d. social service agency coalition
   e. disaster information clearing house

6. The overall capacity to respond to disasters rapidly and effectively, thereby minimizing human suffering and loss of life and property, is best supported and coordinated by a:
   a. regional plan
   b. community plan
   c. national plan
   d. international plan
   e. village plan

7. Of the following activities carried out by international disaster relief organizations, which is least effective and most likely to hamper disaster efforts? Participation in:
   a. preparedness and mitigation programs
   b. national reconstruction projects
   c. disaster preparedness operations
   d. provision of urgent emergency relief programs

8. In many governmental agencies, efficient operation at the advent of a disaster requires a transfer of authority in the existing governing structure to the national disaster committee. It is very important that the implementations of these emergency powers are outlined in:
   a. local/regional planning
   b. national plans
   c. the executive branch
   d. legislation
   e. parliament
True or False

Indicate T or F:

_____ 9. Proclamations that have been prepared in advance for use at the time of a state of emergency should include a provision for price control at wholesale and retail levels.

_____ 10. International agencies are called upon to respond to emergencies in many geographical locations and are unable to create specific disaster plans. Therefore they should organize their operation so that they can rush supplies that are most frequently needed to any potential disaster site within their jurisdiction.

_____ 11. Disaster preparedness and planning activities at the village level are concerned largely with rehabilitation and reconstruction of their communities after the disaster event.

_____ 12. It is unlikely that a national plan would do much to support the development goals of a country.

_____ 13. The identification and location of resources and disaster organization is a major part of a national plan.

Indicate whether the following statements, which are supposed to define the scope of a national plan, are true or false.

_____ 14. The purpose of a national plan is to recognize the administrative structure of existing government agencies to allow them to respond effectively to disasters.

_____ 15. Create, define and structure the national disaster assistance organization.

_____ 16. Define the specific disaster preparedness needs of the country.

_____ 17. Organize and secure funding for new agencies as they are needed to carry out disaster activities.

Answer Key

1. b
2. a
3. a
4. c
5. b
6. c
7. d
8. d
9. T
10. F
11. F
12. F
13. T
14. F
15. T
16. T
17. T
Lesson 4

Action Plans and Procedures

Study Guide Overview
This lesson introduces the action plan as an implementing tool.

Learning Objectives

• Identify the principles of specialized plans and procedures.
• Identify elements of a government organization plan.
• Describe the development of an organization plan.
• Recognize the major elements of a functional plan.
• List the important elements of a communications functional plan.
• Recognize the elements of a specialized plan.

Learning Activities
Read Lesson 4 and review carefully Appendix III and IV.

Evaluation
Complete the self-assessment test.
Lesson 4

Self-Assessment Test

Multiple Choice
Circle the correct answer(s):

1. Immediate disaster response by the people involved with first aid, hospitals, food stores, public water supplies, highways, irrigation and public buildings should be determined by:
   a. action plans
   b. intuition
   c. assessment results
   d. senior officers
   e. legislation

2. Commitment to long-term development, frequent reassessment of the plan, coordination of resources and activities of foreign donors and voluntary agencies are most important in ______ emergency action plans.
   a. voluntary agency
   b. government
   c. Red Cross
   d. international relief agency
   e. foreign government

True or False
Indicate T or F:

In general, an emergency action plan structures the response of the organization so that:

_____ 3. All staff know what has happened, what is going to happen, when it should happen and who should do it.

_____ 4. Completion of one activity will lead to the start and completion of the next.

_____ 5. Material needs are assessed quickly and accurately, allowing urgent needs to be met first.

_____ 6. Transition from relief operations to unavoidable long-term actions is delayed as long as possible.

Answer Key

1. a
2. b
3. T
4. T
5. T
6. T
Lesson 5

Training Issues and Models

Study Guide Overview
This lesson explains the overall need for training. It also identifies who should receive disaster-related training and discusses who will benefit. Various training techniques are described.

Learning Objectives

• Understand the overall need for training.

• Identify who should receive disaster-related training.

• List the beneficiaries of disaster preparedness training.

• Describe various training techniques, using examples of special programs that offer intense training in aspects of disaster management.

Learning Activities
Read Lesson 5.

Evaluation
Complete the self-assessment test.
Lesson 5

Self-Assessment Test

Multiple Choice

Circle the correct answer(s):

1. Of the following training methods at the policy direction level, which is most inappropriate?
   a. post-disaster review
   b. skills training courses
   c. overseas training courses
   d. seminars
   e. workshops

c. decisions with life-or-death consequences must often be made rapidly
d. vast amounts of incoming information reduce decision making to a technical skill
e. government, private and voluntary agencies with no usual working relationships must coordinate their efforts during times of disaster

2. Which of the following considerations are important to the implementation of a disaster preparedness training program?
   a. training programs must be tailored to fit each country’s training needs
   b. training methods and procedures must be compatible with each country’s disaster plan
   c. the responsibility for creating and implementing a disaster training program must be clearly allocated
   d. starting a training program is easiest before a disaster when interest in preparedness is high

   a. community
   b. city
   c. county
   d. national
   e. international

3. The ultimate goal of disaster training is that it be developed for the ______ level.

   4. Simulation training exercises are based on all of the following conditions except:

   a. the atmosphere in which people responding to a disaster must work is charged with tension and uncertainty
   b. the information received after a disaster is often inaccurate and should be judged critically

   _____ 5. Adequate disaster training in developing countries expends on instructing teachers who, as members of a disaster training organization, will eventually inform the entire population.

   _____ 6. Post-disaster review allows trainees to learn from the mistakes of others by evaluating the past performance of a disaster plan and its components.

   _____ 7. Short simulation exercises are invaluable training tools and can be used to test readiness, communications, coordination, etc.

   _____ 8. Promoting self-reliance at the community level must be done with care to prevent local groups from usurping authority from the national disaster assistance organization

True or False

Indicate T or F:

_____ 5. Adequate disaster training in developing countries expends on instructing teachers who, as members of a disaster training organization, will eventually inform the entire population.

_____ 6. Post-disaster review allows trainees to learn from the mistakes of others by evaluating the past performance of a disaster plan and its components.

_____ 7. Short simulation exercises are invaluable training tools and can be used to test readiness, communications, coordination, etc.

_____ 8. Promoting self-reliance at the community level must be done with care to prevent local groups from usurping authority from the national disaster assistance organization

Answer Key

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>b</td>
</tr>
<tr>
<td>2.</td>
<td>a, b, c</td>
</tr>
<tr>
<td>3.</td>
<td>a</td>
</tr>
<tr>
<td>4.</td>
<td>d</td>
</tr>
<tr>
<td>5.</td>
<td>F</td>
</tr>
<tr>
<td>6.</td>
<td>T</td>
</tr>
<tr>
<td>7.</td>
<td>T</td>
</tr>
<tr>
<td>8.</td>
<td>F</td>
</tr>
</tbody>
</table>
Lesson 6

Issues in Preparedness Planning

Study Guide Overview
This lesson introduces the common problems and pitfalls associated with disaster preparedness activities. This includes pointing out the strengths and weaknesses of potentially dysfunctional activities such as stockpiling, identifying evacuation shelters, centralizing authority, and relying on military organizations to assume preparedness roles.

Learning Objectives

• Understand problems common to many preparedness activities.
• Recognize the benefits and limitations of stockpiling.
• Identify dangers associated with evacuation shelters.
• Explain the arguments for and against centralized disaster management.
• Assess the effectiveness of military organizations in disaster preparedness roles.
• Describe the role of international assistance agencies in promoting interest in disaster preparedness.
• Recognize the political elements of disaster preparedness.

Learning Activities
Read Lesson 6.

Evaluation
Complete the self-assessment test.
Lesson 6

Self-Assessment Test

Multiple Choice

Circle the correct answer(s):

1. The effectiveness of a preparedness plan is jeopardized by:
   a. emphasizing relief activities over preparedness activities
   b. relying on electronic communications, especially telephones
   c. carefully sequencing post-disaster activities
   d. determining mechanisms for delivering aid at the appropriate times within the disaster continuum
   e. delegating the authority to local levels

2. Which one of the following items is suitable for stockpiling by international relief agencies:
   a. food
   b. corrugated metal roofing
   c. tents
   d. medical supplies
   e. all of the above

True or False

Indicate T or F:

_____ 3. Providing large shelters for persons living in areas threatened by cyclonic storms is justified because it’s been fairly successful in the United States.

_____ 4. Non-centralized community-based preparedness activities are likely to provide disaster assistance that is compatible with local needs.

_____ 5. Military units are not well suited to long-term disaster roles.

_____ 6. The military usually responds to disasters using military equipment and procedures, without looking for responses that may be more appropriate.

_____ 7. Military philosophy cannot be easily applied to civilian circumstances especially when families are affected.

_____ 8. A hierarchical decision-making process can discourage collective group response by victims.

Answer Key

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>a</td>
</tr>
<tr>
<td>2.</td>
<td>d</td>
</tr>
<tr>
<td>3.</td>
<td>F</td>
</tr>
<tr>
<td>4.</td>
<td>T</td>
</tr>
<tr>
<td>5.</td>
<td>T</td>
</tr>
<tr>
<td>6.</td>
<td>T</td>
</tr>
<tr>
<td>7.</td>
<td>T</td>
</tr>
<tr>
<td>8.</td>
<td>T</td>
</tr>
</tbody>
</table>
Lesson 7

Preparedness Roles and Responsibilities

Study Guide Overview
This lesson discusses the roles and responsibilities to be delegated according to agency type. The needs for coordination among these groups both before and after a disaster are explained.

Learning Objectives

• Recognize criteria and guidelines appropriate for constructing disaster preparedness programs.

• Identify roles effectively filled by non-governmental organizations.

• Recognize the inherent advantages of small disaster-response organizations.

• Understand appropriate steps to fill gaps in the delivery of social services.

• Demonstrate the necessity of inter-agency coordination.

Learning Activities
Read Lesson 7 and Appendix V.

Evaluation
Complete the self-assessment test.
Lesson 7

Self Assessment Test

Multiple Choice
Circle the best answer(s):

1. At what point(s) should voluntary agencies, or small community agencies, become involved in the disaster process?
   a. formation of preparedness policy and guidelines
   b. creation of the national disaster preparedness committee
   c. design of the preparedness plan
   d. implementation of the preparedness plan
   e. disaster response

2. Of the following preparedness activities, non-governmental agencies are least likely to:
   a. promote public awareness of disaster effects
   b. teach appropriate mitigation and response strategies
   c. form local disaster coping structures
   d. aid in the psychological recovery of victims
   e. provide specialized equipment for search and rescue operations

3. A national disaster organization should consider all of the following except:
   30. becoming an integral part of the routine of government
   31. placing primary stress on disaster response
   32. collecting and analyzing a wide range of disaster-related information
   33. aligning relief operations with long-range rehabilitation
   34. using local resources to as high a degree as possible

4. In the development of a disaster preparedness program, experts are most needed to:
   a. provide technical materials and support
   b. write the disaster preparedness plan
   c. prepare lines of communication and authority
   d. repair and operate equipment (radios, transport equipment, etc.)
   e. enable local people to develop their own preparedness competence

True or False
Indicate T or F:

_____ 5. Nations should never implement an off-the-shelf or generic preparedness plan without modification.

_____ 6. The effort expended by a disaster preparedness planner to recruit local resources should approximately equal the effort expended to recruit international resources.

_____ 7. Coordination can best achieve effective disaster response by ensuring equitable distribution of resources within areas of greatest need.

_____ 8. There is a real danger that without careful planning and coordination, disaster relief services can prove useless or even harmful.

_____ 9. Coordination is based on the clear allocation of roles and responsibilities among disaster relief agencies.

_____ 10. The competition between various non-governmental agencies for funds from donor agencies assures the disaster victims receive the best services available.

Answer Key

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>a, d, e</td>
<td>6.</td>
<td>F</td>
</tr>
<tr>
<td>2.</td>
<td>e</td>
<td>7.</td>
<td>T</td>
</tr>
<tr>
<td>3.</td>
<td>b</td>
<td>8.</td>
<td>T</td>
</tr>
<tr>
<td>4.</td>
<td>e</td>
<td>9.</td>
<td>T</td>
</tr>
<tr>
<td>5.</td>
<td>T</td>
<td>10.</td>
<td>F</td>
</tr>
</tbody>
</table>
Lesson 8

Public Awareness and Warnings

Study Guide Overview
This Lesson introduces the concept of public awareness and warnings. Form, content, and source of such activities are identified.

Learning Objectives

• Understand the need for public education programs.

• Outline the difficulties inherent in public education.

• Recognize what public education techniques have been used successfully.

• List activities basic to public awareness programs.

• Describe elements that make public warnings and information effective.

Learning Activities
Read Lesson 8.

Evaluation
Complete the self-assessment test.
Lesson 8

Self-Assessment Test

Multiple Choice

*Circle the best answer(s):*

1. In general, a public education program should
   a. be structured as a series of short-term goals
   b. be in addition to a national disaster plan
   c. teach both specialists and the general public
   d. focus on elementary schools
   e. rely fully on the mass media

2. Infeasible goals, inadequate funding, and delays owing to inadequate coordination cause many public information programs to fail. These problems can best be avoided by acting during the program’s _____ stage.
   a. planning
   b. conception
   c. implementation
   d. review
   e. all of the above

3. Capabilities of a long-term disaster information program include:
   a. constant dissemination of accurate and relevant disaster precaution and mitigation information
   b. complete organizational independence and self-sufficiency
   c. a large, well-trained educational staff
   d. the circulation of information suited to the needs and the customs of the people
   e. the ability of all staff to answer questions for the mass media during emergencies

4. Successful communication being the backbone of a public awareness program demands that the message
   1. come from a trusted source
   2. come from as many sources as possible
   3. include a complete technical analysis of the perceived danger
   4. only be delivered through official government channels
   5. be broadcast on electronic communications equipment

5. In general, public education methods used for agricultural improvements, family planning and the like have shared certain traits that contribute to their success. One of those traits is:
   a. the use of mass printed media to reach rural populations
   b. the use of the official language
   c. professional producers, writers, and actors
   d. unsophisticated printing techniques
   e. preparation for very specific populations

True or False

*Indicate T or F:*

_____ 6. Traditional fatalism in regard to natural disasters can be reduced by providing people with basic information about disaster responsibilities and natural phenomena and their effects.

_____ 7. Short-term public education efforts are an effective means of improving the public’s response to disaster warnings.

_____ 8. It is likely that different means of communication and different approaches will have to be used to inform urban and rural population.

<table>
<thead>
<tr>
<th>Answer Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. c</td>
</tr>
<tr>
<td>2. a</td>
</tr>
<tr>
<td>3. a, d</td>
</tr>
<tr>
<td>4. a</td>
</tr>
<tr>
<td>5. e</td>
</tr>
<tr>
<td>6. T</td>
</tr>
<tr>
<td>7. F</td>
</tr>
<tr>
<td>8. T</td>
</tr>
</tbody>
</table>
Disaster Preparedness

Professional Review Board

W. Nick Carter
Paul Thompson, Principal Author / Editor
This publication was prepared by the Disaster Management Center at the University of Wisconsin-Madison with financial support from the U.S. Office of Foreign Disaster Assistance, United States Agency for International Development (OFDA/USAID).

Technical text prepared by Paul Thompson of INTERTECT. Professional Review Board included W. Nick Cater and the staff of the USAID Office of Foreign Disaster Assistance.

This report was prepared by the University of Wisconsin (UW). Neither the UW nor any of its officers or employees makes any warranty, express or limited, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, mark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement by the UW.

© 1987 by the Board of Regents of the University of Wisconsin System

All rights reserved.

Produced by the University of Wisconsin – Madison

Manufactured in the United States of America

For permission to reprint, contact:

Disaster Management Center
University Of Wisconsin-Madison
Engineering Professional Development
432 North Lake Street
Madison Wisconsin 53706 USA
608-262-5441

If you need this material in an alternative format, please contact the program coordinator or the Office of Equal Opportunity and Diversity Programs.

Direct policy inquiries to the Office of Equal Opportunity and Diversity Programs, 501 Extension Building, 432 N. Lake Street, Madison WI 53706.
Acknowledgements

Many individuals and organizations contributed to the realization of this self-study course. At the Office of Foreign Disaster Assistance, the foresight and collaboration of Frederick Cole, Gudren Huden, and Denise Decker have been invaluable. The thoughtful review by Darrell Petska helped smooth out the rough edges. From INTERTECT, the guidance of Paul Thompson with the assistance of Fred Cuny brought a cohesive text out of many disparate ideas, with added help from Jean Parker and Deborah George. At the University of Wisconsin, Linda Hook, Sarah Hayes, Kate Olle, and Kristen Baer must be thanked for their efforts in preparing and editing the manuscript; and at Artifax, Val Parish and Susan Kummer for layout and typesetting. The course development process is never over, and each of these people understands that very well.
Introduction

Disaster management as an identifiable profession is relatively new. The tasks of a disaster manager, however, have been around for a long time. They have typically been thought of as disaster relief assistance, or as specific ad hoc activities during and after a disaster emergency. Many people have been disaster managers without thinking of themselves in that term.

There has been a growing awareness in recent years that all of these activities, in fact, comprise the process of disaster management. By understanding this as an identifiable role, we can describe a coherent and cohesive direction for people who are involved in the field of disasters. This, of course, includes the spectrum of activities from administration to project implementation: disaster prevention, disaster mitigation, disaster preparedness, and disaster response.

Disaster management is not necessarily a full-time activity. Indeed, for most people in the field, concerns for disaster issues form only a part of their total responsibilities. Similarly, this course is not designed for only full-time professional disaster managers. Rather it is intended to be useful even for individuals who expect to be active only during some aspect of disaster-related operations.

One of the ideal objectives of this course and of the Disaster Management Center (DMC) is that disaster managers eventually work themselves out of their jobs. The ultimate success of disaster management would be the elimination of the underlying causes of disasters; this would contribute to minimizing the people’s vulnerability to disaster. Positive responses to emergencies will make an enormous impact on the current deadly state of disaster events.

To move towards those idealized objectives will require more from disaster managers than an understanding of the aim and scope of their jobs. It will also require development of several skills and technologies. The Disaster Management Center views this course as one component of a training program that will contribute towards those skills and techniques.
Chapter 1

Introduction to Disaster Preparedness

This course will describe the purpose, extent, limits, and primary activities of disaster preparedness. The following Lessons will provide detailed information on how to plan or execute each of these activities and steps. This Lesson provides an overview of the scope of disaster preparedness activities and demonstrates their inter-relationship with each other.

The course is written for disaster managers working in or with national governments. Persons working with inter-governmental agencies and voluntary agencies should find this material helpful in their preparedness activities as well. Much of the information or procedures described are of direct application to these other groups.

I. What is Disaster Preparedness?

Formerly, disaster planners thought disaster preparedness only referred to getting ready for an emergency response, but the concept is, in reality much more complex.

“Disaster preparedness consists of a wide range of measures, both long- and short-term, designed to save lives and limit the amount of damage that might otherwise be caused by the event. Preparedness is concerned with long-term policies and programs to minimize the impact of disasters. The corresponding measures are taken in such fields as legislation, physical and urban planning, public works and building.”

Short-term preparedness measures are taken during a warning period before the impact of a disaster event. They must be supported by legislation and be concerned with operational planning; education and training of the population at large, and the technical training of those who will be required to help in a relief operation; stockpiling of supplies; and emergency funding arrangements. These measures must also include vulnerability analysis, and warning system and evacuation planning. The more effectively these tasks are carried out in advance, the more readily will it be possible to take the action necessary during the emergency phase itself and in the later phases of relief, rehabilitation and reconstruction.

Preparedness measures taken during a disaster include sheltering evacuees, maintaining communications and protecting critical facilities and lifelines; and immediately following the disaster, planning and implementing search and rescue, disaster assessment, evacuation and treatment of injured persons, security in the disaster-affected area, restoration of lifelines and critical facilities that have been damaged, and further evacuation of areas threatened by secondary disasters.

The scope of disaster preparedness, therefore, goes well beyond the tasks of preparation. As mentioned above it carries into the emergency period of the disaster itself. The initial actions of disaster response should be the reactions of implementing a disaster preparedness plan. That is, a well planned disaster preparedness program which has been tested and practiced will become a learned activity. The knowledge of what to do in a disaster will be “internalized.” Not only will the governmental and non-governmental organizations know what to do and how to act accordingly, but so will the general public.

The state of disaster preparedness in a country can be defined as a measure of the willingness and capability of the country and its people to take the various steps needed to safeguard lives and property during any warning period which may be granted, as well as in the post disaster phase.
Preparedness is normally seen as an activity of the planning and engineering disciplines as well as medical, social, and security services. Practical experience has shown that the best organizations to assume responsibility for preparedness are operational agencies. For governments, this means ministries that have their own communications and transport, as well as administrative facilities (for this reason, preparedness is often assigned to military or paramilitary organizations such as civil defense agencies). Additional appropriate ministries are public works departments, housing ministries, and other “operational” agencies.

The organization of these various agencies with their respective services and skills must allow them to work harmoniously together. If one part of the system fails, other elements could be seriously handicapped, and there is, of necessity, a high degree of interdependence between the various components. However, the system should be so designed that if one element does fail, the organization, although weakened, will continue to function and provide the service required.

What this implies is that effective plans cannot be based on the assumption that the authorities and the emergency services will themselves be untouched in the event. Even if physical facilities are not destroyed or disrupted, personnel may be killed or injured, or suffer the adverse effects of stress, or may simply be prevented from reaching their duty station. Plans which do not allow for these factors may fail just when they are most needed.3

---

Figure 1.1
Disaster Continuum
II. Relationship of Preparedness to Other Parts of the Disaster Continuum

The disaster-related activities of prevention, preparedness, emergency relief, rehabilitation and reconstruction each occupy a distinct time period in relation to a disaster. The length of time any one period will last can vary greatly depending on the type of disaster and other factors. Nevertheless, it is important that people involved in disaster planning and response recognize the different phases and the appropriate activities that occur in each phase. For example, many emergency activities involve the distribution of free relief supplies. If this activity is carried on in the later phases (for example, during reconstruction), there is a danger that dependency relationships can be established, and the relief may provide disincentives to agricultural or economic recovery.4

This course on disaster preparedness includes information on the predisaster activities of disaster preparedness and on planning for emergency response. A separate course, called Disaster Response, deals with carrying out emergency response activities as well as planning and implementing the postdisaster recovery activities of rehabilitation and reconstruction. These activities are shown on the disaster continuum on the previous page.

Pre-disaster activities. These activities are normally subdivided into disaster prevention, disaster mitigation and disaster preparedness. In general, disaster prevention is event-focused. In other words, the objective of prevention is to prevent the disaster from occurring at all. Disaster mitigation accepts the fact that some natural event may occur but tries to lessen the impact by improving the community's ability to absorb the impact with little damage or disruptive effects. Disaster preparedness assumes that the disaster will occur and focuses on structuring response and laying a framework for recovery.

Emergency response activities. Emergency response activities are those carried out during the actual emergency or immediately prior to it. This may involve evacuation of threatened communities, emergency assistance during the disaster, and actions taken in the immediate aftermath during the time when the community is rather disorganized and basic services and infrastructure are not fully functioning.

Preparation for emergency response activities is discussed in Lessons 3 and 4 of this course.

The emergency period is dramatic and traumatic, therefore most attention by the press and international community is focused here. Yet in most disasters (with the exception of droughts, famines, and civil strife), the emergency passes rather quickly, and in reality, only accounts for a very small percentage of the disaster continuum.5

Postdisaster activities. Implementation of these emergency response activities is an element of disaster response which, as mentioned earlier, is covered in the Disaster Response course. Recovery in the postdisaster period can be subdivided into two phases. The first begins at the end of the emergency phase and is a transitional phase (often called the rehabilitation phase) when people and community systems try to re-establish a semblance of normalcy. This period is usually characterized by such activities as businesses reopening in damaged structures, farmers returning to reclaim and clear their land, and resumption of basic infrastructure such as water and sanitation systems in urban areas.

The reconstruction phase is marked by large-scale efforts to replace damaged buildings, revitalize economies or restore agricultural systems to their full predisaster production capacity.

The Relationship of Various Time Phases to Each Other
The activities that are carried out to mitigate a disaster very closely resemble the activities that would be carried out during reconstruction. An observer will also notice that the activities
carried out in both these phases are essentially development activities as they not only reduce
the disaster impact but also provide economic or social benefit. By understanding how these
activities relate to each other, one can see where development activities can play an important
role in disaster mitigation and response.

How Activities in One Phase Should Set the Stage for the Next
Referring again to the disaster continuum, it is possible to see how activities in one phase relate
to the preceding and following phases. For example, emergency response can be facilitated if
the operations have been planned prior to the disaster, not during it. As the general rule, it
should be remembered that each phase and each activity of a disaster lays the framework and
sets the stage for activities in the next phase. Therefore, when planning an emergency
response, the disaster manager should keep in mind how that activity can help promote faster
recovery. A simple example would be as follows. If a house has been destroyed in a windstorm
or flood, there are several options for providing shelter during the emergency. You can provide
a tent, which will offer shelter, or you can provide building materials that can be used to build a
temporary shelter and then re-used in a permanent house during reconstruction. The tent
solves one need during one phase; the building materials solve needs in the emergency phase
and set the stage for reconstruction.

III. Formulating Policies for Disaster Preparedness Programs

Preparedness Planning
Disaster preparedness is a product of planning and of implementing those plans. The planning
process results in a preparedness plan that includes:

- identification of the various disaster risks
- identification of the needs of specific communities to protect themselves from that risk
- identification of the resources of the community, its government and the agencies
  involved in disaster preparedness
- specification of actions to be taken and by whom.
- clear chain of command within which all organizations active in disaster relief are
  coordinated

Orientation to Preparedness Planning
In providing assistance to disaster victims, many differing approaches and programs may be
used. Unfortunately, different approaches may result in the inequitable or unequal delivery of
materials and services. This can cause problems for the local government and for the
organizations with long-term commitments to the area.

One of the ways in which these problems can be avoided is by setting uniform policies or
guidelines and minimum standards. These provide a method for shaping the emergency
response and a basis upon which program coordination can be affected. Ideally, uniform
policies and standards are set as a part of the disaster preparedness process.

Normally, the national government is responsible for developing and implementing policies and
standards, but all major organizations, especially those providing substantial relief, should
participate in developing the documents.

Policies do not need to be extremely complicated nor long; in fact, simpler and briefer
documents increase the chances of voluntary compliance.
**Key Issues**

There are three key issues to consider when establishing and implementing uniform policies and standards. They are:

**Who Sets the Policies**

It is the responsibility of the national government to establish and implement policies and standards. A government, however, may be reluctant to develop or enforce these standards for fear of alienating foreign assistance agencies, and thereby reducing or hampering the aid process. In this case, the relief agencies or a consortium of the major donor organizations should get together and work out informal policies and minimum standards which all relief agencies can follow.

**Compliance**

Unless the government makes compliance a requirement, some agencies will conduct relief programs contrary to the expressed intent of the policies or provide services below the minimum standard recommended. If policies and standards have been developed by the government but are not enforced, donor agencies can assist by ensuring that projects they fund meet and/or exceed the standards set.

**Restrictive Versus Permissive Policies**

It is important that all policies and standards be flexible and permit relief agencies to adapt their programs to the specific requirements of the communities in which they are working. As a general rule, it is best to develop permissive policies and to set minimum standards, rather than be too restrictive. The objective of policies and standards is to guide reconstruction, not to dictate the precise approach of all relief agencies.

**Key Concepts**

**Linkage to Development Plans**

Preparedness policies and standards should be coordinated with long-term development plans and objectives of the government. Preparedness strategies can be a means of helping to attain many of these objectives, and thus, preparedness policies and standards must be compatible with long-term plans and, to the greatest extent possible, contribute toward these ends.

**Performance Concepts**

The establishment of policies and standards should be based on the level of performance desired. This needs to be done by establishing the level of performance that is expected of each relief sector. For example, plans can be made that establish a minimum amount of food and water that each disaster victim will need for emergency survival.

**People and Organizations**

Key organizations that should be involved in the development of policies and standards are:

- The national emergency coordinating organization(s)
- Appropriate government ministries
- Appropriate financial institutions
- The National Red Cross Society
- Voluntary agencies
- Representatives of affected trades
- Representatives of the local technical community (architects and engineers)
- Foreign government missions typically involved in emergency relief
- Appropriate U.N. representatives
Roles for Relief Agencies

Important roles which agencies, both internal and external, and governmental and non-governmental, can play are:

- To encourage the appropriate authorities to develop and implement uniform reconstruction policies and standards as part of disaster preparedness activities.
- To provide technical input to the development of the policies and standards.
- To disseminate information about the standards and encourage periodic review.
- To give funding priority to those agencies that agree to comply with the government’s standards and policies.

Lessons Learned

- Without policies and standards, relief programs and the aid they provide will be unequal, confusing, and in many cases, inequitable to the disaster victim.
- In order to achieve maximum compliance, as many agencies as possible should be involved in the setting of policies and standards.
- Most non-governmental agencies welcome the establishment of standards and policies as it provides guidance to them in program planning and implementation.
- The policies and standards should be based on reasonable expectations of performance and should recognize the capabilities and capacities of the implementing agencies.
- The policies and standards must be set prior to the onset of relief, rehabilitation and reconstruction activities. Otherwise, they are unenforceable.

IV. Summary

Any disaster or major emergency disrupts normal life, causes breakdowns in (or makes excessive demands upon) the national administration and infrastructure, affects production, and generally means that resources have to be diverted from normal and development purposes to relief, rehabilitation and reconstruction. The people who suffer the most are usually those with the least resilience and with few, if any, resources of their own. The final objective of predisaster planning, using that term in its widest meaning, should be the attainment of postdisaster conditions which will be superior, at least in terms of disaster resistance, to those which existed before. To attain this aim, it will be necessary to seek and obtain the participation and cooperation of the people in the execution of the plans, to encourage self-reliance, and to avoid the creation of a state of dependency or apathy. Technical resources have their place—an important place—in predisaster planning, but the wise planner will recognize that people themselves are the most important resource at his or her command.

References

2. Ibid.
3. Ibid.
Chapter 2

Prerequisites for Preparedness Planning

The process of developing a preparedness plan that enables quick and appropriate response to a disaster requires considerable groundwork. This Lesson identifies the kind of information to be collected and processed to formulate the plan, describes the institutional requirements that are necessary for a plan to be developed and implemented, and outlines the legal and monetary authority that is required for enabling legislation to put the plan into practice.

I. Information Requirements

A thorough and appropriate disaster preparedness plan is based on a wide range of information. In fact, a great deal of information needs to be collected to describe the scope, content, and purpose of any disaster preparedness plan. The plan can actually be viewed as a document created in response to the disaster related information. This section of the course will identify the types of information needed to create an effective preparedness plan and possible information sources.

Hazards, Risk, and Vulnerability

The first step in developing a preparedness plan is to identify the natural hazards of the region, the degree of risk that the population is subjected to and their vulnerability to injury, loss of life or property.

The following sources of information are normally of use when analyzing the threats posed by each type of disaster:

- National records;
- Data and advice from specialist departments (such as meteorological service, geophysical observatories, mines and surveys);
- Publications resulting from surveys and studies, both national and international;
- Past experience of disasters as recorded or noted by organizations, the media, and individuals;
- Any available analyses of risks and vulnerability; and
- Local knowledge.

From these sources, it should be possible to construct a comprehensive assessment of the nature, degree and pattern of the likely threats to different areas of a country, and perhaps to determine the general priority which should be given each threat. However, before the effects of the threat can be fully assessed, certain subsidiary factors should also be considered.

These factors may include:

- Terrain characteristics;
- Geographical distribution of people and property;
- Agricultural and crop patterns in a given area;
- The type of buildings in which people live, work and go to school;
- The specific vulnerability of roads, communications and essential service centers such as hospitals;
- Experience of officials and communities in dealing with disaster;
- Any major environmental changes that have occurred recently like the building of a dam or the silting of a river;
The accuracy of the disaster warning and the length of time between the warning's issuance and the expected onset of the disaster.

**Disaster Effects and Required Response**

Estimate the effects of the disaster and the requirements of a response. The primary sources to develop these estimates are the same as above. Others include the application of microzonation, mathematical modeling of disaster agent impact, scenarios, gaming, and the use of field exercises. From them the planner can calculate the potential extent of disaster related losses and casualties in terms of geographic area, specific populations, agricultural crops and livestock, industry and infrastructure/lifelines.

The estimate of a disaster’s effects can be characterized as a scenario of possible losses and needs. Estimates can then be created that anticipate the resources that are required to respond to the loss. These estimates include not only commodities of food, medicines, and shelter but also the logistical requirements of getting relief to the potential victims.

**Resources**

Make an inventory of the resources available to a vulnerable community or region. These resources include:

- available stocks of items that will be needed for emergency relief;
- agencies (public and private, domestic and foreign) capable of contributing to emergency relief;
- facilities that can be utilized for emergency relief such as temporary shelters, distribution centers, operations centers, etc;
- public services that will be called on to assist in emergencies such as police, fire department, civil defense forces;
- maps showing population distribution, rivers, roads, tunnels, bridges, train routes, air/sea ports, etc.
- items necessary for meeting logistical requirements such as trucks, warning and other communications systems and equipment, water reserves and equipment for transport and storage, etc.

The inventory which locates and quantifies all of these resources within a disaster prone area may well be one of the most important resources. One of the primary purposes of such a document is that it indicates the level of self-sufficiency of the area surveyed. As a general rule it is preferable to rely on and utilize locally available resources than to import them during a crisis. This is because the local resources - whether food, medical assistance, people, or trucks - are invariably more appropriate, more readily put into service, and are usually more cost effective than imported resources.

An important part of the information gathering process is to correlate the resources with the estimated emergency and postdisaster needs. This will describe the deficiencies within the disaster prone area and quantify those resources that either need to be increased within the area or will be needed from the outside.

**Legislation**

Research the existing legislation on disaster preparedness, response, and reconstruction issues. It is necessary to identify what is already “on the books,” to analyze the adequacy of the current legislation, and to describe what steps need to be taken to update or strengthen the legislation.

For more information see Appendix I, Legal authority, Elements of Legislation.
Financial Matters and Compensation

In considering the matters to be covered in preparedness legislation, it is important to note what “financial measures” have been included. It is clearly important that authorities charged with the responsibility for directing or carrying out relief operations should not be hampered by any lack of the necessary authority to spend public funds. The detailed arrangements for achieving this end will naturally vary according to the type of governmental structure in each country, but in principle there should be created either a permanent Emergency Reserve Fund or an Emergency Funding Committee which would be empowered to vote the necessary money if the Legislature were not in session at the time an emergency were declared.

II. Institutional Requirements

It is obvious that a disaster plan and its implementation during emergencies requires a great deal of inter-agency cooperation and interdependence. This places a certain burden on each agency or institution that will be an active participant in disaster response. That is, each agency must have its own “house in order” so that it can meet the obligations of the agency and meet the needs of the disaster victims.

Each institution, therefore, must have its own internal structure that allows it to respond to disasters in the manner required. For agencies that are incorporated its constitution and bylaws need to identify disaster response as a function of the corporation and to make allowances for decision making, raising and disbursing funds or supplies using emergency procedures. These procedures should be coordinated with the overall policies for disaster planning and response as described in the preceding Lesson.

Public institutions or governmental agencies also need their charter or governing regulations tailored to allow for streamlined decision making, clear identification of lines of communication and authority, and a complete description of their role in the disaster.

III. Elements of Preparedness Planning for Emergency Response

Once the information identified above has been gathered, a preparedness plan is developed. This includes six steps. First is the prior determination of the objectives to be met in each affected sector. Second, the strategies and approaches necessary to accomplish these objectives and plug any gaps that have been identified are determined.

The third step is the development of an implementing instrument. This is usually in the form of a disaster preparedness plan, a formal document that sets out the sequence of activities and the responsibilities of each participant.

The purpose of the plan is to place all activities in a comprehensive framework, so that they can be executed in an orderly and sequential manner. Normally, activities are divided into parts, so that resources can be marshaled at each critical place and stage, and disaster managers can concentrate on the most critical activities at the appropriate time.

Plans for a small agency or community may be no more than a brief checklist and description of activities with the assignment of responsibilities noted on the margins, while a national preparedness plan may include a series of documents, including network diagrams and flow charts of activities, subplans (known as specialized plans) for each sector (see Lesson 4), department, and/or agency, scores of checklists and
emergency procedures to be followed, along with a statement of policies. Whatever form a plan follows, it is important that it be written down, both to serve as a reference and to ensure that no activities are forgotten in the haste of the disaster.

To be successful as an implementing instrument, an emergency preparedness plan must meet the following requirements:

- It must present the sequence of activities in a logical and clear manner.
- It must be comprehensive and balanced.
- It must assign specific tasks and specific organizations to be responsible for each.
- It must link appropriate organizations into a cooperating whole and establish mechanisms to bring people, organizations and information together at the critical points.
- It must reflect the policies of the implementing agencies or the national government in a disaster.

The fourth step in preparedness is the development of the tools necessary to respond and implement the plan. Tools include the establishment of communications networks; transport capabilities; action plans, procedures, and checklists for specific areas; the establishment of evacuation routes; and the acquisition and strategic placement of search and rescue equipment.

The fifth step is the strategic placement of resources to be used in the response. For most agencies, this means stockpiling or working out relationships with suppliers to enable rapid acquisition and delivery of needed relief materials. Other activities may include drawing up lists of materials, personnel, and other resources, and the establishment of contingency funds. For the international relief agencies, stockpiling has become a much debated topic, with many critics pointing out that it is of only limited benefit unless carried out in-country.

Generally, if a resource is of real value, then stockpiling should be encouraged in or close to a threatened community, while insuring its protection from prevailing hazards.

The sixth and final step in preparedness is training and drill. A preparedness plan and the tools of preparedness are of little value unless people know how to use them effectively. Performance is enhanced first by training, which means acquainting personnel with the plan and the sequence of activities, as well as with the tools and resources, and instruction on how to use each effectively. Drill includes practice designed to make each activity routine and thereby help reduce time of response, and to help identify the bottlenecks and “debug” the system. Disasters, fortunately, occur infrequently. But between disasters, people and institutions change; it is easy for gaps to develop and for people to forget what has been set out in the plan. Periodic review and drill is the only practical way of keeping the preparedness activities fresh in everyone’s mind and adapting the plan to changing organizational structures and to changing needs. (An innovative method of keeping the preparedness plan up-to-date has been formulated in Sri Lanka. Each year at the beginning of the cyclone season, the government holds a “Cyclone Awareness Day.” On that day, each government department and non-governmental institution with a disaster assignment is required to review and update its plan and send a notice of any changes to the central disaster coordinating office.) In many countries, it is normal practice for critical facilities, such as
hospitals and power generation facilities, to conduct periodic disaster drills, which are analyzed to determine what changes need to be made in the disaster plan.

Without constant drill and training, disaster preparedness efforts will come to naught. Recently, a small island nation that had been stuck by heavy flooding decided to establish a preparedness plan. After several months of painstaking activities, the new plan was prepared and submitted to the government. Only after it was adopted was it learned that a similar plan had been prepared twenty-five years earlier in response to flooding in the same location. Because there had been no provision for drill or updating, it had been forgotten over the years.(10)

References

I.  Introduction

Disaster preparedness is the composite readiness of a nation or community to meet an emergency. The previous Lesson described the various components of preparedness. One of the components, the preparedness plan, in effect describes or embodies all of the others. It puts in place the means with which to respond to a disaster and to start the process of bringing a community back to normal after a disaster.

There is no such thing as a standard, all-purpose emergency plan. There are, however, certain elements which any plan must contain if it is to be effective. At the outset, it should define clearly and precisely the situation for which it is designed, distinguishing between the nature and magnitude of the threat or threats, and the specific local factors which are expected to influence the possible and desirable actions in response.

A plan must be realistic and adaptable: just as there can be no standard plan there will be no “ideal” disaster. It must therefore lay down what resources the planning area can, and will be expected to, provide, and how and when they will be called forward. Broadly, resources can be grouped into manpower, equipment and finance. This exercise will be based on the expected needs for the type and severity of disaster, and once completed will indicate how much in the way of additional resources will be required from outside the area. Naturally a balance must be sought between the three groups of resources. Manpower will perhaps be of little avail without equipment, or funds for its purchase; equipment will be useless if there is no one to operate it. Resources of any kind can be wasted if their provision and use are not properly coordinated.  

In general it should be noted that any complete disaster preparedness and response plan needs to make arrangements in four categories, namely:

- General (or main) plans (which cover overall arrangements for dealing with disaster at any particular level).
- Functional plans (which cover aspects such as communications, search and rescue, emergency shelter, feeding, etc).
- Organization plans (which cover the roles and activities of organizations, departments, etc. in fulfilling their allotted tasks within the context of a general plan).
- Special plans (which deal with a particular or special threat, usually as an adjunct to a general plan; an example could be the threat of a dam collapse which would flood a specific populated area).

This chapter focuses on the contents of the plans at various levels of government, identifies key issues in their preparation, and outlines the steps for developing them.

II.  The National Plan

Plan Elements

The following are the key elements of a national disaster preparedness plan. These plan elements are intended to be illustrative rather than definitive. They call attention to primary
requirements and alternatives for disaster planning objectives, disaster preparedness organization, operation procedures, and support for disaster plan implementation. The solutions to these requirements have worked in a number of countries, but they are not the only way to do the job. The plan elements presented herein should be considered and adapted to meet the specific conditions of each country or region according to their requirements and capacity to support a disaster planning and preparedness capability.

This discussion may also serve as a guide to the state or provincial level. Requirements for organization, assignment of functional responsibility, and planning effort must also be identified at these levels. They are similar in character, if not in scope, to the requirements underlying a national plan and organization.

Objectives of a National Plan
A national plan supports the nation's capability to respond to disasters rapidly and effectively, and thereby to minimize human suffering and loss of life and property. By anticipating disasters and acting to minimize their effects, this plan also supports the continuity of the nation's growth and development.

Such a plan identifies the disaster-related organizations, systems, and detailed plans necessary to assure that available resources and skills are mobilized rapidly and effectively to meet essential human needs and to reestablish normal conditions.

A disaster plan is designed to make as much use as possible of existing resources, systems, and organizations and to work within the established government structure.

Scope of National Plan
A national plan, outlined in the following pages, identifies requirements for developing additional, detailed operating plans by agencies assigned disaster preparedness and response roles.

This plan includes the following elements:
- A description of the structure and functions of the national disaster assistance organization
- A description of disaster preparedness and response objectives and activities, and the assignment of responsibility for them
- General concepts for preparedness and response operations
- Steps for the establishment and funding of the required organizations, systems, and activities.

Organization
The national disaster preparedness system of a country may be organized in several ways. The fundamental principles of agencies designed to prepare for and contend with a disaster or other emergency differ very little from those applicable in other activities of government. Some countries have modeled their organization upon the military example, others rely on the military itself as the lead agency, while other governments have an interdependent relation with voluntary organizations such as the Red Cross or Red Crescent Society to share some of the responsibility.

For the purpose of demonstrating one model this Lesson describes a national disaster assistance organization, which is responsible to the Chief of State for ensuring adequate national disaster preparedness and for coordinating disaster assessment and rescue and relief operations. Usually a key cabinet minister is appointed to provide oversight of this organization and to chair a national disaster committee which coordinates inter-ministerial and policy matters.
relating to disasters. The minister is responsible for overall supervision of the organization which assumes direct control of mobilization and relief operations in the event of a disaster. This is usually achieved under special “enabling legislation”, i.e., laws that give the agency authority during the emergency.

**Structure**

The organization consists of the national disaster committee, chaired by a minister, and a permanent staff headed by a Director. There is also a standby staff of personnel loaned from the ministries and departments that would become involved in an emergency.

The national disaster committee may consist of any of the following individuals:

- Minister of Agriculture
- Minister of Communications and Postal Services
- Minister of the Interior
- Minister of Finance
- Minister of Public Health
- Minister of Public Works
- Minister of Transportation
- Representative of the Meteorological Service
- Representative of the Seismological Service
- Others designated by the Director.

The committee suggests, reviews, and approves detailed disaster preparedness programs and plans; committee members are responsible for seeing that plans are fully coordinated and supported within their respective agencies.

The permanent staff usually consists of a planning and research section, which analyzes disaster threats and develops plans to cope with them, and an operations section, which controls disaster operations and handles training and public education. In addition the staff may organize and support local organizations for disaster coordination, education, and relief.

**Placement of the Organization**

The location of the disaster assistance organization in the governmental structure is an important issue. Most planners place the organization in the executive office of the government, i.e., under the prime minister or president. The advantage is that decisions can be made at the highest level of government and are more likely to be carried out. Other planners prefer to put the organization in a national planning agency, noting that most preparedness and mitigation activities are a planning function. Others argue that disaster response involves command and control and tend to place the agency in military or para-military (i.e., civil defense) organizations. And finally, others feel the best location is in a civilian, “operational” agency, for example, an agency with an emergency logistical capacity to respond to a disaster as well as a long term role in economic development, such as in the ministries of housing and construction, public works, etc. Almost all planners agree that the organization should not be a social welfare or social service agency.

In reality the placement depends on the structure of the government, its degree of decentralization, the geographic area at risk, and the principle disaster threats that the country or region faces. In practice the two best places for the disaster preparedness organization seem to be within an operational agency or within the executive level.
Responsibilities
The disaster assistance organization is responsible for preparing adequately for disasters and, if a disaster occurs, for mobilizing the necessary resources and coordinating effective disaster assessment, rescue, relief and rehabilitation.

The permanent staff of the organization is responsible for the following disaster preparedness functions:
- Analysis of disaster and the nation’s vulnerability to them
- Identification of the likely resource requirements and development of inventories of available resources
- Identification and organization of methods and systems for disaster prediction
- Adaptation or establishment of communications systems and definition of communications procedures for disaster warning and control of post disaster operations
- Promotion of disaster awareness and instruction of the public with respect to disaster warning systems
- Development and coordination with other agencies of contingency plans, procedures, and systems for effective disaster assessment, rescue, relief, and rehabilitation
- Development of plans to expedite the process by airport and port authorities, of waiving normal charges and fees for unloading relief shipments
- Establishment of liaison with private interests, voluntary organizations, and foreign missions to develop procedures for securing quick access to resources such as medical equipment and personnel; food, clothing and shelter; and transportation and heavy equipment.
- Establishment and maintenance of a disaster assessment capability to include aerial reconnaissance and operation of communications systems, and definition, selection, and dispatch of assistance
- Establishment of a disaster control center and other appropriate facilities

The permanent staff also has the following postdisaster responsibilities:
- Activating warning systems and notifying officials and agencies having disaster response roles
- Coordinating and providing other assistance in disaster assessment, and collecting and analyzing information
- Defining, selecting, and coordinating the logistics of rescue and relief operations
- Securing the release of resources from other government agencies, and from private and voluntary organizations, as necessary
- Assisting the national disaster assistance Director as necessary in monitoring, controlling, and expediting postdisaster operations.

General Operating Procedures

Preparedness
The organizations identified in the national disaster plan maintain a state of preparedness by assuring that resources necessary in case of disaster are accessible and that their duties in the event of disaster can be or are being executed effectively.

Disaster Operations
When a disaster appears imminent and has been forecast by responsible organizations or individuals, the national disaster assistance Director advises the Chief of State and recommends that a State of Alert be declared. Upon such declaration, the Director will mandate a public warning, and implement appropriate contingency plans in anticipation of mobilization.

When a disaster occurs, the Director advises the Chief of State whether to declare a State of Disaster; standing provisions (contingency plans and the like) for mobilizing forces for rescue,
relief, and rehabilitation will be implemented. Organizations having resources place them at the
disposal of the Director or deploy them according to pre-established plans. Mobilization and
rescue and relief activities are carried out according to the same plans through specified
authorities.

Emergency operations directed by the national disaster assistance Director should continue
until rescue operations have been completed or can be carried no further, until relief meets pre-
established objectives, and until essential services have been restored and public health and
safety secured.

**Plan Implementation**

Successful implementation of the overall plan requires development of detailed contingency
plans and administrative procedures and the appropriation of funds.

**Detailed Plans**

Through its permanently staffed planning and research section, the national disaster assistance
organization is responsible for developing detailed contingency plans to meet the effects of
likely disasters.

These plans outline the appropriate responsibilities for various government agencies, which
then develop detailed, internal plans to satisfy assigned responsibilities. The national disaster
committee reviews and approves all plans, to assure a coordinated response from all agencies
involved in the overall disaster response effort.

Detailed plans or programs are developed for maintaining emergency communications systems,
carrying out disaster-related public education, and implementing disaster training for
government personnel.

Contingency plans to counter the effects of likely disasters should be developed for damage
assessment, rescue, relief, and rehabilitation. These plans will address key operational
requirements for direction and control of operations, manpower, materials and equipment,
logistics, and support and administration.

The organization’s permanently staffed planning and research section will be responsible for
development of these plans.

**Funding**

The permanent staff of the disaster assistance organization is responsible for securing funding
for programs established under this plan. The staff normally requests funds for the activities
and programs of the national disaster committee and permanent staff, and for salaries for the
permanent staff. Equipment, facilities, and materials necessary to support the activities and
programs of the national disaster assistance organization and other organizations it establishes
are then budgeted.

Special disaster funds may also be established; the disaster assistance organization maintains
the accounting systems and mechanisms to release emergency funds and to charge disaster
operations and materials to emergency fund accounts for disaster assessment, rescue, relief,
and rehabilitation.

Costs incurred by other government agencies in planning and preparing for disasters as
outlined in this and subsequent plans should be budgeted by those agencies. Costs incurred in
supporting operations in the event of an actual disaster as outlined above are charged to
emergency fund accounts.
**Administration**

The disaster assistance organization and its staff, with organizations established by them and other organizations specified in this and resulting plans, act to accomplish planned objectives. They prepare their own internal detailed plans for discharging responsibilities under the national plan and assign specific internal functional responsibilities.

The national disaster committee and the disaster assistance organization’s permanent staff are responsible for implementing the national plan and updating it as necessary. The committee assures that appropriate plans are developed and that organizations assigned responsibilities under the national plan are capable of executing them.

**Legal Aspects of Plan**

The crisis of a disaster should not precipitate a crisis of legal authority. It is important that legislation be in place that stipulates the procedure and authority for declaring a State of Alert or State of Disaster. This is required to facilitate flexible action and streamlined decision making during an emergency. It may be necessary, for example, to implement orders for certain relief or other emergency action with only a few hours notice.

This legal authority typically empowers the national disaster committee to assume command over many administrative matters during the declared State of Alert or State of Disaster. This will mean preempting certain authorities of operational agencies. The legislation should make the scope and limitation of such transfer of authority clear. The legislation has the further responsibility to ensure that the special emergency powers do not create opportunities for the exercise of that authority in repressive ways over the population.

An example of a draft for enabling legislation of a National Disaster plan is presented in Appendix I.

**Legislative Aspects of Financial Matters and Compensation**

Where central government places limits on the expenditures which may be incurred by regional or local authorities, or on the amounts which may be raised by them by means of local taxes or through the money market, legislation may be necessary to exempt from these restrictions expenditures made by local authorities in the course of discharging their emergency responsibility. The legislation may introduce less onerous restrictions, or may have the effect of giving automatic ex post facto approval to expenditures. This kind of legislative action is a long-term preparedness measure, and it should not be forgotten that routine stockpiles or the testing and maintenance of equipment, also cost money. It may be possible to include expenses of this nature in the regular budgetary process, and so to subject them to the normal control by central government, but it might well be considered more satisfactory to have them regarded in the special category as being related to the discharge of emergency responsibilities.

Financial arrangements during an actual emergency operation may on the other hand be made by regulation or decree under the provisions of a proclamation of a State of Emergency. When regulations of this kind are drafted so as to be ready for immediate use in the event of an emergency, they would usefully include provision for price controls at wholesale and retail levels, waivers of customs duties on relief supplies and of landing fees for aircraft carrying them, and compensation for people who render personal services to, or whose property is used by, emergency relief authorities. It may also be necessary to consider the question of compensation for those whose property is destroyed or damaged in the disaster itself or as a necessary concomitant to the relief operation.

Compensation for loss or damage may be paid by insurance, either private or official, or from central funds, or—in the case of oil pollution—from funds established under the terms of international agreements. Private insurance policies often include protection against
earthquake risks as well as the more usual fire and flood, but compensation for damage caused as a result of war or civil strife or commotion will not always be given under standard policies.

The government, the insurance industry and the insured persons or organizations themselves are all involved in this aspect of predisaster planning.

**III. Regional Government Plans**

Although the above discussion suggests that the proposed model for a disaster plan is applicable at regional and local levels, there are, indeed, important differences that need to be taken into account.

**Identification of Main Capabilities and Limitations**

A primary consideration at intermediate or regional levels of government is a critical identification of the main capabilities and limitations which affect disaster preparedness arrangements at such levels. Here, much will depend on the three following fundamentals:

- the national policy, especially the degree to which it governs or influences regional level policy and action;
- the dictates of legislation; and
- the national disaster preparedness plan and the extent to which it covers regional level activities.

**Capabilities and Limitations**

From these three fundamentals, certain practical aspects of capability and limitation ensue. They are:

- the degree to which delegation of overall government authority passes to regional level and thus the division of responsibility (national-regional) which results;
- the extent to which resources (for example, transport, equipment, medical supplies, trained personnel) are concentrated at or controlled from the national level; this, in turn, has a major bearing on the degree and flexibility of action which can be taken at the regional level;
- the total dependence, in some cases, of regional level authorities on certain national systems; for instance, dependence on the national broadcasting system for the key requirement of communicating with the public: this may have significant repercussions (and perhaps limitations) because of possible conflicting needs and priorities as between national and regional levels themselves;
- the ease (or difficulty) of access to or communication with national and other levels, especially during times of crisis pressure; and
- the effects of distance and remoteness, especially in relation to remote island areas.

It follows that identification of main capabilities and limitations along the lines indicated above has a considerable bearing on the disaster preparedness policy which should apply at the regional level of government.

**Definition of Regional Level Disaster Preparedness Policy**

As has been stressed previously, regional level policies obviously have to be compatible with the national policy. However, they are not necessarily or usually identical. Regional level policies tend to be confined to preparedness, local operations, and immediate relief; whereas other aspects such as mitigation and recovery measures are normally directed from national level.
Regional level policies are also conditioned by dependence on the national level for the initiation of certain important disaster preparedness actions. For instance, the provision of an aircraft capability for postdisaster survey.

This modified definition of regional level policy is important since it helps to clarify areas of responsibility, requirements, and scope of operational action.

IV. The Community/Village Level

At the community or village level the capabilities and limitations will obviously vary considerably between different circumstances; and this point must be taken into account in disaster preparedness measures generally.

On first reflection, it may be felt that little disaster preparedness capability exists at community of village level; and that, when disaster strikes it is largely a question of government sending in assistance mostly in the form of equipment, supplies, and specialist manpower.

This is not necessarily true. All communities and villages have some vitally important assets when it comes to dealing with disaster. These include local knowledge and experience. Clearly, these assets need to be organized and utilized to optimum effect.

Local Assets

Local knowledge and experience may contain, among other things, the following detailed assets:

- Traditional capability for reading disaster warning signs;
- Knowledge of local safe and vulnerable areas;
- Experience and lore concerning disaster impact;
- Survival experience in face of disaster loss;
- Understanding of the hierarchical local system which may be essential in disaster circumstances;
- Inherent capability to utilize the extended family system, which is often vitally important in withstanding crisis.

Other assets within communities and villages are:

- Independence, in many cases, of sophisticated “life support systems” that may be vulnerable to disasters;
- Fairly easy identification of mutual interests;
- Ability of leadership to identify itself readily; and to mobilize labor and resources;
- Relative ease of developing and applying self-help measures;
- Community bond of religious faith;
- Well-established reciprocal ties which are employed in various spheres of community activity, such as agriculture, death, house construction, etc.

Limitations at Local Level

Some limitations at the community or village level that may exist:

- Limited mobility and difficulty of access because of lack of roads, airstrips, and wharves;
- Distance and remoteness (especially small island communities);
- Limitation of assets (equipment, emergency supplies, medical facilities, etc.).
<table>
<thead>
<tr>
<th>Typical Contents Of A Community Based Disaster Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Policy statement on value of disaster planning by chief executive officer</td>
</tr>
<tr>
<td>• Legislative authority for the design of the disaster plan and for the steps it contains</td>
</tr>
<tr>
<td>• Aims of the plan and conditions under which it comes into force</td>
</tr>
<tr>
<td>• Assessment of community disaster probabilities</td>
</tr>
<tr>
<td>• Disaster scenarios</td>
</tr>
<tr>
<td>• Relationships with other levels of government, particularly emergency-related agencies</td>
</tr>
<tr>
<td>• Authority organization chart</td>
</tr>
<tr>
<td>• List of names, addresses, and telephone numbers of all relevant agencies, their heads and deputies</td>
</tr>
<tr>
<td>1. Operation of warning systems:</td>
</tr>
<tr>
<td>• Types of warning</td>
</tr>
<tr>
<td>• Distribution</td>
</tr>
<tr>
<td>• Obligations on receiving warnings</td>
</tr>
<tr>
<td>2. Pre-impact preparations:</td>
</tr>
<tr>
<td>• Relationships between type of disaster and necessary preparations</td>
</tr>
<tr>
<td>• Responsibilities of different agencies</td>
</tr>
<tr>
<td>• Location of greatest risk sites</td>
</tr>
<tr>
<td>3. Emergency evacuation procedures:</td>
</tr>
<tr>
<td>• Conditions under which evacuation is authorized</td>
</tr>
<tr>
<td>• Routes to be followed and destinations</td>
</tr>
<tr>
<td>• Accommodating the special needs of the elderly, ill, or institutionalized</td>
</tr>
<tr>
<td>4. Shelters:</td>
</tr>
<tr>
<td>• Locations</td>
</tr>
<tr>
<td>• Facilities</td>
</tr>
<tr>
<td>5. Disaster control center and subcenters:</td>
</tr>
<tr>
<td>• Location(s)</td>
</tr>
<tr>
<td>• Equipment</td>
</tr>
<tr>
<td>• Operation</td>
</tr>
<tr>
<td>• Staffing</td>
</tr>
<tr>
<td>6. Communications</td>
</tr>
<tr>
<td>7. Public information</td>
</tr>
<tr>
<td>8. Search and rescue</td>
</tr>
<tr>
<td>• Responsibilities</td>
</tr>
<tr>
<td>• Equipment</td>
</tr>
<tr>
<td>• Areas most likely to require servicing</td>
</tr>
<tr>
<td>9. Community order</td>
</tr>
<tr>
<td>10. Medical facilities &amp; morgues</td>
</tr>
<tr>
<td>• Location</td>
</tr>
<tr>
<td>• Transportation</td>
</tr>
<tr>
<td>• Capacity</td>
</tr>
<tr>
<td>• Facilities</td>
</tr>
<tr>
<td>11. Restoration of community services</td>
</tr>
<tr>
<td>• Order of priorities</td>
</tr>
<tr>
<td>• Responsibilities</td>
</tr>
<tr>
<td>12. Protection against continuing threat</td>
</tr>
<tr>
<td>• The search for secondary threats</td>
</tr>
<tr>
<td>• Actions to be taken if discovered</td>
</tr>
<tr>
<td>13. Continuing assessment of total situation</td>
</tr>
<tr>
<td>• Responsibilities</td>
</tr>
<tr>
<td>• Distribution</td>
</tr>
<tr>
<td>14. Reciprocal agreements and links with other municipalities</td>
</tr>
<tr>
<td>15. Testing the plan</td>
</tr>
<tr>
<td>• Disaster simulations</td>
</tr>
<tr>
<td>• Simulation evaluations</td>
</tr>
<tr>
<td>16. Revision and updating of the plan</td>
</tr>
<tr>
<td>17. Plan distribution</td>
</tr>
</tbody>
</table>

Table 3.1
V. Community Plan

This discussion about the contents of preparedness plans at the national and regional level is necessarily general. It may be easier to be more specific about details at the community level. Table 3-1 is an example of a table of contents of a hypothetical community preparedness plan. For small communities and villages it is obviously too extensive and sophisticated but for larger communities it may be used as a model of topics that do need to be accounted for.

Many of the line items from this table of contents have been previously discussed in this or preceding Lessons. Others warrant additional attention here. These following topics, each a facet of the plan preparation process, are borrowed or adapted from Disaster Planning by Harold Foster.15

Disaster Scenarios

Each disaster plan should include a section devoted to simulations of probable disasters, which includes predictions of the type and extent of damage, the nature and scale of probable casualties, and the various needs and responsibilities that these circumstances generate. Once such information has been refined by the disaster planner it can then be used to ensure that the steps outlined in the remainder of the disaster plan are adequate to meet likely disaster-generated requirements. These scenarios are used only to check the appropriateness and effectiveness of the disaster plan. The raw scenario information should not be referred to during an emergency situation, as it is based on conjecture and could lead to confusion. Table 3-2 might be used as a matrix to aid in the consideration of each disaster type.

List of All Relevant Officials, Relief Agencies, Their Telephone Numbers Addresses and Instructions

Every disaster plan should include a detailed listing of all emergency-related personnel, their addresses, and business and private telephone numbers, if any. In addition, the names, addresses, and telephone numbers of alternates, capable of serving in their place should they be incapacitated or unavailable, must also be included. Where extensive telephone systems exist, this information can be used to develop a telephone fan-out system; each individual being obligated to call two or more others in an emergency, so rapidly alerting the entire network. Such fan-outs should be designed with some overlap so that, should one link fail, the entire section dependent upon it does not remain uninformed. Care must be taken to keep all names, addresses, and telephone numbers current.

In the absence of a telephone network, or if the network fails in the emergency an alternate method of communication linkages needs to be designed. Some alternatives would be for officials to meet at a predesignated meeting point or to send messengers between officials. Both of these systems have drawbacks, however. The former may lead to a congregation of senior officials in an area where many of them may not be most needed. This may be especially so if the specified meeting point has been destroyed or is seriously at risk. Messenger systems are slow and may put the couriers into grave danger. Other means of communication such as CB radios might also be considered.
Defining And Coping With Disaster-Related Needs

<table>
<thead>
<tr>
<th>Agent demands: What is the demand?</th>
<th>Who is responsible for meeting the demand?</th>
<th>How is the demand to be met?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Warning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pre-impact preparations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Search and rescue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Care of injured and dead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Welfare</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Restoration of community services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Protection against continuing threat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Community order</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Response demands - food, shelter…</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Continuing Assessment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Mobilization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Coordination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Control and authority</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.2

Operation of Warning Systems
For some disaster types, for example, earthquakes, there is little or no time in which to issue warnings. Most disaster types, however, either increase in magnitude or proximity and can be detected prior to impact. As a result, disaster plans must permit an optimum pre-impact response so that potential life and property losses can be reduced. Warning networks and disaster plans must be coordinated so that there is an effective, rapid, and logical organized response to warning.

Pre-impact Preparations
The length of forewarning, the time between detection and impact, varies greatly from hazard to hazard. Many disaster agents, however, may be preceded by a pre-impact period of days, weeks, or even years. During this phase preparations for impact should be made. Such steps
might include canceling the leave of trained personnel, accelerated maintenance of emergency equipment, and stockpiling of supplies. Impact might be reduced by such measures as sandbagging, drawing down oil tanks and reservoirs and barricading windows. Consequences might be mitigated by the evacuation of people and belongings from threatened areas during the pre-impact period.

Emergency Evacuation

Where warning time permits, evacuation is often the most important response to threat. The movement of large numbers of people from an area at risk, with the minimum of stress, involves careful preplanning. Several factors must be borne in mind. Since hazards differ in their physical characteristics and scale of impact, so too must evacuation procedures. Before any evacuation is begun, care must be taken to ensure that there is, in fact, time to complete it, since residents may be more vulnerable if impact occurs during their evacuation. It is therefore essential to know how long an evacuation is likely to take and whether it can be accomplished in the time available before impact. This problem may be particularly acute if many members of the community are unable to leave unassisted. A disaster plan may require detailed and individual evacuation plans for certain facilities such as hospitals, schools, and prisons.

The choice of routes is crucial. It is unrealistic to assume that any one road or system of roads or railways will be an optimum evacuation channel for every hazard. Evacuation routes should then be chosen for each threat, so that the population is channeled to areas of progressively lower risk. With some hazards such as flooding, this may involve an attempt to rapidly gain in altitude. For others, such as chemical leaks, prevailing winds may be the major determinant behind choice. Evacuation routes must be easily accessible from the high risk locations. They should also be linked to alternative transportation corridors, to be used should primary routes be blocked, and free of potential bottlenecks such as bridges or tunnels that may be easily damaged. Disaster plans should include maps showing all such clearly designated evacuation routes. There is merit in including these in the telephone directory to increase public awareness. Estimates should be made of the time required to evacuate the threatened population. Obviously, this should be less than the time elapsing between the issuing of a warning and the impact of the disaster. Where this is not likely to be the case, attempted evacuation may not be a viable safety strategy.

Naturally it is not enough simply to evacuate an area. Alternative facilities must be available elsewhere. While many evacuees are likely to stay with friends or relatives outside the threatened area, some may not be able to do so. Shelter accommodation providing meals and other facilities must therefore be available in the receiving area.

The following points on Emergency Evacuation should be emphasized:

- It is important that the responsibility for decision making on evacuation is clearly defined and that members of the community know which department, organization or individual holds this authority.
- The system or arrangements for notifying the community must also be clearly defined and understood.
- Self-evaluation by communities is often a very unwise and hazardous undertaking.
- Movement capability is often a very important and restrictive factor, especially in developing countries.
Shelters
In the planning of shelters for evacuees, several factors must be given careful consideration. Obviously location is of paramount importance. Shelters must be sited in low risk areas yet be easily accessible from threatened regions. To determine suitable locations, macro- and micro-scale vulnerability analysis must be carried out to determine the scale of impact of a variety of potential disasters. Such analysis will often indicate that different shelter locations are optimal for each hazard or group of hazards. To accommodate this situation, a variety of buildings might be designated as shelters to be used in specific disasters. Some of these may be within the boundaries of the municipality or region involved in compiling the disaster plan. Some may be required outside its jurisdiction and are best established by reciprocal disaster agreements with other municipalities. Such buildings must be evaluated from the point of view of their structural integrity in the face of various threats, such as fires or earthquakes, as well as the facilities they offer in coping with the demands of evacuees.

Ideally, such shelters should be capable of accommodating evacuees on the scale that they can reasonably be expected and should be staffed with personnel trained in providing social services. Buildings designated as shelters should be capable of storing food, clothing, and medical provisions for long periods and be equipped with communication facilities suitable for collecting and transmitting personal statistics about evacuees. Provision should be made to inform relatives and friends of the safety of the individuals concerned. Any disaster plan should also include a section dealing with the care of special evacuees from prisons, retirement homes, and other institutions that will require unusual services. See Table 3-3 for a summary of shelter requirements for various hazards.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Pre-Event Shelter</th>
<th>Post-Event Shelter</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthquakes</td>
<td>N.A.</td>
<td>Limited temporary refuge usually in urban areas</td>
<td>Earthquake resistant construction, fire resistant</td>
</tr>
<tr>
<td>Cyclones</td>
<td>Evacuation shelters</td>
<td>Limited mass shelters for homeless</td>
<td>Cyclone resistant construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some emergency mass shelter for flood victims</td>
<td>Avoid churches, schools, long-span buildings for emergency buildings unless certified by an engineer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>These buildings may be suitable for post-disaster shelters.</td>
</tr>
<tr>
<td>Floods</td>
<td>Emergency shelter</td>
<td>Temporary refuge</td>
<td>Located above highest possible flood levels</td>
</tr>
</tbody>
</table>

Table 3.3
Disaster Control Center and Subcenters
Many of the problems associated with disaster stem from a lack of coordination among the varied groups and institutions that attempt to respond. Typically each views the situation in terms of its own capabilities and perspectives. Many of these difficulties can be avoided if predisaster planning has included the establishment of an emergency operations center. This should be clearly designated and recognized as such, equipped with a wide range of materials, and staffed by personnel representing all agencies involved in meeting disaster-related needs. This center should also be the site from which overall control of emergency activities is undertaken.

It is essential that, because of its key role in response, such a building is structurally very sound, sited in a minimum risk location, and unlikely to become isolated. It should not be chosen simply because of its convenience for city personnel or its low cost purchase or equip it. An alternative emergency command center should also be designated and made capable of functioning as such should the primary building cease to be operational.

Communications
Communication provides the basis for coordinating an effective disaster response; without it other emergency-related demands cannot be met. Information is a critical aspect of every disaster; data are required about the magnitude, frequency, and location of impact, about victims, evacuees, materials, damage, the state of essential services, the capabilities and number of personnel, volunteers, and numerous other factors. Information must flow during and after a disaster or coordination and effective response become impossible. There must be links between and within disaster-related organizations so that needs and orders can be communicated. They must also exist between such institutions and the public so that warnings can be issued and information on the safety or otherwise of those affected can be provided. Unfortunately, disasters often damage existing communications networks while the convergence of people and information from outside may overload those that continue to function. For these reasons, disaster planning must place heavy emphasis on maintaining existing channels and on providing additional novel alternatives such as citizen band radios, taxi telecommunications, and other potential means. Certain telecommunication links must be preserved for emergency messages only.

Public Information
Few disaster plans make suitable arrangements for disseminating disaster-related information to community organization, the mass media, and to the public. Consequently, varying and conflicting reports of an emergency sometimes occur and receive extensive coverage. To avoid this type of unfortunate development, the responsibility for making public statements should be limited to a specific individual such as the safety plan coordinator whose work should be supported by the development of a public information subplan. Media releases should be carefully prepared to make sure that no erroneous information is given out or misimpressions created.

Search and Rescue
Many disaster result in damage to buildings and the trapping of population that requires a search and rescue response. The basic demands are for the location, rescue, and transportation of victims, often in an injured state, to places of safety where their immediate
needs can be accommodated. This task often requires specialized equipment such as boats, planes, helicopters, mobile hospitals, bulldozers, and other technology together with the qualified personnel to operate and maintain them. A well-prepared disaster plan will therefore list all the sources and locations of such materials and individuals and will ensure that they are put into a state of readiness in the preimpact period, when time permits. Where obvious gaps occur in personnel or the availability of search and rescue equipment, a program of training and acquisition should be provided for in the disaster plan.

Community Order
Since confusion may follow the initial disaster-agent impact, it is essential that community order be maintained. Disaster plans should make provision for the control of the perimeter of the affected area, guarding property, patrolling danger areas, directing traffic and communications, and ensuring that scarce community resources are utilized most effectively. In all cases the ultimate authority and chain of command must be carefully established prior to the development of threat.

Medical Facilities and Morgues
The treatment of the injured and the handling of the dead are normal demands associated with most disasters. Typically the hurt must be moved as rapidly as possible from the impact area to locations where supplies and medical personnel are capable of providing relief. Often priorities in the treatment of individuals must be established. This may involve soliciting information on case histories and determining the possible extent of injuries in the field. Such paramedical responses may often mean the difference between life and death for the more seriously injured victims. This information must be recorded in a legible manner and colored tags can be used to establish hospital treatment priorities.

Fatalities also create a disaster demand. The dead must be removed from the disaster area to some permanent or temporary morgue where they can be identified and the cause of death established and certified. Bodies can then be released to relatives and funeral arrangements finalized. These procedures require the mobilization of a wide range of individuals from coroners and dentists to fingerprint experts and morticians. Any disaster plan should therefore include details of all such hospital and morgue facilities together with information and telephone numbers of the necessary personnel.

Restoration of Community Services
The impact of a disaster frequently results in the disruption of essential community services, such as electricity, gas, telephone, water, transportation, and refuse disposal. The restoration of such facilities, even if only on a temporary basis, is extremely important since search and rescue, the care of casualties, and cleanup operations are often hindered by their absence. The rapid restoration of essential community services should therefore be stressed in disaster planning. Ideally, priorities should be established and responsibilities designated so that crucial services are restored with a minimum of delay.
Protection Against Continuing or Secondary Threat

Initial disasters are often compounded by secondary hazards. These include broken gas mains and power lines, polluted waters, and fires. Any disaster plan must therefore ensure that the community is protected from such secondary, yet related threats. All potential high risk locations such as dam sites, power stations, and sewage works must be rapidly checked and damage contained. Unless such threats are quickly detected they may ultimately prove more destructive than the primary disaster.

Continuing Assessment of the Total Situation

Assessment of the actual damage caused by a hazard and of the effectiveness of responses to it are crucial. This is because without it confusion will result and organized action will be suboptimal. Assessment, therefore, is an essential prerequisite of adequate decision making. Unless a clear overview of the entire situation is available, urgent needs will go unrecognized. The significance of assessment is continuous, since the situation is likely to alter rapidly as secondary threats develop and new sources of assistance become available. Without a detailed overview, it is impossible to set priorities and to gauge the likely effectiveness of selected strategies. For this reason the task of collecting, portraying, analyzing, and assessing disaster-related information should be laid down in any disaster plan. This assignment must be realistic and should allow its accomplishment quickly, so that the ongoing assessment is available to decision makers actively responding to the disaster situation. The need for good assessments is so vital that the Disaster Management Center has developed a course on the topic, entitled “Disaster Assessment.”

Testing the Plan

There are many aspects of disaster response that can only be tested by rehearsal. As a consequence, every plan should be subjected to appraisal through game simulations and field exercises. Following each such test and after an actual disaster occurs the plan must be evaluated and changes made to accommodate deficiencies.

Revision

Every community is in a state of flux. New industries are established, old businesses close, and construction and demolition constantly change the pattern of land use. Materials and equipment are acquired and disposed of and individuals leave and enter the community, bringing changes to the skills and experience available in an emergency. As the fabric of a society alters, so too do both the risks it faces and its potential for responding to them.

To make sure that new information is utilized by those involved in plan implementation it is useful to publish the document in ring binders so that revised procedures can be inserted and obsolete pages discarded with the minimum of effort.

Distribution

Discussions over the distribution of disaster plans normally focus on the conflicting need for awareness and for confidentiality. Typically, the community disaster plan contains information that would be of great value to many organizations and individuals in an emergency. It also
includes data, such as details of communication channels, police procedures, and expected casualties in particular disaster situations, that should not be widely distributed. This is because such confidential information may allow unauthorized individuals to interfere with emergency procedures or cause unnecessary stress within the community.

To overcome this potential conflict between the desire to know and the need to keep confidential, municipalities might consider producing both comprehensive and abbreviated versions of their disaster plan. The distribution of the former might be restricted to those involved in official response in an emergency. These individuals should be listed in an appendix to the document itself. The abbreviated version of the disaster plan, from which confidential details have been deleted, might be far more widely distributed, being made available to the media and the general public. If this approach is not considered feasible certain details, such as the significance of warning signals, evacuation routes, and shelter locations, should be published in the telephone directory and be made available in other easily accessible public places.

Responsibilities for Disaster Preparedness Activities at Village Level

The above activities and responsibilities may seem overwhelming for a small village. In fact many of them can and are done informally. Nevertheless, the following items are included to demonstrate an appropriate perspective for village level considerations.

Whether the existing local government organization as it stands is used for disaster preparedness purposes, or whether some form of subcommittee of that organization is used, its responsibilities tend to be generally along the following lines:

18. To keep the community informed, through public meetings and other means, of precautions to be taken, including methods of warning, etc.; (special emphasis to be made prior to any clearly defined seasonal threat such as cyclones).
19. To allocate responsibilities to persons in the community, as necessary.
• To institute periodic inspections to ensure that precautions are being taken.
• To ensure that equipment required for disaster purposes is available, or can be made available, and is serviceable.
• To ensure that emergency food supplies are available.
• To nominate special wardens or safety officers.
• To designate immediate relief tasks (survey duties, provision of food and temporary shelter, assistance in clearance, etc.): these tasks need to be planned beforehand and made compatible with plans of the next senior level of government.

Preparedness Measures at Local Level

Detailed community preparedness measures will clearly be determined by specific local circumstances, and particularly the nature and extent of the threat. However, some useful aspects for consideration are:

• Development of a first aid capability within the community (probably sponsored through Red Cross, Red Crescent, school programs, primary health care systems, etc.) always composes a valuable local preparedness asset;
• If drought is a possibility, water conservation measures should be considered, wherever these may be possible;
• Measures for safeguarding or emergency garnering of crops may be possible in some circumstances.
VI. International Support Arrangements

Categories of Assistance
International support arrangements may cover a wide range of possibilities and it is therefore advisable to have a prearranged system for dealing with them. Support and assistance can usually be divided into four categories:

* direct participation in disaster preparedness operations; for example, the use of aircraft for survey and assessment, emergency transport, etc.
* urgent emergency relief (provision of emergency food and medical supplies, shelter, etc.)
* long-term programs; for example, various forms of assistance in national reconstruction projects.
* preparedness and mitigation programs prior to and after a disaster strikes.

Relationship with Agencies
The number of international agencies (government and non-government) which have to be dealt with may be very large. Also many different contact-points may be involved; overseas governments will normally deal through diplomatic channels and non-government organizations will tend to work through their in-country counterparts. Therefore, it is advisable to use a national office or department for focusing and coordinating support activities, if this is possible.

The utilization of the diplomatic corps (especially where it can function as a form of committee under the dean of the corps) is a very valuable way of centralizing that particular part of assistance activity.\(^{17}\)

VII. Steps for Developing a Disaster Program

So far this Lesson has been primarily devoted to describing what needs to be done to create various disaster preparedness plans. This section will show how to create a plan by outlining suggested series of steps that can be taken.\(^{18}\)

Phase I Preplanning
1. Determine which phases of a disaster to work in (ex. Mitigation, Preparedness, Emergency operations, Recovery, Reconstruction).
2. Determine which ministry of office to place the National Emergency Committee in.
3. Establish goals and objectives.
4. Establish policies to shape methods for reaching objectives.
5. Identify Action Plans required.
6. Identify data requirements necessary to develop Action Plans.
7. Identify staff needs for developing plans.
8. Develop preliminary budget.
9. Establish Budget and Analysis Routines
10. Establish schedule.
**Phase II Development of Preparedness Plans**

1. Hire planning staff and coordinator.
2. Hire consultants.
3. Assign work tasks.
4. Acquire data (including existing disaster plans in each ministry or department).
5. Identify problem areas (geographic and inter-ministerial).
6. Establish preliminary coordination links between ministries.
8. Decide on format for presentation (Workbook, Checklists, etc.).
9. Send preliminary plans to ministries for review and comment.
10. Identify mitigation actions that can be taken as a part of normal activities.
11. Determine staff requirements.
12. Develop memos of understanding between ministries and departments.
15. Assemble total Preparedness Program.
16. Present to government and public.

**Phase III Development of Emergency Response**

The Disaster Management Center course, Disaster Response, covers this phase in detail.

**Phase IV Development of Recovery Plan**

This phase is beyond the scope of this course and is the start of more traditional development planning.

---

**References**

12. From a paper on this subject by W. Nick Carter.
16. From a paper on this subject by W. Nick Carter.
17. Pacific Islands Development Program, pp 42-43.
I. Introduction
The development, maintenance, and execution of organization plans require much effort by many agencies and individuals involved in disaster preparedness.

In terms of agencies and individuals involved in the “institutional” aspects of disaster preparedness, the development, maintenance, and execution of the specialized plans is one of the largest. This Lesson will illustrate specific actions that can be taken by the key sectors of a country. The action plan encompasses organization, functional, and specialized plans. Much of this Lesson consists of guidelines to be considered in any action plan, recommendations for specific actions, and model drafts of action plans. In several cases the guidelines will only apply to rapid onset disasters or disasters with a short period of prediction such as cyclones and floods.

II. Guide For Preparing An Action Organization Plan

Background
An action organization plan is a mechanism which establishes tasks that must be carried out during each phase of an emergency and a procedure for accomplishing each in the proper sequence. In general, an emergency action operations plan:

- Structures the response of an organization so that everyone knows what is to be expected and at what point each event should happen;
- Structures the response so that each succeeding activity builds upon the previous; and
- Structures the response so that material aid needs can be accurately assessed and the critical ones met on a priority basis.

An action organization plan for a government must meet the following additional requirements:

- The plan must allow the government to respond quickly but cautiously so that it will not be committed in such a way that long-term reconstruction and development objectives will be delayed or made difficult to achieve;
- The plan must be flexible enough so that the changing needs of a situation can be reassessed at the appropriate time;
- The plan must structure the response so that accurate information can be developed upon which to base the next series of actions;
- The plan must concentrate the most appropriate resources of the government at the most appropriate time and place;
- The plan must provide a basis for coordinating the resources and activities of the foreign donors and voluntary agencies.
For optimum success the plan should be linked to preparedness activities. All organizations who play a part in the plan should be familiar with the complete plan and procedures and should receive training in the specific tasks each must perform.

Concept for an Action Organization Plan
The Action Plan establishes a series of sequential actions and routines for each group in the emergency response structure. The plan should be prepared in loose-leaf form and should contain:

- A graphic presentation (such as a flow chart) outlining the activities of the plan and presenting a quick reference to the sequence of events.
- A set of checklists for actions to be taken at disaster operations headquarters.
- A set of checklists for actions to be taken in the field.
- A description of the procedures to be followed during each phase of the emergency.

The plan should list activities according to the proper phase of the disaster or threat. The following categories are recommended:

- Alert Phase - Initial preparations when a threat is identified.
- Warning Phase - Actions taken when a threat is certain (i.e. evacuation).
- Emergency Phase - Full emergency response after a disaster has occurred.
- Transition Phase (Rehabilitation) - The gradual change from relief operations to set the stage for longer term recovery programs.
- Reconstruction Phase - Physical and economic recovery.

Sample Action Plan
The following page presents a sample extract from an Action Plan.

Sample Table of Contents for an Action Plan

Part I - Introduction
Lesson 1. Instructions
Lesson 2. Amendment procedures

Part II - Task Sequence
Lesson 3. Flow Chart (Note: recommend PERT, not *CPM)
Lesson 4. Task outlines

Part III - Emergency Procedures
Lesson 5. Procedures and guidelines for disaster operations center
Lesson 6. Procedures and guidelines for government departments
Lesson 7. Procedures and guidelines for non-governmental agencies

Part IV - Checklists
Lesson 8. Checklist for Disaster Operations Center
Lesson 9. Checklist for central government ministries
III. Guidelines for an Action Plan

The following is a prototype for an action plan as applied to the specific set of activities for communication. It was developed for a specific country and may not necessarily be applicable exactly as is to another location. The task of the preparedness planner is to ensure that the topic under consideration is adequately researched and tailored to each location.

Communications: Essential Characteristics

A disaster preparedness communications system should have the following essential characteristics:

• Rapid contact: the system must provide means of rapid contact between coordinating authorities and relevant agencies and services as well as between the various levels of the disaster preparedness organization;

• Reliability: the system must be reliable in that it should minimize possible disruption by any direct or indirect effects of the disaster event. Protection of broadcast links with the general public is especially important; adequate back-up systems and emergency power supplies should be provided as far as possible;

• Flexibility: the system must be capable of coping with rapidly changing or developing disaster situations;

• Self-sufficiency: as far as possible, the system should be self-sustaining and thus capable of maintaining continuous communications services to the organizations and services which depend on it.

Desirable Characteristics

In addition to the above essential characteristics, the following are desirable:

• Mobility: the system should have a mobile component, so that if necessary it may provide communications wherever the disaster situation may dictate;

• User compatibility: the system should be readily operable and maintainable by the personnel available. Without compatibility between the operating requirements of the system and the level of competence of available personnel, communications efficiency may be greatly reduced.

Communications Resources

The communications system may comprise any or all of the following categories:

• Personal Communication: messenger, runner, dispatch rider, etc.;

• Audio/Visual Communication: semaphore, heliograph, warning pennant, siren, public address system, bells, etc.;
• Line Communication: established telephone exchange systems, established direct lines, field cable, and other operational direct line systems;
• Radio Communication: short and long-range radio, radar, etc.

_Maintenance, Manning and Training_
As modern communications systems may involve complex equipment, consideration of maintenance requirements will assume a high priority. Similarly, personnel Manning and training aspects assume parallel priorities.

The following is a specific example of an action plan based on the above design principles.

**Telecommunications - Maintenance in Disaster Areas**
Many of the precautionary measures necessary to reduce disaster should appear in the Annual Maintenance program of the Department of Post and Telecommunications. These include:

• Annual inspection and repair of radio masts, anchorages, foundations and stay wires.
• Annual inspection of all buildings and the carrying out of repairs to roofing, wooden shutters, doors, bolts, etc.. (See Section on Public Buildings for more details in the Appendix.)
• Quarterly inspection of poles, stays and overhead circuits; assessment of the condition of the wires; adjustment in the amount of stock; and the clearing of foliage away from wires.

**Telecommunications - Special Disaster Considerations**
In addition to regular maintenance, the following suggestions should be considered.

1. Upgrade outside equipment to withstand wind speeds of at least 120 mph (192 kmph).
2. House electrical and switching equipment in storm-proof buildings above flood level.
3. Replace overhead cables with underground armored cables in areas of high vulnerability and where economically feasible.
4. Store batteries away from areas likely to flood.
5. Establish an emergency tool kit at each exchange, including:
   • cable cutters
   • cutting pliers
   • spanners
   • ropes
   • ratchet tension
   • crosscut saws
   • pulley blocks with rope
6. At each exchange designate a staff member (such as an inspector) as a disaster officer. He must live in the area, be instructed in the likely effects of a disaster, and be knowledgeable about disaster precautions and post-storm procedures.
7. Provide at least two tarpaulins in every building with radio equipment, teleprinter equipment, and manual and auto-exchanges.
8. Install standby generators in all exchange buildings for the recharging of batteries.
9. A practice disaster alert should be mounted annually, for review and updating of precautions and post-storm procedures.
Telecommunications - Emergency Preparations During a Disaster Alert

1. Disaster Warning bulletins should be conveyed by Head Office to field offices. However, field offices should carry out precautionary measures without waiting for official notification.

2. Once a Disaster Warning has been issued, halt all normal maintenance activities and secure new and repair work underway.

3. Review, by officers and staff, appropriate precautionary measures and emergency procedures.

4. Test the wireless telegraph equipment at post offices with HEADQUARTERS radio to ensure that it is functioning, then wrap the equipment in polyethylene and secure against falling debris.

5. Cut any threatening tree branches near wireless telegraph (WT) aerial.

6. Check standby generators and ensure that adequate fuel stocks exist and are protected.

7. Secure all outside equipment to the extent possible.

8. Check emergency tool kits and assemble any additional equipment needed.

9. Inspect all Post and Telecommunications buildings for storm proofing, closing all doors and windows and wooden shutters (or nailing boards over windows), and checking bolts and catches on doors and windows. (See Handbook section on Public Buildings for more details.)

10. Wrap tarpaulins or polyethylene around all inside equipment which may be damaged by rainwater (such as radios and exchanges).

11. Arrange for the transport of additional jeeps to inspectors.

12. Fill available vehicles with fuel.

13. Assemble equipment and emergency stocks of materials likely to be necessary for restoration of services.

14. Arrange emergency standby cable and overhead construction parties for dispatch to the affected area immediately after the disaster.

15. Acquire authorization to carry out an emergency program including the hiring of laborers, the purchasing of needed tools and disbursing of funds.

16. Once the storm has begun, remove fuses from the lines and disconnect the power supplies to equipment.

17. Ensure that all staff are aware of recommended disaster precautions to protect life and personal property.

18. All storage batteries should be charged fully during a cyclone alert for use in the post-cyclone period when the electricity supply is not likely to be available.

Additional action plans are in Appendix II. A review of them will be beneficial to observe the scope of the activities required for a thorough coverage of a country’s vital sectors.

References


Chapter 5

Training Issues And Models

I. Introduction
The preceding Lessons have established what disaster preparedness is, how to design a preparedness program, and discuss how to implement preparedness. However, a key element of implementation, and therefore key to the success of a disaster preparedness program, is in the training of the people charged with the duties of implementation as well as the public, the ultimate beneficiaries. In fact, the state of preparedness of a community or a country depends on how well disaster managers and the people living in disaster prone areas are trained to act effectively when a disaster threatens.

This Lesson will present the overall need for training, identify who should receive disaster related training, discuss who will benefit from disaster preparedness training, describe various training techniques, and refer to examples of special programs that offer intense training in various aspects of disaster management.

II. Need for Training
Disaster preparedness training can be seen as an extension of public education for members of the general public, or individuals in specialized publics. An example of the first kind is emergency health or life-saving training normally available to the general public. It might be useful, for example, to hold training sessions in the construction of flood shelters in affected areas, or to train residents of high-rise apartments, or other dense population areas, in emergency communications procedures for use in pre-impact periods.

The second kind would include specialized training in communication or information skills for those actively engaged in disaster work: training regional amateur radio operators to work together more efficiently; training disaster coordinators in better media relations; training firemen, policemen or militia in improved public alert methods; training social welfare workers in the way human communication channels work, and how best to use these during disasters; training broadcasters how to cope with disaster conditions; training telephone operators how to respond to vast increases in telephone queries.

There is also a third kind of public information training: the training of public information officers and of others who engage in communication with the public as their full-time professional occupation. Many public information officers are former journalists and it may be useful to train them in broadcasting techniques, public administration, disaster research or disaster management.

Regional journalism schools and communication institutes have begun to pay attention to this area of public administration. In Asia, regional bodies such as the Asian Mass Communication Research and Information Center (AMCRIC), the Press Foundation of Asia (PFA) and the
Association of Southeast Asian Nations (ASEAN) have held communication media seminars, conferences and workshops.

Mass communication programs at schools of journalism usually include courses in social science theory, as well as mass media practice. This background is useful for those engaged in disaster work. However, it would be quite possible to introduce disaster case studies into the curricula of various courses, or even to devote entire courses to the use of communication media in disaster situations.

There already exists a considerable amount of training. Most government emergency measures or civil defense officers spend a considerable amount of their time taking-in or giving-out training, though not often in public information aspects.

The importance of preparatory measures in disaster evacuation demonstrates that prior training, through exercises of the disaster plan, significantly contributes to the success of evacuations when these are necessary. This kind of training exercise could have avoided unnecessary loss of life in several cases. However, public participation in simulation exercises does not produce much benefit unless there is an obvious, perceived need by the public for it.

A similar kind of training in common use is the seminar, in which those who have to cooperate during disasters are brought together for a discussion and possible solutions, or in which experts are assembled to work in particular areas of concern. The League of Red Cross Societies, for example, has been very active in offering technical seminars and training courses on predisaster planning and preparedness at the regional level.

Disaster managers and related disaster professionals also have access to highly specialized intense courses in all subjects of disaster preparedness. These are usually provided at an instructional institution in a classroom situation face-to-face with expert instructors. There are some very good examples of these opportunities offered at the Oxford Program of Development Workshops in Disaster Management and Preparedness, the Centre of Research on the Epidemiology of Disasters at the Catholic University of Louvain, Brussels, and the Ross Institute at the London School of Hygiene and Tropical Medicine. An example of the professional trainers taking the program to the “field” is the Pan American Health Organization. They conduct seminars on various aspects of emergency health for professional health care providers throughout the Americas.

It can be argued that country-wide training of the general population for disasters is not everywhere practicable, because major disasters are relatively infrequent. Many people are not therefore sufficiently interested or motivated to take part in a voluntary training scheme. The great majority of the audience develop attitudes of indifference and even a sense of invulnerability or fatalism.

The following is a commentary on how to adapt these general concepts to the special application in developing countries.

Counter-Disaster Training in Developing Countries

It is important to note that the national programming of developing countries has to focus on major issues of development, thus leaving disaster affairs to subsist at a fairly modest level of priority. It follows that counter-disaster training, like disaster preparedness itself, needs to be
approached in a carefully planned and efficiently organized manner, if maximum effectiveness is to be achieved.

As with most aspects of disaster affairs, certain general considerations apply to training. There are, for example, almost invariably some commonplace limitations on the availability of instructors, facilities and equipment. Communications may also be a handicap; as may access to some of the more remote country areas. There is also the point that at the community level there may be limits to what can be usefully taught, absorbed and utilized: for instance there is little point in training people in the use of communications equipment if that equipment cannot be maintained in working order. These various limitations do not, as is sometimes supposed, precluded the application of useful training programs. The important point is that they need to be recognized and assessed, so that the programs can them be framed in a realistic and productive way.

Another important consideration is that any training concept should fit particular national circumstances. For example, if communication is difficult, due to terrain or multi-island characteristics, then training must be geared to a decentralized or regionalized pattern of disaster operations. Conversely, if communication facilities are good, then training can be reasonably based on the premise that one area of the country can reinforce another in time of need, thus making mobility a key training theme. However, it is always profitable to train for self-reliance at local levels so that stricken communities can ride out, as far as possible, immediate postdisaster crises. In one case, which illustrates this need, it took a village headman 24 hours to walk to the nearest government contact-point to give notification of serious local disaster.

There is also the need to recognize that the ultimate responsibility for disaster affairs rests with government. Therefore government resources should be utilized to maximum effect and in turn, government personnel must be given the necessary training to perform adequately when their department or section is required to function in an extended disaster role. Too often it is assumed, quite wrongly, that no training for this extended role is necessary.

Standardization in training is also an important consideration, to be aimed for wherever feasible. It should not be impossible, in most cases, to achieve reasonable compatibility of training for government officials, as well as for members of other organizations and voluntary agencies.

The foregoing are only some of the considerations which may apply; clearly, each national situation will have its own particular ones. However, in regard to what has been said above, perhaps three aspects should be rated as being of special importance. They are that:

1. Nations must work out their own training needs. To copy slavishly ideas or proposals from other countries, or from academic sources, is almost certain to result in an inadequate definition of what is required.
2. Training must be compatible with disaster plans. This is clearly of vital importance and, indeed, disaster plans, if properly formulated, should indicate and/or confirm what types and levels of training are needed.
3. Responsibility for training must be clearly defined. Otherwise training is likely to be uncoordinated and ineffective; where possible, responsibility is best given to some form of disaster preparedness section or department.
The Broad Training Requirement

Once major considerations, such as those above, have been taken into account, it is possible to begin establishing the broad training requirement.

A sensible starting point is to bear in mind that there is a very close link between training and awareness. If people are kept well informed about disaster and what it is likely to do, then appropriate training usually makes good sense. Indeed it is useful in practical terms, to regard awareness as a first training step.

Another initial step is to ensure that existing training assets are recognized and utilized to best effect. Disaster experience itself is one such valuable asset, especially when it is fully exploited, as suggested below, in the form of postdisaster review.

Also, the normal-role training of police forces, defense forces, fire and ambulance services, Red Cross and other agencies constitutes another valuable disaster-related asset. If, therefore, any special functions required by the disaster plan can also be included in the training curricula of these organizations, the overall training benefit is evident.

Once these basic assets have been made as effective as possible, then particular counter-disaster training requirements can be measured. Normally it is useful to consider three levels of training; policy direction level; operational level and community level.

In broad terms, the main methods of training appropriate to these levels are:

- Policy direction level. Seminars, postdisaster review and similar discussion periods, workshops, exercises, overseas training courses etc.
- Operational level. Skills or specialist-role training courses, briefings, exercises etc.
- Community level. Public awareness programs, briefing periods, motivation for voluntary work under the disaster plan etc.

It does, however, always need to be recognized that most kinds of disaster awareness activity have beneficial effect at all three levels.

The Formulation of Training Programs

Training policy

In formulating detailed training programs, it is advisable to establish some general policy guidelines. Initially, these should cover aspects such as the need to train to the disaster plan; training priorities in relation to the overall training requirement; the need to keep programs uncomplicated, so that they are both effective and of high interest level; the pattern of training to be followed, so that training activity does not become fragmented; and any other similar points of policy which may apply.

Organization of training capability

It is often assumed that the provision of training capability in developing countries depends on an approach of training the trainers’ first, and then building up a national training structure.
However, for a number of reasons, practical experience tends to indicate that this is only partially true; and in some cases not true at all. A more effective approach may therefore be as follows:

- Ensure that there is an efficient national disaster preparedness section, which is given the clear responsibility for training requirements.
- Provide the members of this section with a local disaster handbook, or set of guidelines, drawn up specifically to meet national requirements, including those applying to training (this may need to be done with the assistance of an outside specialist or consultant but this kind of service can usually be obtained free of charge from UNDRO, USAID, or similar sources).
- In due time, give key members of the section some general disaster preparedness training at, say, appropriate overseas establishments.
- Utilize local disaster-experienced officials and the resources of government training sections to assist in producing and implementing training programs; utilize also the instructional expertise available from police, defense force, educational, church mission, Red Cross and similar sources.
- Utilize national mobile teams to assist in spreading awareness and readiness information.
- Use any other approach or method which might apply to national circumstances; for instance, in some remote areas radio listening groups exist and can be exploited for disaster awareness purposes; or, existing national programs for, say, health education can occasionally convey disaster training information also.

**Training program components and adjuncts**

Before considering a possible training program pattern, it is worth emphasizing the value of certain possible components and adjuncts.

For example, postdisaster review is not only a valuable training asset in its accepted form of lessons learned. It can also be extended, in the light of immediately recent disaster experience, into a means of testing sections of a plan or system, thereby providing additional training benefit.

Similarly, short practical exercises are invaluable. Often they are regarded as being too complicated or difficult to organize and implement. This is not really so. Short one-day or even half-day exercises are feasible and effective for testing such important aspects as readiness, communications, co-ordination arrangements and so on.

Training in schools is also extremely valuable, especially in the longer term. This is particularly the case if it covers the disaster action needed to be taken on a family basis, as well as that required if disaster occurs during school hours. Also, many schools already teach first aid; if this first-aid training can occasionally be set in a simple disaster scenario, its interest and value is significantly enhanced.

The importance of promoting self-reliance at local community level has already been mentioned and there is both a strong training and disaster response aspect to it. If organizationally, within the disaster plan, some kind of village (or local community) committee is established, it can be given an appropriate awareness, readiness and response role. This in turn produces a training incentive, which can be exploited in the best interests of counter-disaster capability generally, especially if predictable seasonal threats (such as cyclone and flood) are used for periodic emphasis.
As has been said above, it is worth considering various aspects such as these before a training program is actually produced.\textsuperscript{24}

**What can be done**

The production of a national disaster training program at the policy direction level, contains a number of key factors including the following:

1. Criteria for selection of personnel;
2. Recruitment;
3. Designing the curriculum;
4. Organizing and implementing the training program;
5. Maintaining participation in training; and
6. Maximizing learning during training.

A useful guide to the principles of good training especially designed for use in developing countries, may be the following:

1. Structure — which includes planning, defining objectives, specifying kinds of learning and sequence of training activities.
2. Relevance — the more similar the conditions of the training setting to the back-home setting, the more likely will be the application of new skills and orientations back-home. This is a major rationale for the use of simulation techniques in training.
3. Specificity — goals, learning and training activities should be specific and stated in behavioral terms.
4. Generality — at the same time it should be possible to generalize from specific training activities.
5. Reinforcement — if the individual is not able to identify the positive forces resulting from his changes, he may revert to earlier behaviors, assuming his efforts have been irrelevant.
6. In-process evaluation and feedback — most individuals are more active in a training situation when they are provided knowledge and criteria of competence to apply to themselves and each other, than when they are being directly supervised and evaluated by an expert.
7. Openness and flexibility — should be continuously responsive to the unanticipated needs of trainees and circumstance.
8. Linkage — between elements in the training world and the “outside” world.
9. Involvement — through techniques such as simulation and role-playing.
10. Cost effectiveness — the greatest benefit to the largest number of trainees at minimum cost.
11. Redundancy — any effective communication has a great deal of redundancy built into it to overcome selective attention by trainees.
12. Synergy — learning takes place most forcefully when a number of inputs from different sources converge on one point.
13. Wholeness of learning — attitude, knowledge and skill need to be joined together.
14. Transferability — unless there is some chance for trying out and practicing under back-home conditions, an individual will not be likely to transfer learning to his back-home setting.
15. Compatibility — training should be compatible with the trainees’ personal history, previous learnings, expectations and future work situations.\textsuperscript{25}
Any disaster training scheme must have as its ultimate goal the benefit of the population which bears the brunt of disasters, even though the training may be couched in terms of national development. This means that, in effect, disaster training is part of community development. It is primarily concerned with helping people where they live. It depends for its success on winning people’s confidence and willing cooperation. The various communities which make up the general public must be simulated and educated in relation to their own local needs and interests. This, in turn, means that those concerned with public education and training must be skilled in human relations and in practical ways of improving local conditions. They must have a real liking and respect for people and a genuine belief in the value of their work. Additionally, success cannot be achieved without cooperation from many levels of government. Training is one way to accomplish these various aims.

III. Simulation

A specific method of training that has proven very useful is the simulation exercise. The following excerpt of an article from the journal “Disasters” describes one agency’s particular use and success with the simulation form of training.

“Simulation Exercises in Disaster Preparedness Training”

Over the last 3 years, the disaster preparedness training program of the Pan American Health Organization (PAHO) has used two simulation exercises to train personnel with decision-making responsibilities. The exercises cover hurricanes, earthquakes, floods, and hospital mass casualty management following a major transportation accident. This article describes our experience with these exercises in training sessions in Latin America and the Caribbean and suggests some ways in which simulation exercises can be used in the future.

Simulation Exercises

No exercise can ever fully reproduce the atmosphere of a disaster, nor will a simulation exercise, by itself, constitute a full training program. As one component of a larger curriculum that includes lectures and discussions, however, simulation exercises can provide an immediacy of experience that other training methods usually do not.

The term simulation has been used to describe anything from impromptu role playing to highly sophisticated computer models of real world events. The purpose and structure of a simulation exercise varies according to the user and the general program of which it is a part. Most instructional simulation, however, share the following characteristics, summarized by Taylor and Walford (27): they present a simplified abstraction of the essential relationships and the fundamental interplay between key roles; unfold time at a much quicker rate than normal so that the implications of action in a dynamic situation can be clearly and repeatedly felt; allow participants to “sit in the hot seat” and feel the direct impact of the consequences of decision making; and offer an opportunity for collaborative learning.

The simulation exercises used by PAHO, incorporate these characteristics in the specific context of a hypothetical disaster. Each exercise follows a carefully scripted scenario in which a group of people are assigned roles and called upon to respond individually and in groups to incoming information about a disaster. Two levels of simulation exist: that of the environment and that of individual and group action upon the environment. The first is established in the script, the second flows naturally from the situation in which the participants are placed.
The core concepts around which the simulations are built, are that: 1) the tension and anxiety of uncertainty under which personnel must operate, whether at the central or field level, are high, 2) information circulating after a disaster strikes is highly unreliable and must be assessed critically; 3) time is of the essence—decisions of life and death importance must be made rapidly; 4) coordination among technical sectors that may not work together during normal times is vital; and 5) there is no such thing as a purely technical decision, political factors being more prominent than ever during the aftermath of a disaster.

Technical issues are woven into the exercise as problems and choices between alternative courses of action. The group is not expected to address each problem correctly. That is the focus of later sections of the course. The emphasis is not on specific solutions, but on the approach to organizing incoming information and establishing priorities so that solutions can be found. The simulations are designed to foster flexible, method-oriented thinking. Taylor and Walford point out that:

. . .even when the student has some previous experience of simulation techniques, there is little likelihood that there can be conscious transfer of strategic ideas. . .few participants are able to approach dynamic simulation experiences with a tool kit of “cook book” solutions.

The PAHO Exercise

The exercise is an all-day event, usually lasting 7 hours. Early in the morning, participants are divided into groups of no more than 12 each, having been told only that they will take part in an exercise. Each participant is assigned a role. As the exercise proceeds, the individual members of the group receive brief reports, information and demands for action corresponding to their roles. The amount of information accumulated by the participants soon become so extensive that the volume alone produces anxiety. Pressure is also intensified by the dawning realization that there is no external authority to turn to for guidelines or instructions. Decisions rest solely with the group, although it may receive a response to decisions it has taken.

A moderate level of physical discomfort aggravates the level of tension. From the outside, lights are turned on and off, the room temperature is allowed to rise, the food and beverages are withheld until the point of irritation is reached.

The following scene is taken by way of example, from the exercise Earthquake in Tocuy, developed by E. Rozinblat (1980) and used in a South American regional training course held in Peru.

Members of the National Emergency Committee were awakened at 4 a.m. by a major earthquake. Fleeing their homes, securing shelter for their families, and trying to establish contact with the areas that fall under their responsibility, they have been called to a meeting of the Committee. At 0300 hours the committee has been in session for 23 hours. Each individual seated at the table is handed information, as follows:

To the Epidemiologist. You are informed that hundreds of cadavers are piled up in Umare. No one knows what to do with them. The morgue in Guaca is full of bodies. Due to electricity failure the refrigerators are not working, placing the vaccines in jeopardy. Your personnel ask for instructions.
To the Chief of Health Area No. 5. A collaborator tells you that the health center is seriously damaged. According to unconfirmed sources, there are 60 dead and 400 injured in Quigua. The rural health centers are still not operating and half of the people hospitalized in the health center have been moved to a shelter, which has been improvised from a warehouse belonging to the private sector. The road to Quiagua is almost impassable. Your family is all right.

To the Director of the Regional Hospital. On the radio you hear that a ham operator from Guaca has announced that the city and the hospital are in ruins and international and national assistance is needed. He called on all volunteers to go to the hospital.

To the Vice Governor. The police report that a large number of persons are migrating toward the city and there is no place to put them up. Another tremor has caused general panic.

To Regional Nurse. You are requested to send nurses to several points of Guaca. Medicines urgently required. Stocks are depleted.

The information delivered to the participants in this scene was handed out in a period of 5 minutes. Additional information and requests for decisions and action continue to arrive at approximately the same rate for several hours, tapering off in frequency toward the end (5 days after impact in simulated time). Much of the information is contradictory, reports of deaths and injuries do not match, some players receive information on epidemics while others are assailed by family problems, political pressures or an inability to locate key staff. As time goes by players receive telegrams and telephone requests from “the President,” foreign donors or the press, demanding to know what actions are being taken, what kind of assistance is being provided to victims, what supplies are needed, etc. By the end of the exercise, the heated arguments, telephone calls and planning for action taking place in the operations room is a highly realistic facsimile of what occurs in an emergency.

Obviously, it is impossible to attempt to respond to each bit of information as it arrives, especially if the group has come to the realization that the information that each player receives must be shared with the rest of the group. This does not mean that groups have not tried to frantically beat the pace of the information, or in some cases, simply refused to accept incoming data until they have acted upon what they have decided to give priority. Toward the end of the day, what was intended takes place: the group frees itself from the dictates of specific events to organize itself and the information systematically with an eye to devising a policy approach.

Observations on Conducting the Exercise

Each group constituting the National Emergency Committee or its equivalent is assigned a coordinator and an observer. The success of the simulation depends heavily on the smooth, professional behavior of these individuals. This requires that they be chosen carefully and be given enough time to read all the material, ask questions, and preferably go through a dry run of part of the exercise.

In the pre-exercise training of coordinators and observers, it is emphasized that they should not identify too closely with their groups, and that their groups are not in a performance competition with each other. This is done in order to correct the mistaken perception that there is a “right answer” or correct behavior for which participants will be judged. The PAHO exercise is not used to evaluate the professional skills or technical knowledge of participants.
The coordinator is responsible for handing out the information to each participant according to a rather strict timetable that establishes the pace of the exercise. In addition to this background data (morbidity and mortality statistics, resources available, transportation network information, maps and other material) that is given to the group upon request or if the group is proceeding to develop a plan of action which would benefit from that information. The coordinator plays no part in the group’s deliberations. There are, however, a few circumstances that may require intervention by the coordinator. For example, if a vice governor who takes his or her role too seriously monopolizes the discussion, the coordinator may call the player out of the room for several minutes, to allow other players to take a more active part.

The observer records the treatment of technical problems requiring action by the group. Later in the course, when these subjects are treated again, in lectures and discussion groups, the observer reviews the decisions that were taken during the simulation. This provides an opportunity to reconsider the actions taken under pressure, and emphasizes the importance of a measured response.

An issue that has been considered on more than one occasion is whether or not to assign roles to people who carry out those functions in everyday life. There are those who argue that, for the sake of realism, each participant should be given the role he or she actually has. We agree that in some instances, especially in courses intended exclusively for nationals who know each other and work together every day, this may be a good idea. However, in regional courses with participants from several different countries and sectors represented, we have made a point of assigning roles to individuals who have not and probably never will have those specific professional responsibilities. The reasons for this are several. First, a simulation provides an opportunity to experience the type of problems and decisions with which a counterpart in another sector is faced. Second, since the objective is not to evaluate the competence of specific individuals, it is easier to avoid the feeling that participants are “on trial,” by placing them in a situation with which they are obviously not expected to be familiar.

**Adaptations**

PAHO has developed exercises specific to various subregions of the Americas which share basic health problems, vulnerability to specific types of disasters, and basic organizational and cultural similarities. The realism of the information and social framework that is depicted in the simulation script is essential to the success of an exercise. If the social structure, health system or background data seem “foreign” or unrealistic, the exercise fails. The focus of attention and discussion becomes not what should be done but whether or not the environment created by the simulation accurately represents conditions the participants will be expected to work in.

The exercises are flexible and can be adapted to the needs of specific groups of trainees. Roles can be changed to match those existing in a given country or a specific technical sector. The type of technical problems presented can be changed according to the role of the participants and the specificity of their knowledge. In another version of Earthquake in Tocuy, for instance, a military group was established for each group of civilians. It was left to the groups to decide whether to join forces or act on their own, although the duplication of effort and conflict in priorities eventually become apparent if the latter option was chosen.

The simulations also can be used to reinforce or test knowledge. In one country, local health officers were brought together to update current emergency preparedness plans. Groups were given basic data and asked to develop disaster relief procedures without referring to the
country’s existing plan. After the plans had been designed, they were tested in a half-day simulation exercise. During the simulated disaster, participants were restricted to taking only those response measures that they had provided for in their plans. As events unfolded, numerous contingencies emerged which they were not able to handle because corresponding procedures had been overlooked in their plan. The simulation experience served as the basis for reviewing and improving existing national relief operations.(28)

IV. Computer-Aided Exercises

The proliferation of computer hardware and computer technology is increasing at an astounding rate. The use of computers in disaster management will, in the future, become not only commonplace but a necessity. The computer and its eventual accessibility by a large proportion of disaster managers will make it an ideal tool for disaster preparedness training.

Computer-aided training of disaster relief management is already a fact. A computer-based simulation exercise has been designed to aid in the training of those with predisaster planning and disaster relief management responsibilities. It was prepared by the International Systems Company of Lancaster (ISCOL), Great Britain. The aim of the exercise is to provide a realistic setting in which the problems of disaster relief management can be experienced and the techniques of resource management practiced. In addition, it aims to highlight the nature and value of disaster preparedness. The emphasis is on the disaster-prone countries, i.e., the third world, but the lessons to be taught have a more general relevance.

The exercise prepared by ISCOL was named ATLANTIS, and was designed to provide a simulated exercise as a practical alternative to actual disaster experience. The main concerns of disaster relief managers include implementation of search and rescue operations and the speedy restoration of the life-support systems. These tasks, however, become problems of great complexity in the confusion typical of postdisaster situations. The problems of poor and unreliable communications, lack of resources and inadequate transportation make effective management a challenge. By simulating this experience prior to a disaster, the execution of these tasks in “real life” should be far more effective.

The actual computer model describes the major infrastructural elements of the country of Atlantis, its resources and the state of its population. The player’s decisions are used as input to the model. By implementing these decisions, keeping track of the associated resource deployments and calculating the current consumption and production rates, the model is able to simulate the effects of the players decisions on the condition of the population. In addition, players may request information concerning stocks of resources, the state of communication links and the condition of the population. Replies to information requests and messages concerning the implementation of decisions are printed out by the program. The directing staff may also obtain information concerning the situation in the country and may make certain changes to it, thereby controlling the tempo of the exercise.

The model has three main sub-models: the Communications, the National and the Regional sub-models. The Communications sub-model simulates the passing of messages from players to the various regional officials and their replies or other related responses. The National sub-model simulates the movement of transport and resources from one region to another and their deployment. The Regional sub-model calculates the effect of these resource deployments on the condition of the population in each of the regions.(29)
This brief description of a specific example of computer-based training intends to suggest that the potential effectiveness of such an experience is very high. The techniques and skills required to utilize such training are no longer a hurdle. Rather it remains to be a challenge of making this kind or similar kinds of experiences available to disaster managers throughout the disaster-prone world.

---

References


23. Counter-disaster is a term that collectively refers to all measures which prevent, mitigate, or improve preparedness and response to disasters.


Chapter 6

Preparedness Issues

I. Introduction
Much of the preceding lessons describe the how-to-do-it of creating disaster preparedness plans. If it were a simple and straightforward process to implement a preparedness program all disaster-prone areas would probably have them. In fact, there are many significant issues that make the process complicated, ambiguous or possibly in conflict with other goals and activities of government and non-government agencies. This lesson focuses on some of those problems and identifies key issues in preparedness.

II. Common Problems in Preparedness
A general review of preparedness planning and an assessment of response activities carried out under the direction of preparedness plans has indicated a number of common problems, such as:

- Overcentralization of authority and failure to delegate authority to local levels.
- Failure to adequately sequence postdisaster activities.
- Failure to fully structure the emergency response actions in the transition phase.
- Over-reliance on electronic communications, especially telephones.
- Failure to build in flexibility and an ability to respond to changing situations.
- Failure to plan adequate and appropriate disaster assessment measures.
- Overemphasis on speed of delivery of material aid rather than on the process of determining actual needs and priorities.
- Failure to determine appropriate mechanisms for delivering aid at the appropriate periods.
- Failure to establish methods for termination or diverting inappropriate aid.
- Failure to plan adequate protection of critical facilities.
- Placing responsibility for preparedness planning in the wrong ministry.
- Over emphasis on relief activities (as opposed to search and rescue, protection of critical facilities, etc.).
- Failure to ensure adequate and effective co-ordination of disaster preparedness and relief efforts.
- Failure of departments, organizations and agencies to ensure that they can effectively carry out the tasks allotted to and accepted by them within relevant plans.

In the implementation of preparedness plans, there have been additional problems in that preparedness agencies often fail to fully involve local people and existing coping mechanisms in planning and training activities.

The preparedness planner should review these problems in relation to preparedness plans that are currently in place. It also becomes a useful reference during the design stage of planning to check if the problems have been anticipated and will be averted.
III. Issues in Preparedness

The anchors of preparedness plans need to be taken into account. The following issues are the most important for which clear decisions must be made. Otherwise, there will be unanticipated results during an emergency.

Stockpiling

Critics point to the fact that distribution of relief supplies rests more on human than technological factors, and that the ability to move materials rapidly from Europe or North America to the developing countries is of little consequence if they cannot be distributed rapidly once they arrive. Another issue is the appropriateness of the aid that is stockpiled. While there is no doubt that some equipment, tools, and resources are helpful in disaster, much of the aid that is traditionally stockpiled is of little real value to the disaster victims (despite the fact that they may stand in line for hours to receive it).

Other critics point out that for stockpiling to be effective, it must be carried out in or very close to the area where it will be used.

Arguments often focus on tents and other emergency shelter items. As an alternative to tents, some relief strategists have proposed that stock piles of building materials, especially roofing sheets, be placed near threatened communities. Others argue that if the agency has the capability to stockpile materials in this manner, it makes little sense to withhold them until a disaster strikes, especially when they could be useful in improving the safety of the existing buildings. They argue that money is better spent on vulnerability reduction than stockpiling.

The answer to the stockpiling question probably lies somewhere in between the arguments. Stockpiling can be effective, especially if it is carried out in the country, and there are certainly some materials and resources required in every disaster that a poor country cannot justify buying. Medical supplies, especially, are costly and often have a short shelf life. Thus it probably makes sense for these to be stockpiled and provided by the international relief system. However, effective stockpiling of medical supplies can be assisted if stockpiled items are systematically rotated through the normal medical and health system, thus avoiding shelf life problems. Donors should be careful, however, to ensure that the aid provided is appropriate and that the ability to stockpile does not result in the stockpiling of inappropriate aid, or the transfer of these materials at inappropriate times, or in such a way as to clog up the pipeline needed for more critical items.

Community Shelters

A preparedness issue that often arises is the question of providing large shelters for persons living in areas threatened by cyclonic storms. Much of the traditional preparedness literature advises officials to designate churches, schools, or other large buildings as shelter. Proponents often point to similar practices in the United States. While this practice has been fairly successful in the US, there are two serious draw backs to using this approach in developing countries. In the United States, the buildings designated as shelters were especially designed or reinforced to withstand hurricane-force winds. The designation of similar large-scale buildings in developing countries is practical only if they meet the same design criteria and standards - which few do. In fact, many are less stable in high winds than the surrounding houses. The record of these buildings when used as shelters is alarming. In Andhra Pradesh, following the cyclone in 1977, three buildings (churches and schools) failed, with a total loss of
over 400 lives. In Dominica, some experts attribute the relatively low loss of life in Hurricane David (1979) to the fact that there was no warning and people were not able to get to the churches designated as hurricane shelters. Of the six main churches, four were totally destroyed.

The second question is that of designating any building in a low lying or flood-prone area as a shelter. Hurricanes can propel storm surges dozens of kilometers inland with awesome force that no building is safe against. Even if the building does survive the pounding of the wave action, the water may rise as high as 10 meters, entirely covering one- and two-story buildings. Every building used as a community shelter in the coastal area of Andra Pradesh during the 1977 cyclone was submerged by the surge. In fourteen of the buildings to which people had fled for protection, there were no survivors.

Thus, even if buildings are specially designed or reinforced as shelters, there could still be a danger.

There are other practical issues involved in the question of coastal storm shelters. In rural areas, it would be difficult and cost-prohibitive to build and maintain a single structure large enough to house all the people in a particular region, and it is unlikely that shelters could be distributed widely enough to be close to all threatened families. Furthermore, the success of shelters would still be dependent upon adequate warning and evacuation systems. Unless an adequate early warning system was developed, people in riverine environments or on islands would be unable to get to the shelters in the first place.

What then is the alternative? Most experts concur that the best measure is adequate warning and evacuation of the threatened area. They argue that in areas along the coast, especially those where storm surges could occur, people should not be encouraged to remain. Since the technology is now available to track cyclonic storms, more emphasis should be placed on public information and awareness of the need to evacuate. This should be accompanied by construction of evacuation routes and hurricane-resistant reception centers for evacuees.

**Centralization versus Decentralization**

One of the management issues in disaster preparedness is the question of how much centralization of authority is required for the effective administration of preparedness and emergency response activities. When emergency preparedness was a new topic, little was known about a society’s response to a disaster, and it was assumed that people confronted by disaster would panic and behave in unusual ways. It was believed that a strong central office with ultimate authority and power would be the most effective way of controlling the situation and keeping the social fabric together. Krimgold has written, “An emergency is often used to justify changes in the ordinary procedure for making decisions. It provides an excuse which allows national authorities to decide local questions or in turn an excuse for international authorities to decide national questions. In the name of emergency, property can be confiscated, people can be forced to leave their homes and democratic processes can be circumvented.”

The other danger is that in order for a highly centralized bureaucratic system to work, it must have a pyramidal and hierarchical administrative framework. In such systems, there is a loss of information at each level of the organization each time a communication is sent, and the final message received may be different from the original transmitted. Furthermore, such a system is
dependent on the functioning of the central office. If that is damaged or communications are severed, the whole system will break down.

Our increased understanding of disaster response by societies indicates an alternative approach to management and argues the case for decentralization. If disaster assistance is to be compatible and “in phase” with actions that are occurring within the community (which are usually quite logical and rational) preparedness activities and decisions should also be community-based. It would be difficult for a national or even regional disaster plan to take into account all the local variations found at the community level. Decentralization is important because it allows for local variations in culture, community, and need. Thus “the shortest possible distance between the people who make decisions and the people who are subject to the result of those decisions should be maintained.”

This is not to say that there is no need for a central coordinating body for preparedness activities, which should be endowed with a degree of authority, for such an organization can assure that there is minimal overlap in provision of services and that all assistance is provided on an equitable basis (if given the proper working tools, such as uniform assistance policies). However, in initiating or reviewing preparedness and associated issues, it is often useful to work from the bottom up. This helps to ensure that the top and intermediate levels of authority are structured to respond accurately and effectively to what happens at the community (or disaster front) level. This in turn helps to achieve a reasonable balance between centralization and decentralization. It becomes clear then that the role of the central office is to coordinate resources outside the community and help meet the needs identified by the local plan.

Use of the Military and Civil Defense

In many countries, responsibility for civil disaster preparedness is placed in the hands of agencies that are either a formal part of the defense ministry or rely heavily on military organizations. This reflects common practices in the United States and Europe during the 1950s and 60s. During the Cold War, many of the industrialized nations built extensive civil defense networks to respond to civilian needs in the event of a nuclear attack. Responsibility for coordinating activities was normally placed in the hands of military or paramilitary organizations.

As tensions lessened in the 1960s, it was decided to expand these organizations to include a response to civil disasters and to integrate the resources, which included warning devices, shelters, food supplies, and search and rescue equipment, into municipal and state preparedness activities. (In the United States, the change from a strictly military to an expanded civil portfolio is reflected in the progressive name changes from Civil Defense to Civil Defense Preparedness Agency, now integrated in the Federal Emergency Management Agency.) The reasons were not always humanitarian. Some defense planners saw natural disaster as a working laboratory for nuclear war preparations.

There are a number of advantages to using the military in a civil disaster. Usually, the military has an excellent and highly mobile communications system. Units of soldiers can operate self-sufficiently for several days at a time, and they have access to vehicles and heavy equipment useful in many disaster roles. Furthermore, the military, is trained to act, in an orderly and disciplined manner, which can have major psychological advantages in a chaotic situation.
The classical role of the military in disaster is that of aid to the civil power. This, in fact, applies in countries as diverse as Australia, Indonesia, Tonga and Burma. This classical role can be effectively established and maintained by allocation of appropriate roles within plans and, where necessary, enforcement under legislation.

Yet, it is good to be aware of a number of problems associated with the military. First, military units are not suited to long-term disaster roles. Very few commanders are willing to allow their troops or key personnel to devote extensive time to non-defense related activities. Thus organizations that are dependent upon the military in key sectors must by necessity limit their involvement to the emergency period.

A second problem is that any organization or activity tends to mold its method of operation around the key participants. If the military assumes a major role in disaster response, activities will be molded to military capabilities. A subtle example of this is the emphasis on the use of tents as emergency shelter. Because military organizations already have the units and can quickly erect them, few alternatives are sought.

Another example is the way in which tent camps for evacuees are set up. Military engineers will naturally use their own base planning procedures and lay the camps out along military lines. These plans are designed to be orderly, compact, and to achieve a high density. While suitable for military needs, the plans neglect the basic requirements of adequate space for families, and the needs of special groups among the disaster victims. Furthermore, a high density may encourage the spread of disease and the development of undesirable social conditions within a camp, all of which can have a negative long-term effect on the inhabitants.

The third problem is precisely that which makes the military so efficient in the first place, that is, its highly centralized control system. The military hierarchy is designed to facilitate control and to centralize authority. But in a disaster, people need to get together and develop collective responses. A military hierarchy of decision making can discourage and inhibit this process.

Another common problem is that many civil defense agencies are dominated by senior military officers. This may result in the agency being subtly reformed into an operational arm of the military or becoming a shadow command designed to “take over” in a disaster.

In many countries the military represents the power of a repressive government, and local people, far from welcoming the arrival of the military after a disaster, are often fearful of any increased presence of the armed forces. Unfortunately, any preparedness experts from the international relief agencies routinely encourage developing countries to pattern their preparedness plans and organizations after Western civil defense models and thus inadvertently encourage a higher degree of military presence than is really desirable.

The best answer to these dilemmas is to integrate the military’s capacities under civilian control. The resources that are needed in a disaster and that the military can easily provide should be identified, including communications, medical services, and transport. Plans should be made to place small units under the temporary authority of civil officials for specific tasks. It will then be easier for nonmilitary authorities to manage these resources, and local leaders will not feel overwhelmed or threatened by the presence of soldiers in their community.

An effective, and non-threatening, way of integrating military and civil functions is to assign only officers with a technical background to civil defense agencies, and at the local level, to place command of military units under the authority of senior noncommissioned officers.
Technical Assistance

Much of the increased interest in disaster preparedness in the developing countries has been stimulated by the assistance agencies of the industrialized countries and some of the international consortia of non-government agencies. The two most influential organizations currently involved are the AID office of U.S. Foreign Disaster Assistance (OFDA) and the League of Red Cross Societies.

OFDA has taken strong and valuable steps in aiding the development of national disaster plans. Beginning in the early 1970s, OFDA (then titled Foreign Disaster Relief Coordinator”) began a series of annual seminars for representatives from relief and development organizations in Third World countries. Participants heard lectures from noted disaster specialists and visited state and national civil defense agencies in the U.S. In the latter part of the decade, OFDA changed its approach and began holding seminars that were more closely attuned to the needs in each region. Participants were encouraged to outline and describe their own needs, which OFDA and other organizations could later help them try to meet. The most successful of these seminars was held in 1979 on St. Lucia and resulted in a variety of regional Caribbean disaster preparedness activities.

The work of the League has been influential too, not only in establishing preparedness activities as a function of local Red Cross societies, but also as an example to other nongovernmental agencies as to what can be accomplished through preparedness. The League has also promoted national predisaster planning by asking national societies to encourage their governments to develop national disaster plans. “In this activity, functioning as a humanitarian pressure group, the Red Cross has been responsible for a significant part of the predisaster planning which has taken place...in the developing counties.”

Other nongovernmental organizations are beginning to take note of predisaster planning possibilities. This is especially true among international volag coordinating bodies. For example, the World Council of Churches has recently undertaken preparedness activities and is encouraging its members to do likewise. World Vision has also initiated steps along these lines. Very promising attempts at preparedness at the local level are being made by CADEC (Christian Action for Development in the Caribbean), under a special Disasters Emergency Relief and Welfare Committee supported by technical assistance from Church World Service, OXFAM, and Catholic Relief Services.

There are a number of recurring problems associated with providing technical assistance in the development of emergency preparedness plans. First is the problem of selecting an appropriate model for the plan. Often a standard model or models based on systems used in industrialized countries are suggested as a base for local derivatives. Relying heavily on highly technical or capital-intensive equipment and resources, such plans are usually inappropriate for developing countries.

Although in any preparedness plan there will be recurring organizational, operational, and staffing patterns, it is clear that each country or organization requires a unique combination of these elements. Models developed by each country should present the best plan for meeting local needs and capabilities and reflect the material and human resources available.
A second set of problems involves emphasis. More often than not, technical aid has concentrated only on relief, especially that provided by the international donor community. In fact, in certain cases preparedness assistance has seemed to be focused more on facilitating aid by international donors than on the response capabilities of the disaster-affected community. To be effective, technical assistance should concentrate on the full range of preparedness needs and activities.

The best means of overcoming many of these problems is by making a subtle shift in emphasis. Instead of concentrating on the adoption of specific modes or plans, technical assistance should be aimed at providing a conceptual framework within which an organization can review the options and develop its own approach and structure. While it is not possible to design a preparedness model or disaster plan that can be adapted to all situations and environments, it is possible to develop satisfactory measures that will be adequate for most situations. Technical assistance can support local efforts by providing access to resources and information that will facilitate the preparedness and response activities. By bringing people together to discuss common issues, problems, and experiences, measures such as the AID Disaster Preparedness Seminars can benefit preparedness activities.

Planning The Political Elements

One of the most frequently overlooked aspects of predisaster planning is the political element. When a major disaster occurs, the prime minister or president of the nation will naturally want to demonstrate his concern and interest in the situation by taking personal steps to assist. In many countries, a personal representative is designated to be in charge of relief of reconstruction functions reporting directly to the Chief of State. In some cases, this has led to the formation of entirely new disaster response teams and the circumvention of the networks established through disaster preparedness.

In non-governmental agencies, this problem also exists. If a disaster is of an immense magnitude, the head of an organization often feels compelled to visit the scene and make some personal input. Many field directors have seen their carefully developed programs altered or ended before they got off the ground by one of these “state visits” when the chief of the organization demanded quick action and/or key changes based on his assumption of what is necessary in a disaster.

It is quite logical, and indeed proper, that chief executives demand some degree of personal involvement. For disaster preparedness, however, the problem is that the intervention of this nature by persons who are not a part of the predisaster planning process can slow, complicate, or even erase painstaking preparedness and mitigation efforts.33

References

30 Drimgold, Frederick, “The role of International Aid for Pre-Disaster Planning in Developing Countries, Avdelningen for Arketektur, KTH Stockholm, 1974.
31 Ibid.
32 Ibid.
33 Cuny, Frederick C., Disaster Preparedness: Expanding Post-Disaster Opportunities, INTERTEC, 1981. Much of this material also appears in Frederick C. Cuny, Disasters and Development, Oxford University Press, New York, 1983.
Chapter 7

Preparedness Roles and Responsibilities

I. Introduction
Implementing preparedness activities, or a whole integrated program, depends on each government, non-government agency, and international organizations understanding some basic concepts. Each group must clarify its own role in such a program and understand the responsibilities that it implies. That is, there is an interdependence among the agencies and a need for communication to produce a balanced, coordinated and complete plan. This Lesson will discuss how to identify these roles and responsibilities according to agency type. The types discussed are national governments, non-government organizations, and international organizations. The final section of this Lesson stresses the vital need for coordination among these groups both before and after a disaster.

II. Disaster Organization and Preparedness Models and Guidelines
To develop a preparedness plan, an agency need not start from nothing. Much work in this area has already been done. No single nation's disaster preparedness plans, preparations, and operation, however, offer a universally acceptable ideal or optimal model. The models developed must therefore necessarily represent a composite or synthesis of elements or characteristics drawn from different nations. Constructing models based on the characteristics of the most wealthy and technologically advanced nations must be avoided. The danger of such models is that they lead less-developed societies to overlook their own ingenious resources in developing incremental improvements in their disaster preparations, thereby becoming more dependent on outside assistance.

What is needed immediately is a set of basic principles or guidelines that each nation can apply within its own socio-political context. Such guidelines might, for example, convey the following elements:

• The most effective disaster organization is one which is an integral part of the routine structure of government, closely attuned to the political realities of life as well as to technical requirements; such a structure should serve routine management information functions and operate under emergency or crisis conditions.
• The organization should place primary emphasis on disaster prevention, control and mitigation.
• It should constantly converge information that will allow it to monitor the entire spectrum of dangers that threaten life and property.
• It should clearly assign responsibilities to the various agencies of government and to related voluntary and private agencies.
• It should develop a system of reconnaissance and damage assessment that will provide a continual, accurate strategic overview of the critical preventive, precautionary, relief, and recovery needs.
• Relief operations should be attuned closely to long-range rehabilitation measures that will provide greater protection and control in the future.
• The stimulus for learning provided by disaster should be utilized in appropriate training programs for both specialized disaster-related agencies and the general public.

• At any given stage in the development of the society, the organization should make maximal use of indigenous resources.

• This organizational system should be connected closely with other national, regional, and international organizations in the sharing of vital information and in developing mutual aid plans and operations. \(^{34}\)

It must be borne in mind that:

• International relief is a very small part of the total cost of postdisaster reconstruction, rarely more than 10%. This means that so long as we concern ourselves only with international relief we fail to deal with the bulk of the problem.

• The expenditure on postdisaster relief aid must be compared to the cost of predisaster planning and organization. There is a multitude of evidence of inefficiency of postdisaster relief. Causes of inefficiency are: the inability to give local specifications, inability to coordinate disaster relief efforts, inability to follow up emergency aid deliveries, and inability to grasp the total dimensions of disaster situations. In contrast to this stand the relatively efficient types of aid which can be delivered because of predisaster planning. Planning is essentially the careful, conscious explicit statement of national priorities in foreseeable disaster situations, the development of plans for application of aid which will become available in such situations and the development of internal organizational contacts. This type of activity is also a contribution to the general development of internal organization and in improvement of long-range planning within the developing society.

• In order to solve a problem people must be aware of it. This awareness must be a rational understanding of the types of natural events that are likely to occur within the boundaries of the country concerned, a rational and hopefully unemotional understanding of what the impact of these events can be on the existing social systems and the physical infrastructure of the country. Once this awareness is developed to a sufficiently sophisticated level, not only with authorities but also with the public, it must then be coupled with knowledge of what can be done to eliminate or to reduce the problem. The knowledge required comes from a range of disciplines. First scientific knowledge of natural phenomena, the earth sciences; meteorology and hydrology should be applied to clear mapping of the disaster risk. Then strategic planning and social planning must be carried out for warning, evacuation and relief operations. Knowledge of physical planning should be applied to development of land use and building regulation in order to avoid settlement in risk areas. Finally knowledge of the natural sciences may be applied to reduction of harmful natural phenomena. This coupling of awareness of problems and knowledge which can be applied to their solution can lead to the types of political decisions and setting of national priorities which establish preparedness, and this preparedness can lead ultimately to security and stability.

• Local participation, initiative and authorship is essential in the predisaster phase. We cannot work directly with our material as technicians. We must work as educators, we must invest competence and confidence in local people. We cannot hope to work as experts leaving products behind us, we must leave a functioning process with its own life. We must establish an organic process and not build an inorganic monument. Compare a living tree with a steel column! The tree is capable of reproducing itself when the column over time will only rust and deteriorate. The one may seem stronger in the first moment, but over time the living organism certainly will prove to be the lasting force. This means that we shift the emphasis from the competence of the expert to prescribe to the ability of the expert to activate and utilize the competence of local people. \(^{35}\)
III. Non-Governmental Organizations

Too often, groups such as voluntary agencies (volags), churches, or small community organizations are omitted from predisaster planning activities. Many small groups feel that preparedness or mitigation activities are beyond their capabilities, or feel that it is not their place to become involved. Small groups, however, are among the most effective of the coping mechanisms and play a key role in disaster recovery. Thus they should be encouraged to participate to the fullest extent possible.

There are many roles that small groups can fulfill and activities they can undertake, especially in preparedness. At the most basic level, small groups can promote awareness of natural hazards and promote public action to mitigate or prepare for a pending disaster. Second, agencies can work together for meeting people’s needs in a disaster and assign responsibilities for certain tasks to appropriate groups. This step, the development of an organizational framework for coping, is the most important action that can be taken at the local level.

Actions to reduce losses at the local level are called “community-based disaster preparedness” activities. Volags and small groups can be very effective in helping to organize and implement these measures. For example, in some cyclone-prone rice-producing areas, two ways of reducing crop losses could be introduced. If the weather permits, crops could be planted several weeks earlier so that they could be harvested before the peak of the hurricane season. The introduction of improved storage for harvested rice, such as small-scale ferro-cement silos, would reduce losses should a cyclone strike after the harvest.

Social service agencies, especially churches and their affiliates, should learn more about their role in psychological recovery. One of the most valuable roles played by these organizations is helping families and individuals overcome the emotional stresses of a disaster. It is surprising how few groups are adequately trained or prepared to help individuals and families deal with widespread traumatic events, such as mass casualties, family reunification, and the loss of possessions.

Organizations with access to resources for longer-term recovery should develop policies to guide their recovery programs. It should be remembered that in a region-wide disaster, the social services available at the local level will be minimal, and organizations should determine in advance what affected groups to serve and the best means for maximizing the resources available. The possible gaps in the delivery of social services can be readily identified or estimated, and steps should be taken to plan appropriate action to plug these gaps.

A simplified predisaster planning process for small groups is as follows:

• Identify the key sectors and areas likely to be affected in each community.
• Determine what types of assistance people will need and estimate the types and levels of assistance they could reasonably expect to receive from within the community and from outside resources. From this list, identify the gaps that will exist.
• Determine what services the organization can provide, giving priority to the gaps identified in step 2.
• Determine how each one of the gaps can be met and develop a plan for providing these services when needed.
• Review the plan and determine if the organization needs any additional services or assistance to implement the plan, and if so, make arrangements to obtain these services when appropriate. 36
IV. Inter-Agency Coordination

With the rise of interest in international relief, and the birth of an unprecedented number of separate relief organizations, mostly small and of uncertain experience, there has arisen a demand for coordination of the agencies involved. Coordination is usually advocated on the grounds that greater efficiency or effectiveness can thereby be achieved. Effectiveness tends to be valued above efficiency when life-saving operations are under way, while the latter takes precedence as rational, cost-benefit criteria are applied to post-crisis recovery. It is also sometimes suggested that a coordinated approach to relief has good public relations appeal for donors, and that order and discipline are to be valued as good per se.

Yet, the reason for stressing coordination is that it can mean the difference between success or failure of a whole relief campaign. A useful reference in this regard is the work of Professor Joseph Scanlon of Carleton University in Canada, whose disaster research unit has undertaken a great deal of postdisaster analysis. One of Scanlon’s reports states:

_We have one final comment about this disaster. And it is one we make almost every time we look at any crisis situation. It seems to us that once again we have seen the need for overall co-ordination. Some one agency must take responsibility for all that goes on and must see to it that the various necessary tasks are sensibly allocated to those who can perform them._

The prime objectives of coordination are the avoidance of material waste, duplication of effort, excessive coverage, and/or loss of time and effort. These objectives can be achieved by the sharing of resources, including for example information, transport, warehousing facilities, and specialist staff. Efficiency can also be achieved by dividing up the disaster area among the helping agencies so that each is responsible for delivering to the population in its assigned territory all of the services which are needed. Allocation of relief work can also be achieved by making each agency responsible for a given service in all or any of the affected areas. A combination of these methods may be used to great effect.

The secondary objective of coordination is the avoidance of counterproductive responses on the part of multiple relief agents. In a major disaster, losses in time and effort can be caused by the convergence on the scene of countless individuals, organizations, and material goods. Unfortunately, both personnel and material aid are frequently selected on the basis of stereotypical needs which are popularly believed to be associated with disasters. These inputs, made available without clearly defined purposes or an adequate picture of how the additional resources will help result in an uncoordinated mass response that imposes a strain on physical space, communications facilities, and the patience of victims and those few officials who are legitimately involved with the event. It has been hypothesized that the greater the number of outside organizations converging on the scene, the greater the amount of inter-organizational conflict one can expect. A sufficiently prestigious or powerful coordinating body can therefore perform four functions in relation to the convergence phenomenon:

- It can attempt to discourage unqualified organizations and misguided individuals from lending their presence or sending inappropriate response.
- It can direct inappropriate aid which does arrive into non-harmful channels of activity.
- It can assist in resolving disputes between the otherwise uncoordinated helping organizations.
With regard to achieving effectiveness, the prime objective of coordination is to ensure that resources are distributed to the areas of greatest need, and that they are distributed equitably within areas of similar need.

A second objective is to ensure that the methods and program norms employed by each agency do not conflict with those employed by any other agency. Where many private individuals, private voluntary organizations, government departments and intergovernmental agencies are all trying to help in one area, there will be many opportunities for conflicting understandings of what needs to be done and how programs of assistance should be organized. Unless minimal common policies are agreed upon, the available resources are likely to be distributed unfairly among the needy; there will be confusion and misunderstanding in the minds of the victims; and there will be ample room for resentment and bitterness to grow up among those differentially benefitting. The job of a coordinating agency should be to issue guidelines on the relief policies to be pursued, and to facilitate compatibility among the different approaches to relief, which are adopted by the various helping agencies.

The third objective of coordination that can lead to greater effectiveness in the delivery of relief, revolves on the fact that no one relief organization can provide a complete range of services to the disaster victims. Disaster relief and reconstruction in technologically sophisticated cultures demands an array of specialists each with their own particular skills. The more technologically complex the society rendering relief, the more elaborate is the functional differentiation. In order that the victims be able to reap the benefit of any one service, other complementary services often have to be provided. The more services offered and the more specialized agencies involved, the greater the need for coordination in achieving any desired results. Indeed, without a coordination of inputs, some inputs will achieve no benefit at all. Medicines without appropriately qualified personnel to dispense them can be as useless as building materials without the tools to work them or credit to buy them.

The wide range of aspects that are necessarily involved in successful co-ordination include:

- Planning measures
- Organizational structures
- Control and direction systems- Communications
- Standard awareness and information
- Training

Above all, emphasis should be placed on the importance of clear allocation of roles and responsibilities, plus a suitable system for ensuring that these roles and responsibilities can be fulfilled: because, without the assured capability to fulfill allotted roles, no system of co-ordination can work effectively.

Coordination can be hampered by the desire of many relief agencies for a separate, identifiable, public image, a need which many relief agencies experience for their own separate, identifiable, public image. This is especially true of the private non-governmental organizations which rely on public donations for their support. Each agency feels that it must be able to demonstrate to its donor public how its contributions are used and, by implication, what the advantages are of contributing to that particular agency over contributing to any other similar organization. The competitive spirit is anathema to inter-agency coordination. Depending on the organization in question, individual programs of relief are regularly fashioned with an eye to their publicity value, rather than according to whether they will fit in with a coordinated, effective, and efficient response by all agencies.
In addition to each relief organization having its own constituency of donors, some also have their own constituency of victims. Churches or affinity groups, for example, are prone to have members scattered throughout a disaster-affected area. These organizations may insist that they have the right to assist their members, and only their members, in all of those places, irrespective of the work being done by other organizations with the population at large. However, because of the practical difficulty, or unacceptability, of distinguishing members from non-members, an affinity group may end up by attempting to serve all claimants who approach it for assistance. Achieving coordination by allocating different organizations to different areas then becomes highly problematic.

A factor which produces a need for coordination and is, of itself, an obstacle to achieving it, is the large number of new organizations which may be born as a result of an emergency. When the crisis appears grave but unclearly defined; when the officials do not give an immediate lead; where inter-organizational coordination is low; and when the community as a whole has relatively little experience of dealing with crisis; then new groups under new leaders can be expected to spring into existence. From the point of view of achieving a coordinated response, a difficulty arises in that the new leaders that arise to direct the new groups operate without any necessary allegiance to a central authority and are therefore extremely difficult to coordinate in a combined assault.

In the last analysis, coordination is possible only when individual administrators feel that the sacrifices and effort involved are worthwhile. For the greater good, it will be necessary for each to relinquish some autonomy. Being coordinated often means being prepared to subject one’s own will to that of another. An act of faith is required in the utility of the process, even before the potential benefits are evident. Even then, the benefits and the costs are unlikely to be distributed evenly among the participating organizations.

If administrators are to be persuaded of the benefits obtainable from coordinating with others, then a certain amount of groundwork has to be undertaken before a disaster strikes. In fact, intense negotiations may be necessary to establish agreed roles in the disaster preparedness and disaster response plans at all levels. Planning in advance may be the most important aspect of coordination, because it helps to ensure coherency of operations, especially in the emergency phase. In particular, it is useful for those who are likely to be involved in the administration of the relief to establish personal contact with those with whom they are likely to work. Relief agencies do not coordinate with one another en masse, but via the medium of trust and understanding which is fashioned between their respective officials.

Preparedness plans should be drawn up which will facilitate coordination. Any ambiguity or uncertainty as to which body has the power, or duty, to exercise the coordination function, should be ironed out before the disaster strikes. An appropriate division of labor should be made among the various relief agencies likely to be involved.

Finally, education and training will need to be provided on the advantages of coordination with others. (See also Appendix V for “Gap Identification for Disaster Preparedness.” It can be a useful tool to assist in the coordination of responsibilities for disaster preparedness and response.)
References

41. Kieffer, Margaret, “Disasters and Coping Mechanisms in Cakchiquel
Chapter 8

Public Awareness and Warnings

A community at risk to a disaster will not be prepared to meet it if the general public itself is not prepared. This is true regardless of how effectively prepared are all public and private agencies. It becomes the responsibility, then, of those agencies involved with disaster preparedness to include the public in their plans.  

I. Need for Public Education

Educating the general public about the consequences of a major disaster on an unprotected community, as well as about warning signals, the public alert and the various other protective actions that can be taken by public organizations and by individuals, has often been considered a peripheral aspect of the warning process and the disaster preparedness program in general.

Unnecessary loss of life and damage to property has been caused because of ignorance and lack of knowledge, prior preparation or necessary skills. It is now gradually being realized that an informed public is better prepared to adapt and respond to danger and that an effective public education program can significantly enhance the outcome of the warning process.

The training and education of the public in disaster preparedness and prevention must be promoted by governments, as well as by national and international organizations. Education in disaster prevention should begin in primary schools by informing pupils about the effects of disaster and methods of protection against them.

Specific groups of individuals, such as civil defense personnel and others having responsibilities in disaster situations, can be provided with a basic knowledge of natural phenomena and their effects. Such instruction will not only help them to understand basic and practical preventive and preparedness measures but also serve to dissipate some of the traditional fatalism about natural calamities.

This theme was reiterated at the United Nations Water Conference in 1977.

High priority should be given to education, training and public information in disaster prevention and preparedness, both by individual governments and international organizations. This should be directed, among others, to public officials, decision-makers, professionals in building and construction industries, national health planners, public health workers and the general public situated in particularly vulnerable areas.

Government advisory services, for example, can play a significant part in informing the general public about the nature of disasters. Scientists, such as volcanologists or seismologists, must have the ability to work with non-scientists—government officials and representatives of disaster-relief organizations—to understand their problems and needs and make them aware of what kind of information can be supplied, its basis and its limitations. The volcanologist, for example, must establish a rapport with residents of the areas concerned, not only with
community leaders but with the populace as a whole; he or she must understand their feelings and reactions, their behavior under stress, and try to ease the stress by gaining their confidence. If people have confidence in the volcanologist, and he/she takes pains to explain to them in their own language what the situation is and what risks are involved, the likelihood of panic can be much reduced. It has been aptly stated that it is the unknown or not-understood danger that terrifies. The mere presence of the volcanologist can inspire confidence and calm the situation.

In the interim period, when disaster education is being introduced into the school curricula, mass media will have to be enlisted to disseminate information to the present generation of adults. These media, especially the press, cinema, radio and television have an important role to play in public information and education in disaster prevention and disaster preparedness measures.

The task will not be at all easy. Research on warning response shows that short-term public education efforts, even intense ones dealing with urgent tasks, do not have a measurable lasting effect, largely because of the non-recurring nature of disasters in many areas. Generally, evidence so far suggests that many public education efforts to change warning response need considerable improvement, judging by the fact that some proportion of the population usually fails to take appropriate action despite well-understood warnings.

This would indicate that public education programs should first be undertaken in those areas with recurring disasters, such as Bangladesh, or high hazard risk, where there is some incentive to pay attention to the program, and where there are sufficient human, material and financial resources to carry on the program for a long period of time.

Decades of exposure to loss of life and property damage from floods or drought are not conducive to learning for citizens who have grown accustomed to their unfortunate position. The public remains largely ill-informed of even basic steps necessary for adequate disaster preparedness and often has no awareness whatsoever of the most rudimentary preventive measures. This condition is compounded by a fatalistic view of natural calamities, sometimes acquired from centuries of experience. It could take a tremendous effort to break through the hopelessness or lethargy, particularly where there are few options open to inhabitants caught in disasters. Public works programs, coupled with public information, might be more feasible in the short-term for these areas.

It should not be forgotten that a public education program should be aimed at both general and special publics. Dual programs can educate the general public to hazards and how they should respond to them, and educate the special publics (such as government officials at various levels, agency officials involved with disasters) to their roles in the prevention and mitigation process and how these should be carried out.

Well-designed and implemented disaster education programs can work. For example successful results have been achieved in China where vast numbers of people have learned how to act when earthquakes and similar disasters strike their communities. The general public has been drawn into the warning process itself: with tremor observers as well as observations of animal behavior.

A successful program of compulsory civil defense education and training has been carried out in the Soviet Union for many years. Every citizen has had to take time to acquire information and learn skills which might be needed in the event of natural or man-made disasters.
The rudimentary structure of a public education program can be assembled, although these models will always be subservient to regional, national or local needs, resources and conditions:

- Long-term rather than short-term
- Have built-in evaluation of effectiveness in the mid-term
- Incorporate the educational infrastructure, from primary schools to university level
- Use the mass media to reach the mass of adults
- Use folk or alternative media to reach other sections of the population
- Aim at both the general public and the special publics (i.e., minorities in the population)
- Also aim at official and quasi-official levels
- At first, begin in an area with recurring disasters or hazardous conditions, where there is some incentive for population to react favorably to the program
- Later establish a truly national program welded into the educational and communicational aspects of national development
- The program should be national, regional or local in character to increase the motivation of those taking part in the program, as well as their knowledge about the hazards;
- It should be an extension of the public information program;
- It should take advantage of normal conditions of life, normal modes of behavior, normal sources of information, etc., in the preliminary stages.

**Learning from Others**

Such a public education program is not really so different (apart from content) from those undertaken in connection with agricultural improvement, adult education, family planning and nutrition. There have been many excellent examples of public education programs in these areas over the past decade or so in the developing countries and it would be useful to look at some of them to find out how they became successful.

In a rural education program in remote areas of Peru, film, video-tape and rural forums have been successfully used to bring information about earthquake resistant construction methods to isolated communities. Much of the filming has been carried out by and with local people in their own language as a way of expressing their feelings about their own problems. Similar techniques could be used in any public education program in disaster-prone communities. Drought and famine education is part of rural extension programs in many parts of Africa, in particular the Sahel region.

**II. Typical Activities of Public Awareness Programs**

**Communication and Planning**

Most public information practices involve some form of communication, using a particular medium to transmit information about disaster prevention to a particular public. This might vary from a series of rural radio talks to briefings for school officials.

Seven principles of communication have been proposed which apply to all these activities

*Credibility*: the recipient must have confidence in the source, and this may involve building a climate of belief between the sender and receiver:
**Context:** the communication program must form part of the normal environment of the audience. Context must confirm, not contradict, the message:

**Clarity:** a message must be in simple terms, and the further it must travel the simpler it should be:

**Continuity and consistency:** messages should be repeated and they should be consistent with one another:

**Content:** the message must have meaning for the receivers. It must be compatible with their value system and must be relevant to their problems:

**Channels:** established channels of communication should be utilized, particularly channels that are used and respected by the audience: and

**Capability:** the message must take into account such factors as the audience’s availability, habit, degree of literacy and knowledge of the world.

A public information campaign or a long-term public education program needs planning because hasty, insufficient, uncoordinated action will quickly undermine public confidence, confuse those taking part, and lead to a public information calamity when a real disaster strikes. Planning requires careful study: backwards to determine the major factors which led to present conditions; in the present, to consider the forces with which the program must come to terms; and forward to set out a series of targets.

Public information planning usually fails for several specific reasons: failure of the planners to include the practitioners in discussion of what is possible; lack of budgetary or other needed support from the administration; and frustrations and delays which face those who have to carry out the program, usually because of coordination problems.

Planning of course leads directly to planned resources to carry out the program. This might have to include such items as a referral or information center, centralized mailing lists and collections of press clippings or press digests.

**Ways and Means of Carrying Out Programs**

A shopping list of information activities would probably include most of the following, and perhaps others not on the list below. Planners must make their own lists, keeping in mind their own resources, resources available through coordination with other groups (including possible need for translations), and the nature of the audience.

- Use of major mass media through a press relations program (including press kits): radio, television, daily newspapers, features and books.
- Secondary mass media: regional or local broadcasting, weekly newspapers and other periodicals, documentary or news film, 8mm film, video, or phonograph records.
- Audio-visual services: photography (stills, transparencies, slide-sets, TV-stills sets, photo packages, etc.) audio tapes, audio cassettes.
- Exhibits and displays, information racks, closed-circuit television showings, traveling exhibits.
- Design: builds toward an effective image through the use of logos, letterheads, etc.
• Other channels to the public: speeches; letters to the newspapers; questions raised in parliament; articles in magazines; establishment of a radio forum or newspaper column; community discussion groups.
• Various internal communication programs to (a) administration, (b) employees in disaster-related jobs, and (c) employees in general, using company publications, bulletin boards, etc.
• Leaflets, manuals, handbooks, reference guides, brochures, booklets and books which give basic facts on disasters to be faced and procedures to be adopted, such as "lists of first-aid supplies," "eleven steps to survival," "self-help during flooding," etc. These might be in many forms from the comic-book format to the formal, institutional report. Distribution should fit the objectives of each popular item.
• Wall-sheets, posters, billboards, bulletin board notices, wall newspapers.
• Inserts and enclosures in other forms of communication, like magazines and books.
• Advertising, direct-mailing or telephone surveys
• Meetings, seminars, briefings, conferences.
• Organized talks, i.e. "Speaker's Bureau," radio talk series.
• Telephone answering services, i.e., recorded messages.
• Public address systems.
• Special events: disaster simulations; a national disaster information day, or a series of days in which communities are visited in turn; visiting days at government advisory services, or public service agencies like the fire station.
• Folk media (story telling, dance, song, puppet-shows, music, street entertainment, posters, etc.).
• Folk network ("the grapevine," the family, community leaders, community groups, clubs, associations, religious organizations, etc.).

Some of these items are part of any continuing public information program, while others would more probably be used as part of a short-term campaign. Any continuing program should build up at least the following capabilities:

• To establish a system in which accurate and relevant information on disaster prevention and mitigation is constantly disseminated through appropriate channels;
• To develop a capability for technical assistance, advice and consultation through other government departments and provide information guidelines and materials for use by other levels of government and non-governmental organizations;
• To provide a central point for mass media where they can get prompt, reliable answers to their questions; and
• To maintain a measure of attitudes and needs of the general public, and how these can best be met.

Many of these techniques or approaches have been prepared for urban audiences in developing countries. Comparable approaches have to be designed for rural audiences in developing countries. These rural audiences may prefer multi-colored leaflets, pamphlets, and brochures with realistic and familiar illustrations, generously illustrated formats with adequate accompanying textual explanations; posters and flip-charts on white, glossy paper; texts written in the dialect of the province or district that suggest or give straightforward solutions to village problems; up-to-date information on innovations, detailing the conditions under which these are adaptable; mutually supportive texts and illustrations; and step-by-step accounts of how to use any innovations. In general, the rural audiences place greater value on personal channels, while urban audiences would seem to prefer the mass media — radio, television, newspapers and film.
Much of the work done in community development or family planning would be of direct interest to public information people working in the disaster area. The International Planned Parenthood Federation (IPPF), for example, has developed excellent material for use in carrying out information programs at the local level. Grassroots Radio is an excellent practical manual which enables non-professional broadcasters to use local radio stations for their information purposes, and Communicating Family Planning is a practical handbook on producing material for rural African audiences.

Several programs in public awareness of disaster resistant house construction have been sponsored by the Office of U.S. Foreign Disaster Assistance. Examples of educational materials from programs in Jamaica, the Dominican Republic, and the Solomon Islands portray graphically the step-by-step procedures to implement construction techniques using drawings designed to be understood by the target audience.

Throughout the implementation process of a public awareness program, materials and programs should be evaluated for their effectiveness. Members of the intended audience should be questioned for responses to films, radio announcements, and posters, and levels of acceptance should be considered. It is understandable that a program will take years before its impact is felt. However if these recommendations are followed, public awareness of disaster risk should be heightened, and hopefully, the necessary steps for reducing that risk will result. Cooperation between technical and research organizations, state governments, voluntary agencies and local leaders will have a major impact on the program’s effectiveness. Through concerted efforts, acceptance of disaster preparedness techniques will gradually become part of the community's tradition.

III. Public Warnings and Information

Yet, with all of the above mentioned preparation an educated public's response to a disaster warning is only as good as the warning itself. Therefore it is important that the public emergency warning and information systems be carefully planned.

An assumption is made that the emergency manager will take the necessary steps to disseminate the warning to the public, as well as setting in train all his/her own arrangements according to the nature of the case.

From the point of view of the public, the warning will be most effective if it is:

- Issued by a person or organization in whom public confidence is placed;
- As specific as practicable concerning the magnitude of the event, the place at which it is expected, and the time when it will occur; and
- Susceptible to independent confirmation.

In emergencies which call for a response by the public, the degree of reliability which is accorded to the source of information and instruction is known to be a major factor in determining the quality and speed of the public’s response. Especially is this so in emergencies in which individuals cannot perceive the danger through their own senses, as for example where impending industrial, or even radiation, accidents can be foreseen by the competent authorities but where, to the layperson’s eye, everything in the vicinities of the plants appears absolutely normal. The credibility of the source of public warnings about emergencies must be protected if mutual understanding and confidence are to be achieved. This is not only a matter of positive
action, but sometimes a matter of the avoidance of actions, such as issuing demonstrably inaccurate information or issuing accurate information too slowly, which would tend to diminish credibility.

- Be specific, i.e. warning sources should give specific local information about the threat which will not allow listeners conveniently to forget them. Sirens, or the sound of church bells, for example, are non-specific and are easily imagined to be something else, or not very important, unless an adequate information and education campaign has already been effectively conducted.
- Be urgent (they should get people moving and not allow time for rationalizing the warning away);
- Spell out the consequences of not heeding the warning (probably in explicit detail) so that people cannot casually dismiss them; and
- Be absolutely clear about the probability of occurrence, since people tend to pay little attention to something labeled “a probability.” It should be remembered that one warning is not enough, so that they should be continuous, because people also need to be kept up-to-date about what is happening and to be given instructions appropriate to the development of the situation.

Some sectors of the population may have to be given warnings different in nature from others. Island or coastal territories will have to take special precautions for the benefit of inshore and coastal boat traffic. In another category fall the disabled, who may not be able to see or hear warnings, or act upon them if they do.

Planners must guard against the natural human tendency to disbelieve that conditions will change for the worse. Some people may go further, and actively seek reasons why they should not respond to warnings. When the “warning” cannot be truly specific, as in the case of a prediction of an earthquake, the issue of credibility becomes of even greater importance, particularly when there is no agreement between scientists about the accuracy of the prediction.

A study conducted in the United States recorded that generally, persons of high and low socio-economic status differed in their perceptions of preferred warning sources. Higher status citizens prefer government sources, while persons of lower socio-economic status preferred information from the Red Cross. When these results were compared to the existing structure for the dissemination of earthquake warnings in the United States, it appeared that there is inequity inherent in the current warning system. We infer from the analysis that high status groups will be more apt to respond adaptively to earthquake warnings than persons of lower social status because there is no current plan to incorporate private organizations like the Red Cross into the earthquake prediction warning system.

There is a clear implication here for emergency planners who are concerned with the effective dissemination of warnings and/or public education. There is no such thing as an open-ended loop: all credible warning sources must be involved in the dissemination process.
References

43. This Lesson is based upon an UNDRO publication devoted to public awareness, entitled Disaster Prevention and Mitigation: A Compendium of Current Knowledge, Vol. 10, Public Information Aspects, United Nations, New York, 1979.


Appendix I

Legal Authority, Elements Of Legislation

Introduction
Legal and regulatory authority for disaster preparedness organizations, operations and powers often may not be found in a single document, and sometimes may not be documented at all. However, basic authority to plan for and deal with disasters usually exists in fact. The purpose of this appendix is to identify primary elements of disaster legislation as a guideline to the development of specific legislation in any given country.

These legislative elements are presented as though they were incorporated in a single legislative act.

Disaster Organization and Plan
A national disaster assistance organization and a national disaster preparedness plan shall be established to: prepare for, minimize, and control the effects of disasters; preserve life and alleviate suffering; restore normal conditions following a disaster.

This disaster assistance organization and preparedness plan shall have the following purposes:

- To facilitate coordination of disaster-related activities, use of available resources, and participation of people in affected areas and in the rest of the country.
- To use resources already available within the country and within the disaster-affected areas as completely and as efficiently as possible.
- To provide the organization and plans by which these objectives may best be achieved.
- By making adequate preparation for disaster and provision of relief and rehabilitation, to reduce suffering and loss of life and property, and to restore conditions under which national development and social and economic objectives can be pursued.

Declaration of a State of Disaster
For purpose of this act, a disaster is any disruption of normal social and economic activity due to natural or other causes that results in widespread or severe damage, injury, and/or loss of life or property.

A state of disaster shall be declared when a disaster has occurred or appears imminent. The declaration shall authorize implementation of standing provisions for warning appropriate populations and for mobilizing resources and carrying out rescue and relief operations as specified in this act and as developed by the national disaster assistance organization.

Upon the advice of qualified personnel that a disaster is imminent, or at the request of responsible officials in an area where a disaster has occurred, the chief of state shall declare a state of disaster and designate the area to which it applies. The state of disaster shall automatically exist for 30 days unless the chief of state terminates it earlier; it may be renewed for additional 30-day periods.
The national disaster assistance director shall be responsible for the overall direction of disaster preparation or response operations. Upon declaration of a state of disaster, the director shall direct operations appropriate to the situation, as specified in the national disaster plan and contingency plans resulting from it.

All agencies of the government and other organizations shall carry out preparation or response activities under the direction of the national disaster assistance director, and according to existing emergency plans through authorities specified in those plans. Government agencies are intended to maintain their current organization structure and to contribute various specialized services and resources to the disaster effort as directed or planned.

Upon declaration of a state of disaster, the chief of state is authorized to use any or all of the following powers as necessary to facilitate response and, to the extent feasible, assure and restore the well-being of the disaster-affected people.

- The chief of state may suspend the provisions of any regulatory statute for conduct of government business, and may suspend the rules or regulations of any government agencies that would hinder necessary emergency action. For example, customs and immigration regulations might be suspended to expedite the arrival and clearance of relief personnel and materials.
- The chief of state may enforce measures deemed necessary for preserving life and health; these measures include directing evacuation, enforcing sanitary and public health discipline, controlling access to disaster-affected areas, and imposing conditions of martial law where such measures would facilitate rescue or relief.
- The chief of state may redirect available resources of the nation—not only those stipulated in plans—as necessary to cope with the emergency. Private resources may be conscripted, subject to indemnification as prescribed herein.

It shall be the duty of the chief of state to designate a national disaster assistance director and to ensure that provision is made for replacing the director and any other key disaster officials if necessary.

**National Disaster Plan**

A National Disaster Plan shall be developed and maintained to guide disaster preparation and to facilitate restoration of normal conditions through well-planned, coordinated action and efficient use of available resources.

The national plan shall detail disaster preparedness activities recommended by the national disaster assistance organization, and shall make plans for disaster response objectives and activities. The plan shall address the following tasks:

- Detail the structure and responsibilities of the national disaster assistance organization, based on the general requirements of this act, and define its relationship to other government, private, and foreign agencies.
- Define the roles and objectives of other organizations and government agencies, both civil and military, in ensuring disaster preparedness and in responding to disasters.
- Define disaster preparedness objectives and specify the functional and organizational means and resources required to meet them, addressing the nation’s requirements for
disaster hazard and vulnerability assessment, disaster prevention and mitigation programs, disaster forecasting and warning, and disaster readiness requirements.

- Define disaster response objectives, actions, procedures, system, and resources, and address requirements for mobilization for disaster response, disaster damage assessment, rescue and relief, rehabilitation, and reconstruction.
- Delineate requirements for development of additional detailed contingency operations and organizational plans, and assign responsibility for their completion, coordination, and maintenance.
- Specify procedures for training personnel with responsibilities under the national plan.

**National Disaster Assistance Organization**

A national disaster assistance organization shall be established to prepare and plan for disasters and to direct, coordinate, and control disaster response activities and resources.

**Mission**

The disaster assistance organization shall define specific plans for preparedness and response to disasters such as floods, earthquakes, cyclones, and landslides; shall develop and maintain necessary systems and procedures for communication, transportation, and disaster control in the event of a disaster; and shall establish national resource requirements and maintain access to resources for rescue and relief.

**Organization**

The organization shall consist of a permanent National Disaster Committee and a permanent staff.

The organization shall report to that ministry designated by the chief of state; the minister shall be appointed by the chief of state as national disaster assistance director.

The National Disaster Committee may consist of the ministers of defense, interior, communication and postal services, finance, foreign affairs, education, transportation, public works and public health; representatives of seismological and meteorological services; and others as designated by the national disaster assistance director. The national disaster assistance director shall chair the committee.

The permanent staff shall be directed by an executive secretary who shall report to the national disaster assistance director.

With the approval of the National Disaster Committee, the organization may establish other organizational units by identifying their purpose and justifying their establishment and funding.

The National Disaster Committee shall be responsible for assuring an adequate state of national disaster preparedness in the following ways:

- By analyzing likely disasters and the nation's vulnerability to them.
- By estimating the effects of such disasters and defining requirements for response.
- By developing contingency plans to meet requirements for mobilization, rescue, relief, and rehabilitation; and to determine the availability of and to secure access to necessary resources. This step includes establishing and maintaining liaison with other government agencies, private enterprises, foreign missions, and voluntary agencies.
• By promulgating the necessary regulations to facilitate mobilizing resources and organizing post-disaster activity, and to protect public health and well-being.
• By establishing and maintaining necessary communications and warning and control systems, and by educating the public in their use.
• By establishing a suitable emergency operations center.
• By developing and conducting programs to train people in the use of disaster plans.

The organization shall also coordinate and, through the national disaster assistance director, direct disaster assessment, rescue, relief, and rehabilitation operations in the following ways:

• By detecting imminent disaster and warning the populace.
• By implementing appropriate contingency plans.
• By coordinating disaster assessments and evaluating information acquired.
• By determining and coordinating appropriate responses.
• By coordinating logistics for personnel, materials, and equipment.
• By directing non-government and foreign assistance activity.
• By coordinating the reestablishment of essential services.

**Funding**

An operating budget for the organization shall be established and periodically prepared and justified by the permanent staff.

**National Disaster Assistance Organization Activities**

Included in the budget shall be funds for the activities of the disaster assistance organization staff and the National Disaster Committee; for the development and coordination of disaster plans, training, and exercises; for the establishment and maintenance of suitable facilities and a disaster operations center; and for the salaries for the permanent staff.

In addition, funding for any additional organizational units established by the organization shall be requested and justified in the budget.

**Relief and Rehabilitation**

The disaster assistance organization shall investigate the benefits of a disaster relief and rehabilitation fund to finance mobilization, rescue, and relief costs independently of normal budgets. The organization shall present a proposal for the scope, functioning, and control of such a fund to the chief of state and finance minister for consideration and approval within a year from the date of this act.

The organization shall further establish regulations and procedures to provide just compensation of private and other interests for property or resources conscripted during disasters.

---

**References**

Hurricane Preparedness Measures

Hurricane preparedness measures that should be taken by government during a hurricane watch:

- Activate emergency committees (issue amber alert).
- Government officials who hold key positions should be given half day’s leave to prepare their families, then recalled.
- Emergency work groups should be organized in each critical government ministry.
- Emergency operations centers should be organized in each critical government ministry and linked to the central Emergency Operations Center (EOC).
- Back-up communications should be established in the event phone lines and electricity are cut (messengers).
- Those preparedness and emergency plans that exist should be reviewed, updated, and copies forwarded to the EOC along with lists of persons on duty assignments for each ministry.
- EOC should check stores of maps and charts, especially those of lifelines.
- Shelter managers should be alerted to possible call-up.
- Operation supplies and funds for EOC should be acquired.
- Plans for vulnerable areas should be developed or reviewed, especially evacuation plans.
- Check on status and location of rescue equipment.
- Review evacuation routes with highway/roads department for latest blockages.
- Alert media and clarify terminology.
Appendix III

Actions By Government Ministries: A Checklist

Military
- Cancel and issue leaves as appropriate.
- Secure and protect critical equipment.
- Move aircraft and light boats to safe locations and secure.
- Fuel vehicles.

Water Departments
- Lower water levels in reservoirs to accommodate rapid rise in water levels without flooding.
- Position equipment in critical locations to repair or close broken mains.
- Sand bag and protect critical facilities, especially near purification or treatment centers.
- Fuel vehicles.

Sanitation Department
- Position equipment in critical locations to repair or close broken lines.
- Sand bag and protect critical facilities, especially in low lying or vulnerable areas.
- Distribute data on water purification methods to phase on vulnerable areas.
- Distribute water test equipment at key locations and review testing methods.
- Fuel vehicles.

Electric Company
- Position equipment in critical locations for repairs.
- Review possible shutdown locations.
- Sand bag and protect critical facilities.
- Check casings of transformers and waterproof where needed.
- Store sets of maps in safe locations.
- Fuel vehicles.

Telecommunications
- Activate emergency team and switchboards.
- Position emergency equipment along principal lines or near critical facilities.
- Prepare to re-establish communication links to critical authorities on a priority basis (with back-ups).
- Protect key facilities, especially central switchboard operations.
- Check casings of critical equipment and waterproof where necessary.
- Fuel vehicles.
Roads and Highways

- Position equipment to clear backlogs of critical routes, especially around hospitals and lifelines, and near vulnerable settlements.
- Mark evacuation routes, and position signs for identification of emergency routes for post disaster use.
- Issue orders for disaster assessment survey teams to check routes, bridges, culverts, etc. immediately following the hurricane.
- Position sandbags in critical locations.
- Move equipment stored in low lying or flood prone areas to high ground.
- Fuel vehicles.²

References

Appendix IV

Examples Of Planning Guidelines

This appendix includes sample action plans for the following fifteen sectors. (The action plan for communications is in Lesson 4.)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning System</td>
<td>Public water supply</td>
</tr>
<tr>
<td>Evacuation</td>
<td>Schools</td>
</tr>
<tr>
<td>Search and rescue</td>
<td>Highways</td>
</tr>
<tr>
<td>First aid</td>
<td>Airports</td>
</tr>
<tr>
<td>Hospitals and Public Health Organization</td>
<td>Railway</td>
</tr>
<tr>
<td>Police</td>
<td>Irrigation</td>
</tr>
<tr>
<td>Cooperative and food stores</td>
<td>Public building</td>
</tr>
<tr>
<td>Electricity</td>
<td></td>
</tr>
</tbody>
</table>

(These sample action plans are excerpts from the Sri Lanka Cyclone Handbook, prepared by Padco, Inc., for the UNDP.)

Warning System

Prerequisites for a Responsive Warning System
The goal of a warning system is to ensure that all possible precautions are carried out in order to minimize loss of life and property damage. These preparedness measures are directed both to pre-disaster precautions and to the facilitation of prompt, efficient post-disaster emergency measures.

A responsive warning system is based on preparedness, which includes the following components:

Public Education
A public education program should provide the public with information about disasters, their possible effects, and the appropriate precautions to take.

Training programs should be provided for public servants who will have special responsibilities during disasters.

Training aids (including booklets, films, posters, handouts, etc.) should be developed for the public school and university curricula, and public servants.

Preparedness Plans
All departments and institutions in the disaster-prone area should develop disaster preparedness plans specific to community needs and to locally available staff, equipment and facilities.

Review
An annual practice alert should be carried out by all schools, departments and institutions to review and update disaster preparedness plans. This practice alert should include the public and should become a routine national activity, possibly on a “national disaster day.”

**Disaster Warning System**

The recommended disaster warning system is based both on the Sri Lanka administrative system and on the relief system as organized after the disaster of 1978.

**Central Government Response**

When a DISASTER WATCH bulletin has been issued (indicating that a potentially threatening cyclone has formed), the Meteorological Department will notify the secretary to the Cabinet. The Cabinet will then be asked to activate a top-level standing coordinating committee to:

- Activate an information center.
- Distribute forecast bulletins ensuring that all ministries, the mass media, agencies and nongovernmental groups receive accurate details about impending danger.
- Encourage all ministries to direct their personnel toward implementing preparedness plans and carrying out all necessary precautions.
- Provide the public, via radio and newspapers, information including:
  - a description of disasters and their likely effects;
  - details on the precautions that the public should take for protecting lives and property.
- Develop a data collection and coordination system in anticipation of postdisaster needs.

**Ministry Level Response**

When a DISASTER WATCH bulletin has been issued, all ministries will set in motion their respective disaster preparedness plans that include:

- Activating one coordinating point within each ministry for intraministry response and data collection.
- Ensuring that all ministry field staff in the disaster-prone areas receive the forecast bulletin information.
- Ensuring that all field staff have information about disasters, their effects, and the precautions to take protecting life and property.
- Ensuring that all necessary precautions are taken to protect public property and to maintain services.
- Determining from field personnel the availability of staff, equipment and supplies to cope with the disaster, and determining with field staff the need for additional support.
- Providing field personnel with emergency authorizations needed to cope with post-disaster needs.

**Evacuation**

1. Prior to a disaster, evacuation of people from areas considered to be particularly dangerous should be carried out, by legal sanction if necessary.
2. Evacuation from an affected area after a disaster should only be carried out if the post-disaster situation constitutes a threat to life (such as continued flooding).
3. When evacuation is necessary, it should be organized on a family or community basis. Family members should not be separated.
4. Evacuation for the purpose of providing better services may actually cause hardships by separating victims from their land and/or personal property, or by delaying the cleanup and reconstruction process.

**Evacuation Safety Rules**

- When a disaster comes, stay at home if it is a sturdy house on high ground. If it is not, move to another area or shelter on high ground and stay there until the storm is over.
- Before making any last minute preparations, be absolutely certain you have time. If advised to evacuate, do so immediately. Don’t wait until the last minute to leave, hoping to save your possessions. Save your life.
- Move quickly and calmly. Don’t take chances. Getting safely to higher ground or away from the seashore is your first consideration.
- Follow police instructions about evacuation. It is better to be safe than sorry.
- Know where you are going before you leave and make sure you have adequate time to get there.
- If you have only limited time for evacuation preparations, take only blankets, clothes and any foods available. If you have time to gather supplies, take with you:
  - Any polyethylene raincoats
  - Important documents and papers
  - Emergency supply of food
  - Emergency supply of water
  - Matches and a lamp
  - Flashlight with extra batteries
- Lock your house when you leave.
- Watch for:
  - washed out bridges
  - downed power lines
  - floating hazards
- Don’t walk through streams more than knee deep. Flood currents are strong and people can easily be washed away in them.
- The possibility of looting is always a concern. Secure items as well as possible, but don’t delay evacuation.
Search and Rescue

Problem and Solution
In the disruption following a natural disaster, information immediately necessary may be difficult to gather in a conventional manner. Aerial observation can provide an alternate or complementary data source to ground surveillance. Information derived from aerial observation includes interpretation of aerial photographs, data recorded on video tapes and notes and symbols marked on maps by an observer in the plane or helicopter. Critical information includes geographic extent and severity of damage, and immediate and accurate accounts of specific damage sites. A permanent record of this is important for later referral.

This information derived from aerial observation provides a basis on which to make decisions. Decisions include those related to the life-saving function of search and rescue. Whether the emergency involves numerous stranded persons over a large area or a single lost person in a remote area, data can be collected more quickly than by ground search, especially if conditions are difficult for ordinary ground movement.

Search and Rescue—Guidelines
• Search and rescue operations are usually a cooperative community effort.
• Search and rescue efforts usually require a two-phase process:
  Phase 1—Immediate postdisaster rescue work by local survivors
  Phase 2—Specialized assistance, possibly from outside the immediate area
• Immediate postdisaster rescue work will predominantly consist of rescuing people trapped by fallen debris, identifying and assisting seriously injured persons, and evacuating or assisting people marooned by flood waters.
• The majority of all immediate postdisaster rescue work is carried out by local survivors.
• The specialized assistance most often required in search and rescue operations after disasters is:
  – Transportation for the seriously injured;
  – Aerial reconnaissance for the identification of people stranded in inaccessible places;
  – Boats for rescue or for supply to people in marooned situations;
  – Heavy equipment to clean landslides or remove debris.
• Regional or national rescue units which must travel any great distance are often of little use for the immediate postdisaster rescue work but may be of some assistance in providing specialized help (such as helicopters).
• Each community should designate one department or agency to be responsible for coordination of rescue activities within its boundaries.
• When a disaster can be predicted, search and rescue operations should be organized within a community as soon as there is notification that the disaster is likely to strike.
• Agencies and organizations likely to participate in search and rescue operations should carry out preparedness training for all personnel involved.
• Any agencies likely to be involved in search and rescue work should carry out annual practice sessions.
• Search and rescue must be carried out systematically to ensure that no one has been missed.
First Aid

The key to effective postdisaster first aid programs is preplanning and good coordination.

There are four basic facets to the provision of first aid after disasters:

- The provision of on-site, immediate post-disaster first aid by locally available resource people;
- The provision of medical treatment for minor injuries and secondary illnesses by health care professionals, such as mobile health teams;
- The treatment of more serious injuries and illnesses at district or provincial hospitals;
- The monitoring and surveillance of post-disaster illnesses, medical needs, and the possibility of epidemics.

For the provision of effective first aid services, all of the above-listed functions should be mutually supportive and well coordinated to ensure good medical care and to avoid duplication of effort.

On-site, immediate postdisaster first aid will necessarily be provided by those resource people living within each village or neighborhood because:

- For at least 12 hours after a cyclone, for example, continuing winds and rain will prevent auxiliary help from being flown in;
- Roads may be blocked by fallen trees, landslides, or flooding for as long as several days, making ground transport hazardous or impossible.

The quality of first aid treatment given immediately postdisaster will depend largely upon the first aid training of auxiliary health care workers and non-professionals in each community.

For the treatment of more serious injuries, emergency medical attention should be directed toward transporting the patient to a treatment center, rather than attempting to bring in limited services to treat the injured.

The need for auxiliary health care workers (such as mobile health teams) will depend largely upon the services and personnel offered by local health facilities.

Medical teams, if needed, should be well coordinated to prevent duplication of effort and to ensure adequate coverage of medical needs.

Medical teams from outside the disaster area will be more effective if they function in conjunction with local health care workers (rather than acting independently) and if they are an extension of a local hospital program.

Medical teams are typically much more effective if they work in a selective number of locations on a regular basis.

If the injured are isolated in numerous small villages, it may be necessary to send small medical teams via helicopter. Such teams must be contacted for resupply and possible extraction on a daily basis. One helicopter can usually service up to five small medical teams, moving them
from village to village, providing them with supplies, and providing limited evacuation for the severely injured or ill.

Medical teams formed to provide services during an emergency period should:

- Be selected on the basis of skills to deal with emergency situations;
- Be composed of people willing to live under rough conditions and, if possible, be composed of people who know the area and speak the language;
- Receive a briefing to discuss likely needs, define roles and responsibilities, and establish reporting and referral procedures;
- Be provided with specific locations where they should work;
- Expect to provide their own logistical support, including medical supplies, food, water, ground transport and fuel;
- Bring to the affected area all personal equipment needed, such as bedding, cooking equipment, bathing supplies, etc.
- Be encouraged to keep records of treatments and referrals, and to report regularly to the medical coordinating officials.
- Expect to assist at field level for approximately three weeks after a disaster such as a cyclone.

Medical coordination centers should include the following in their operations:

- Determine the number and location of hospitals and clinics still operable, and determine the services they can provide.
- Send out triage teams to systematically provide aid to the most seriously injured and to assess medical needs.
- Arrange emergency transport for the injured.
- Assess staff, equipment, facilities and supplies needed, and arrange for transport to the area.
- Carry out data collection on deaths, injuries, illnesses, evacuation, needs and supplies.

The type and number of medical supplies and drugs to be rushed to the area should be based on:

- The number and type of injuries and illnesses expected;
- Requests from the field level;
- Confirmation of the level of stock available (acquired as a preparedness measure prior to the disaster).

A list of the type of injuries likely, and the drugs and supplies most needed, should be compiled for disaster preparedness training and planning.

The number of severe injuries during disasters varies depending on the type of disaster. During cyclones, for example, the number of injuries is not typically very high in comparison to the number of people affected by the cyclone.

The public health problems that can follow some disasters may be as serious as disaster-related injuries.
Emergency drugs and supplies should be requested on a priority basis indicating the preferred arrival date; for instance:

- Ship at once by fastest means
- Ship with 72-hour delay in arrival
- Ship with 15-day delay in arrival
- Ship with 30-day delay in arrival.

Note: Demanding a highly selective and staggered arrival of goods will allow more efficient receipt and utilization of emergency goods and will avoid overburdening ports of entry.

Accepted goods should be moved from airfields and ports with a minimum of delay.

All medical teams, treatment centers and hospitals should be asked to keep records of the patients treated, noting at a minimum: date, location, chief complaint, treatment, discharge, diagnosis (for hospitals).

**Hospitals and Public Health Organizations**

**Hospitals—Special Disaster Considerations**

Special precautions for hospitals in disaster areas include the following:

- All new hospitals should be designed to withstand disaster forces.
- Upgrade existing hospitals to ensure at a minimum:
  - That at least one large disaster-proof room exists that could function as a ward.
  - That at least one storm-proof room exists for the storage of all valuable equipment, stocks and records.
  - That the rooms housing the x-ray equipment and drug stores are storm-proof and flood-proof.
- Install wooden shutters on all windows.
- Substitute a less brittle material whenever asbestos ceiling sheets are being replaced.

**Equipment**

Stock emergency medical equipment which may be required after a disaster.

A standby generator should exist for every hospital.

At least one kerosene-powered refrigeration unit should exist for vaccines.

**Preparedness Plans**

Ensure that every hospital has an emergency preparedness plan. The plan should be specifically developed for the facilities, equipment and staff of that particular hospital.
Determine what injuries/illnesses should be expected and what drugs and other medical items will be required.

Ensure that extra supplies of medical items can be obtained quickly in an emergency.

**Staff**

Provide information to staff about disasters, likely damages and effects, and information about ways to protect life, equipment and property.

Carry out a practice disaster alert, at least once annually, to review procedures and make any amendments necessary.

Ensure that hospital staff are aware of which hospital rooms/buildings are disaster-proof.

**Hospitals—Emergency Preparations During a Disaster Warning**

When a DISASTER WARNING has been issued (indicating that a disaster is expected in the area within 24 hours), hospital staff should carry out disaster preparedness measures, including the following:

**Patients**

Discharge all ambulatory patients whose release does not pose a health risk to them. If possible, they should be transported to their home areas.

Non-ambulatory patients should be relocated within the hospital to the safest areas. The safest rooms are likely to be:

- On ground floor;
- Rooms in the center of the building away from windows; and
- Rooms with concrete ceilings.

Equipment supplies (such as candles, matches, hurricanes lamps and extra clothing) should be provided for the comfort of the patients.

**Staff**

Hospital administrators should

- Review with staff the likely effects of a disaster and the precautions to be taken.
- Review emergency procedures to be adopted in the hospital.
- Establish work schedules to ensure that adequate staff are available to in-patient needs.
- Organize in-house emergency medical teams to ensure that adequate staff are available at all times to handle emergency casualties.
- Set up teams of doctors, nurses and dressers for visiting surrounding villages.
**Equipment**
Surgical packs should be assembled and sterilized.

- A large enough number should be sterilized to last four to five days.
- The sterilized packs must be stored in protective cabinets to ensure that they do not get wet. Covering the stock with polyethylene is recommended as an added safety measure.

All valuable instruments, such as surgical tools, ophthalmoscopes, portable sterilizers, ECGs, dental equipment, etc., should be packed in protective coverings and stored in whichever room is considered to be the most storm-proof (to the center of the building; having no windows; located on ground floor; and having a concrete ceiling).

Protect all immovable equipment, such as x-ray machines, by covering them with tarpaulins or polyethylene.

All fracture equipment should be readied.

All electrical equipment should be unplugged when high winds begin.

Check the emergency electrical generator to ensure that it is operational and that a buffer stock of fuel exists. If an emergency generator is not available at the hospital, arrange for one on loan.

All mattresses and bedding which are not in use should be removed and placed in storage to protect against rainwater soaking.

**Drugs and Medical Supplies**
If surgery is to be performed following the disaster, arrange for emergency supplies of anesthetic gases (usually supplied on a daily basis).

Check stocks of those drugs which are likely to be most needed after a disaster. These can be categorized generally as:

- Drugs used in treatment of cuts and fractures, such as tetanus toxoid, analgesics and antibiotics.
- Drugs used for the treatment of diarrhea, water-borne diseases and flu (indicating oral rehydrating supplies).
- Drugs required to fight infections.

Assess the level of medical supplies in stock, including:

- suture materials
- surgical dressings
- splints
- plaster rolls
- disposable needles and syringes
- local antiseptics
Request from central warehouses, on an emergency priority basis, that those supplies likely to be needed be dispatched to the hospital immediately.

Take special protective measures for drugs and medical supplies. If the drug stores are located in a building with tile, asbestos or C.1. sheet roofs, move all stock to a room with concrete ceilings. Wrap with polyethylene all stocks of surgical dressings and any other items particularly prone to water damage.

**Supplies**

Wrap all books, records, stationery and paper supplies in polyethylene and store in cabinets, almirahs, or wall cupboards.

Hospital food stocks should be checked. Ensure that a minimum of seven days’ supply is on hand for patients and staff.

Fill hospital water storage tanks and encourage water savings. If no storage tanks exist, water for drinking should be drawn in clean containers and protected.

**Facilities**

Close all windows and doors and secure with bolts and catches.

Close wooden shutters if available, nail temporary wooden shutters over windows, particularly on the windows of those offices, storerooms, or wards considered to be critical.

Prepare an area of the hospital for receiving large numbers of casualties.

- Prepare equipment and supplies likely to be needed.
- Develop emergency admission procedures (with adequate record keeping).

Transport should be arranged for the transfer of seriously injured patients from villages and peripheral hospitals to general hospitals. If roads are blocked, the method should be established to signal helicopter transport.

Plan for emergency accommodations for auxiliary staff from outside the area.

**Coordination**

The provision of medical services should be coordinated by the superintendent of health services and the medical officer of health to ensure that medical needs are cared for as efficiently and quickly as possible.

A system should be developed to systematically check villages for identification of the most seriously injured, and to assist with the provision of emergency transport (possibly by helicopter).

Procedures should be clarified between peripheral hospitals and general hospitals. An injury and disease monitoring system should be developed to ensure that a full picture of health risks is maintained.
Police—Disaster Planning in Routine Activities

Listed below are precautionary measures for reducing loss of life and damage property, that can be incorporated into routine programming by the police department.

1. Provide training for all police officers working in disaster-prone areas to ensure that they understand disasters, the likely effects, and the precautionary measures to be carried out.
2. Ensure that all officers are familiar with emergency prestorm and poststorm procedures.
3. Ensure that officers are provided with first-aid training to assist with postdisaster medical emergencies.
4. Establish an ongoing process of research and assessment of the social factors that affect the effectiveness of a warning system.
5. Develop public warning procedures for each police station and district.
6. Identify and chart for easy reference, areas of high risk in the community such as areas prone to flash floods or flooding, residences near lagoons, villages close to the sea shore, etc.
7. Assess evacuation policies, procedures, mechanics, routes and destinations.
8. Develop poststorm procedures and priorities based on expected community needs.
9. Carry out practice disaster alerts annually (at the beginning of the monsoon season) to review and update procedures.
10. Maintain cyclostat equipment in key location to provide printed warning notices and recommended emergency procedures.
11. Maintain emergency communications equipment for communication linkage between mobile units and a base station.
12. Consider all disaster threats as case studies. Ensure that studies are carried out to evaluate the effectiveness of procedures and to understand better the public response.
13. Encourage community awareness of disasters, the damages, and the precautions to be taken.

Police—Emergency Preparation During a Disaster Watch

Upon learning that a disaster has formed which may strike the country, preparedness measures should be taken.

1. The officer-in-charge of each police station should call all officers and staff together to review how disasters work, what the damages might be, and what precautionary measures could be taken.
2. Review with all officers and staff procedures for warning the public.
3. All activities should be carried out in close collaboration with the government agent and assistant government agent.
4. Ensure that equipment (such as mobile public address systems and cyclostat machines) is functional and can be protected.
5. Identify those areas of the community that would be in specific danger (such as from flooding or storm surge) and draw up contingency plans for providing warnings and other assistance that may be needed.
6. Provide information to government officials, village leaders and the public regarding the disaster, even when the disaster is not an immediate threat to the area.
7. Draw up contingency plans for poststorm actions.
8. Use the opportunity to encourage public education programs about disasters, their effects, and precautionary measures that can be taken.

9. In close coordination with the government agent and assistant government agent, notify all villages and encourage the people to:
   - listen to their radios for further information about the disaster threat;
   - review emergency preparedness plans;
   - heed any BAD WEATHER WARNINGS that might be issued.

10. In contacting villages to provide information about the disaster threat, the following guidelines should be considered:
   - Ensure that the information provided is accurate with no distortion. (People must have confidence in the information provided.)
   - Provide information to both village officials.
   - Provide information by means of both public address systems (as is normally done) and printed notices in public places.
   - In addition to information that a disaster is threatening the area, provide information which describes disasters, probable damages, and details of the precautions to be taken.
   - Specify when the police will visit the area again to provide further information about the disaster. A minimum return time of every six hours is advisable.

---

**Police—Emergency Preparations During a Disaster Warning**

When a DISASTER WARNING bulletin has been issued for your area by the Meteorological Department, the following preparedness measures should be carried out. (A CYCLONE WARNING means that a cyclone is expected to strike within 24 hours.)

1. Mobilize all resources to notify the general public of the impending danger and provide information on recommended precautionary procedures.
2. Supervise evacuation of communities in potentially dangerous areas, such as those areas prone to flooding or storm surge.
3. Work in close collaboration with the government agent, assistant government agent, and other officials in carrying out pre-disaster plans and in planning for the post-disaster situation.
4. Assist the general public by dispelling rumors and answering questions. Thunderstorm activity, for example, may be confused with the disaster and may cause inappropriate public response.
5. Mobilize police reserves and volunteers for immediate needs and in preparation for the postdisaster situation.
6. Augment police staff with officers trained in disaster operations, such as the police works unit.
7. Recommend deploying of auxiliary military services of the disaster-prone areas for assistance in search-and-rescue, road-clearing, and emergency communications.
8. Keep the government agent’s office and headquarters informed of all relevant developments.
9. Ensure that staff families are prepared for the disaster and are in a safe place.
10. Protect all records by wrapping them in polyethylene to protect them from rainwater damage should the roof blow off.
11. Protect all valuable equipment (such as radios, typewriters, furnishings, arms and ammunition, etc.) against damage from rain water, flooding or falling debris.
12. Close and cover all windows; check catches and bolts on all windows and doors.
13. Check auxiliary generator and ensure that extra fuel is on hand and protected.

Cooperative and Food Stores

**Food Stores—Special Disaster Considerations**

Listed below are general recommendations applicable to most food stores. Specific measures for protecting food stocks will be dependent upon food type, storage practices and warehouse facilities.

1. Disaster preparedness plans should be required of all food stores, including:
   - Village cooperative retail stores.
   - Primary cooperative stores.
   - District cooperative warehouses.
   - Paddy Marketing Board warehouses.
2. Provide training to cooperative officers, store managers, warehouse keepers and other staff, on disasters, their likely effects, and precautionary measures to be taken.
3. Require that all food stores and supply stations have emergency tarpaulins or polyethylene to cover stocks.
4. Maintain at least a 14-day buffer stock of food in all cooperative stores during the months of October through November.
5. Upgrade the structures of stores and warehouses to minimize disaster damage.
6. Review storage practices, ensuring, for example, that food stocks are always stacked on rags or bunnage.
7. Provide storage facilities, such as steel cabinets or almirahs, for protecting records and equipment against storm damage.
8. Encourage private wholesale and retail store owners to be familiar with precautionary measures against disaster damage.
9. A practice disaster alert should be mounted annually.
10. If there is sufficient time, move excess rice in storage out of the area likely to be affected by the approaching disaster.

**Food Stores—Emergency Preparations During a Disaster Alert**

Head offices and district offices should convey to field staff warnings as issued by the Meteorological Department but staff should not wait for official notification before taking precautions.

1. Review with staff the precautions to be taken for protection of all food and equipment.
2. Itemize the stock level of all major items and report this to district officers, such as deputy food controllers.
3. Wrap all records in polyethylene and place in protective cabinets or almirahs.
4. Protect all other equipment, such as typewriters, against damage from rainwater or falling debris.
5. Prepare all buildings for the disaster.
6. • Close all windows.
    • Close wooden shutters or cover windows with boards.
7. Keep stores open as long as possible to permit people to buy emergency supplies.
8. Cover all stocks with polyethylene or tarpaulins, then weight the covering down and tie securely to prevent it from blowing away or ripping.
9. Close all doors and padlock them.
10. Contingency plans should be developed with assistant government agents, or other appropriate officials, for the post-storm distribution of food.
11. Put perishables and food wrapped in bags on higher shelves, food in cans and jars on lower shelves.

**Electricity**

*Electricity—Maintenance in Disaster Areas*

Many of the precautionary measures necessary to reduce disaster damage should appear in the regular maintenance program of the Electricity Utility Board. These include:

1. Quarterly inspection and repair of high tension lines, towers, poles and right-of-ways.
2. Regular inspection and repair of substations, transformers, insulators, and other equipment.
3. Regular repair of distribution lines and replacement of all damaged poles.
4. Regular inspection and repair of all buildings, stores, and shops, with particular attention to the fastenings of roof sheeting, condition of wooden shutters, doors, latches, etc.

*Electricity—Special Disaster Considerations*

In addition to routine maintenance the following special precautions should be taken.

1. Use cyclone-resistant, high-tension towers and poles in the new construction of lines and in any replacement of existing towers and poles.
2. Set poles to an adequate enough depth to prevent overturning or leaning from wind pressure when the ground is waterlogged.
3. Upgrade design specifications and quality control of construction for concrete poles to ensure that they are disaster resistant.
4. Upgrade the specifications for wooden poles to ensure that mature timber is used, that poles are cured adequately, and that the wood has been treated by a proper impregnation method against moisture and insect damage.
5. Replace pole-mounted transformers with plinth-mounted transformers.
6. Place underground the low-tension main supply cables (LTCs) between transformer stations in urban areas, where economically feasible.
7. Standby generators should exist in all of the following public service offices:
   - Hospitals
   - Water department
   - Government agent’s office
   - Police stations
   - Telecommunications buildings
   - Meteorological stations

8. Establish at each depot an emergency tool kit comprising cable cutters, pulley blocks, jungle knives, axes, crowbars, mammothies, ropes, hacksaws and spanners. Emergency tents for work crews should also be in storage.

9. Divide the distribution area into disaster zones, corresponding to Electricity Board depots.

10. Designate a competent member of staff in each zone (such as an electrical foreman) to be the disaster officer. The disaster officer should:
    - Become familiar with the mechanics of disasters and their effects.
    - Be familiar with pre-storm precautions.
    - Be able to carry out post-storm emergency recovery measures.

11. Establish radio communications between the district electrical engineer and various depots.

12. Mount an annual practice alert in order for staff to review and update precautionary measures and procedures.

---

**Electricity—Emergency Preparations During a Disaster Alert**

The Electricity Board head office should convey disaster warnings to the disaster warnings as they are issued by the Meteorological Department; however, staff should not wait for official notification before taking precautions.

1. Cancel leave for all electrical service personnel in the areas likely to be affected.
2. Review with the staff precautions for protecting equipment and postdisaster procedures to be followed.
3. Check emergency tool kits, assembling any additional equipment needed.
4. Check standby generators at hospitals and at other public service offices, to make sure that they are working properly.
5. Fill department vehicles with fuel and park them in a protected area.
   - Close all windows.
   - Close wooden shutters or cover windows with boards.
   - Put all documents and papers in cabinets or almirahs, then wrap polyethylene around the entire storage unit.
   - Protect all other equipment, such as typewriters, against falling debris and rain water damage.
   - (See section on public buildings for more details).
7. Secure all stocks.
   • Put stocks of light bulbs in wooden crates to protect them from falling debris.
   • Place all testing equipment and meters in cabinets or safes.

8. Review with the staff precautions to be taken by staff and families for protecting life and personal property.
9. Disconnecting the main electricity supply for an area should be delayed until the winds of the cyclone have begun. Cutting off electricity too early can adversely affect precautionary measures to be taken by the public.
10. Upon leaving the building, lock all doors.

**From Head Office**

1. Issue emergency authorizations and provisions to enable field staff to:
   • Recruit casual laborers.
   • Purchase locally needed emergency tools and equipment.
   • Acquire needed materials.
   • Distribute funds for emergency needs.

2. Ready supplies of poles and cables for transport into the affected area.
3. Assemble emergency repair gangs and equip them with food, bedding, temporary shelter and tools.
4. Assemble additional jeeps for use by staff in the affected areas.

**Public Water Supply**

**Public Water Supply—Maintenance in Disaster Areas**

Many of the precautionary measures necessary to reduce disaster damage should appear in the annual maintenance programs of individual water systems under the National Water Supply and Drainage Authority.

1. Regular maintenance and repair of wells, intake structures, piping stations, buildings above ground, pumping mains, and the treatment plant.
2. Regular inspection, maintenance and repair of pumps, generators and chlorinators.
3. Annual inspection and testing of hydrants, wash outs, valves, and other pipeline apparatus.
4. Removal of trees adjacent to pumping mains and to the larger distribution mains.

**Public Water Supply—Special Disaster Considerations**

In addition to the routine maintenance outlined, the following special precautions should be taken.

1. The pumping stations must be upgraded to be storm-proof.
2. Standby diesel pumps or generators should be installed in storm-proof buildings.
3. The water tower and storage tanks should be designed to withstand cyclonic winds.
4. A standby water supply should be available in the event of saline intrusion or other pollution of the regular supply.
5. A minimum level of stock parts should be maintained for emergencies and should include extra lengths of pipe, connections, joints, hydrants and bleaching powder. Adequate tools should be on hand to carry out emergency repairs.
6. For each water supply scheme, a disaster officer should be designated and instructed in precautionary and poststorm procedures.
7. Establish procedures for the emergency distribution of water if existing supply is disrupted.

Public Water Supply—Preparations During a Disaster Alert

Once a disaster warning has been issued by the Meteorological Department, the following courses of action should be taken.

1. Cancel leave for all staff.
2. Encourage people to store an emergency supply of drinking water.
3. Make sure the hospital storage tank is full and the hospital is conserving water.
4. Establish temporary means of distributing water on an emergency basis.
5. Cover pumps and motors with timber (if the building is not storm-proof) to prevent damage from falling debris.
6. Wrap motors in polyethylene to protect from rain damage.
7. Make sure auxiliary generators and standby engines are in good working order.
8. Acquire a buffer stock of fuel for the motors and store in a protected place.
9. Secure the main office building, close all doors and windows and put all records, paper stocks, and equipment in cabinets or almirahs.
10. Establish emergency work gangs for immediate post-disaster repairs.

Schools

Schools—Special Disaster Considerations

In order to minimize damage and reduce loss of life in disasters, the following recommendations should be carried out as part of all school programs in disaster-prone areas.

1. Provide a training program for teachers to ensure that they understand disasters, likely effects and the precautions that should be taken.
2. Include in the curriculum of all students information about disasters and the precautionary measures to be taken.
3. Mount an annual disaster practice alert within schools to review with staff and students emergency procedures to be followed in the event of a disaster.
4. Ensure that new schools are constructed to be disaster resistant.
5. Plant trees with deep root structures on the boundary of the school property to act as wind breaks.
6. Develop emergency procedures for securing furniture, equipment and supplies.
**Schools—Emergency Preparations During a Disaster Alert**

All principals or teachers in charge of schools should be notified of an approaching disaster by provincial administrative authorities and through the Ministry of Education channels. However, the carrying out of precautionary measures should not be delayed for lack of official notification. Precautionary measures include:

1. Assemble students and teachers and explain the disaster threat, likely effects, and precautionary measures.
2. Close schools and ensure that all children are safely returned to their families.
3. Give special consideration to boarding students. Send boarding students to their parents if at all possible. If this is not feasible, the following actions should be taken.
   - Find a building that is not prone to damage in the disaster, for the safety of the children.
   - Ensure that adequate adult supervision and care is provided.
   - Acquire stocks of emergency foods and protect against possible disaster damage.
   - Store safe drinking water in clean containers in a well-secured area.
   - Acquire aid supplies that may be required.
4. Wrap all books, valuable documents, records and paper supplies in polyethylene or fertilizer bags, and place in wall cupboards or almirahs.
5. Place all science equipment, teaching aids (including blackboards, bells, clocks, globes, maps, etc.) and any other valuable equipment in a wall cupboard or any safe compartment, after having covered them with polyethylene to protect them against damage.
6. Move all furniture on the first floor to the ground floor, where it is less likely to be damaged.
7. Store as much furniture as possible in any available enclosed rooms.
8. Stack all desks, chairs and other furniture to one end of the building to minimize exposure to high winds and rain. Tie together with ropes and cover with tarpaulin or polyethylene.
9. Secure any loose items on the school grounds to prevent them from being blown about by the wind.
10. Secure water containers and cover well, if possible.

**Highways**

**Highways—Maintenance in Disaster Areas**

Many of the precautionary measures necessary to reduce disaster damage should appear in the annual maintenance program of the Department of Highways. These include:

1. Annual inspections of all road bridges by a bridge engineer, including underwater inspection of foundations and piers. A full check should be made on all concrete and steel work.
2. Repairs should be promptly carried out.
3. Annual inspection and repair of all buildings, including storm shutters and roof fixings.
4. A quarterly program by the maintenance engineer’s staff for cleaning and repairing of culverts, wing walls, aprons and foundations.
5. Monthly program by maintenance engineer’s staff for cleaning ditches, grass cutting, the burning or removal of debris, and the cutting of dangerous trees along the roadside.
6. Monthly inspections and repair by maintenance engineer’s staff of all paved and unpaved road surfaces including edge metaling, pothole patching and any failure of surface foundations.
7. Regular inspection by mechanical engineer of all plants and equipment in the district workshops.
8. An up-to-date report of all damage and repairs should be kept in the district office report book.

Highways—Special Disaster Considerations
In areas prone to disasters, the following precautions should be taken:
1. Roads prone to flooding should be identified and alternative routes planned.
2. Alternative ways for by-passing flooded areas should be assessed.
3. The designation of routes strategic to evacuation and relief should be identified and marked, in close coordination with police and other administrative groups involved with relief efforts.
   - Roads, to be useful for evacuation, should be within one hour’s walk, three miles (five km) of dwellings.
   - The evacuation routes should be away from the coast or flood-prone areas.
   - Evacuation routes should not include roads likely to flood, but may include footpaths.
4. In each unit, in all divisions, a competent officer, such as the technical officer-in-charge, should be designated as the disaster officer.
   - The officer’s responsibility is to mobilize staff and volunteers to clear the roads in his/her section should a disaster strike.
   - The disaster officer should have a good relationship with local community groups who will play an important role in clearing roads after a disaster.
   - The disaster officer should be familiar with prestorm precautions and poststorm procedures for road clearing and for defining safe evacuation routes where necessary.
   - An annual practice alert should be carried out for all staff.
5. Standing orders should be developed for the execution of work following a disaster.
6. Emergency tool kits should be assembled for each division, and should include:
   - Crosscut saws
   - Axes
   - Power chain saw with extra fuel, oil, sharpening files, chains and tightening wrenches
   - Pulley block with chain and rope
7. All divisions should be issued two-way radios.
8. During the northeast monsoon season, a front-endloader should be stationed in each division.
9. Each ferry should have an emergency bay to protect the ferry.
10. Each ferry should have chains or cables, rather than ropes, for mooring in cyclone conditions.
11. Closed-type bridge abutments should replace open-type abutments in cyclone conditions.
12. Flood water measuring poles should be installed at all causeways and low level roads prone to flooding. This will assist drivers in assessing the dangers of crossing with water on the road.

**Highways—Emergency Preparations During a Disaster Alert**

1. A disaster warning should be conveyed from the Department of Highways in headquarters to field staff as soon as it has been issued by the Meteorological Department.
2. All disaster officers (technical officers) should be notified and should meet with staff to review emergency procedures.
3. Work under construction should be secured with ropes, sandbags, and covered with tarpaulins if necessary.
4. Emergency tool kits should be checked by each disaster zone officer and additional tools assembled and sharpened. Radio communication equipment should also be issued if available.
5. Each unit should mobilize a farm tractor with chain, cables and a buffer stock of fuel.
6. Vehicles should be inspected, fuel tanks filled and batteries and electrical wiring covered as necessary.
7. Extra transport vehicles should be dispatched from headquarters and stationed at safe strategic spots along routes likely to be affected.
8. Heavy equipment, such as front-end loaders, should be moved to areas likely to be damaged and secured in a safe place.
9. Ferries should be securely moored with extra bindings at least 12 hours before the expected landfall of the cyclone. Ferries should not be withdrawn from service more than 15 hours before the cyclone, due to traffic disruption.
10. The upper side of ferries should be checked for holes which would allow rainwater in.
11. If people are evacuating an area, the evacuation routes should be checked and people assisted.
12. The head office should be contacted and emergency authorizations sought, including definition of emergency monies available.
Airports

**Airports—Maintenance in Disaster Areas**

Many of the precautionary measures to reduce disaster damage should appear in the annual maintenance program of the Airport Authority. These would include:

1. An annual inspection and repair of drainage systems inside the airport perimeter, including culverts, ditches, wind walls and foundations.
2. Regular inspection and repair of runway and apron drainage, especially any scoured areas or depressions.
3. Annual inspection and repair of all buildings, stores, hangars, fuel dumps, with special attention to the fastenings of roofing sheets. Storm shutters, bolts and clasps on doors and windows should be in good condition.
4. Annual inspection of the radio tower and communications equipment, including lightning rods.

**Airports—Special Disaster Considerations**

Airport buildings, because of their size, are quite vulnerable to damage.

1. Hangars should be evaluated by a competent structural engineer to provide the airport manager with information about their ability to withstand cyclone winds.
2. Aircraft tie-downs should be constructed in the parking and apron area, with at least three tie-down bolts per airplane. Chains of adequate strength should be available and be fixed with bolts and washers (snaps are likely to spread).

**Airports—Emergency Preparations During a Disaster Alert**

1. Remove all serviceable aircraft from the cyclone area.
2. Unless the hangar has been certified to be safe, it may be safer to move remaining airplanes from the hangar to outside tie-downs.
3. Securely anchor all unserviceable aircraft to holding-down bolts, if safe hangar space is not available.
4. Auxiliary equipment such as pumps, wagons, etc. should be moved indoors.
5. All radio and weather instruments should be stored in a stormproof room.
6. Wind direction indicators should be removed.
7. The amount of aviation fuel should be checked and auxiliary fuel stocks brought in.
8. Contingency plans should be prepared for post-disaster use of the airport, including:
   - Need for emergency control tower equipment
   - Need for emergency control tower staff
   - Need for emergency linemen for fueling
   - Emergency fuel supplies
   - Temporary storage facilities
9. The auxiliary electrical supply system, if available, should be checked.
10. Hangar doors and windows should be closed and the catches reinforced to withstand the wind.
11. Any large windows should be taped to prevent the shattering of glass. Windows should be covered with wooden shutters or boards, where possible.
Railway

Railway—Maintenance in Disaster Areas
Many of the precautionary measures necessary to reduce disaster damage should appear in the annual maintenance program by the Department of Railways. These include:

• An annual inspection by a bridge engineer of all railway bridges, including an underwater survey of foundations, piers and abutments. A full check on all concrete and steelwork should be included and any repairs needed should be promptly carried out.
• Annual inspection by mechanical engineer of all plant and equipment.
• Annual inspection and repair of all buildings, including wooden shutters and roof fastenings.
• Quarterly cleaning and repair of culverts, wing walls, aprons and foundations by maintenance engineer’s staff.
• Continuous regular weeding, cleaning of ditches and the burning and removal of debris by the maintenance engineer’s staff.
• Continuous regular inspection and repair by maintenance engineer of all railroad track, ballasting, cess damage, fish plates and holding down bolts.

Railway—Special Disaster Considerations
In addition to the routine maintenance outlined, special precautions should be taken.

Emergency Systems
An evaluation of the number and location of sidings and passing places should be carried out to ensure that an increased number of trains can operate in an emergency situation.

Emergency train operating procedures, such as the pilot working system, should be developed. All staff should be well trained to implement the emergency systems.

Within the emergency operating framework, emergency procedures should be developed to provide the station masters with authority to dispatch or hold trains and take other emergency decisions in a disaster-threatening situation.

Systems should be developed for increasing the ability to carry increased number of passengers in an emergency situation.

Equipment
Railway stations, particularly terminal and junction stations, should be equipped with emergency communication equipment.

Every workgang tool box should have tools that will be needed in a disaster emergency. This should include crosscut saws, axes and rope. Each district tree cutters gang should have a chain saw.

Rain capes and caps should be made available to workgangs in an emergency.

Every station should have a disaster-proof storage room.
Emergency Organization

Districts should be divided into disaster zones corresponding to the present subdivisions. In each zone a foreman pate-layer should be designated as responsible in an emergency. He/she should be acquainted with emergency procedures and should live in the area.

Railway—Emergency Preparations During a Disaster Alert

Once a disaster warning has been issued, the following courses of action should be taken:

1. Head railway office should convey the disaster warning to field staff.
2. Staff meetings should be called, both at head office and at field level, to review precautions and establish contingency plans.
3. Staff leave should be canceled and all staff in districts likely to be affected should be put on emergency alert.
4. Plans should be finalized for sending auxiliary staff and repairpersons into the affected areas to assist local staff.
5. Contingency plans should be established for providing food and emergency shelter for local staff and for auxiliary staff being sent into the affected area.
6. Rail schedules should be revised and special trains brought into the area to assist with the increased volume of traffic.
7. A schedule for the departure of the last trains prior to the disaster should be developed by station masters and posted.
8. Tractor-shovel, tripper, and auxiliary jeeps should be arranged for transport to the affected area.

At Railway Stations

All new construction and repair activities should be halted and the work secured as far as possible with sandbags, tarpaulins, etc.

Maintenance and repairpersons should be instructed to assemble and check repair equipment.

Polyethylene should be acquired for the protection of freight and equipment.

All perishable and breakable items should be loaded into goods wagons and padlocked.

For any coaches remaining in the area, shutters should be pulled down and doors closed.

Buildings, stations and yards should be secured. All loose items should be moved indoors.

All records and paper stocks should be put in almirahs or metal cabinets.

Documents such as pay abstracts should be wrapped in polyethylene and placed in a safe place.

Ticket booths should be draped with polyethylene, front and back.

Any radio equipment should be wrapped in polyethylene and taken to the safest place in the station (such as rooms with concrete roofs).
Cash should be locked in the safe.

Reserve stocks of fuel should be checked.

Rolling stock should be secured with breaks on and catch points set. Wagon wheels should be blocked.

Officers should ensure that all staff are well aware of precautions to be taken to protect their lives and personal property.

Finally, all windows and doors of buildings should be closed and securely latched or bolted.

**Irrigation**

**Irrigation—Maintenance in Disaster Areas**

Routine maintenance is the key factor in the prevention of disaster damage. The following actions should be carried out by the Department of Irrigation during the annual program of maintenance and repair.

1. Monthly inspection and repair of the bunds (embankments) of tanks, and replacement of rip-rap.
2. Regular inspection and repair of sluice gates and operating mechanisms.
3. Regular inspection and repair of irrigation channels, bridges, culverts, control gates, and overflow channels.
4. Regular inspection and repair of pumps, generators, motor equipment and station buildings.

**Irrigation—Special Disaster Considerations**

1. The technical assistant responsible for the tanks of an area should also be designated an emergency officer, knowledgeable about disasters, their effects, and appropriate emergency procedures.
2. Each technical assistant should have instructions and operating procedures for disaster conditions.
3. Emergency disaster procedures should be reviewed annually by all staff.
4. Emergency tool kits should be prepared for all technical assistants in cyclone-prone areas. The tool kits should include:

   - ropes
   - pulley blocks
   - jungle knives
   - shovels
   - concrete (in bags)
   - concrete pans
   - gunny bags
   - cane baskets
Irrigation—Emergency Preparations during a Disaster Alert

1. Head office should convey the disaster warning to field staff.
2. Leave should be canceled for all staff working in the area likely to be affected.
3. Staff that are out of the area should be asked to return.
4. Irrigation engineers should review with technical assistants emergency procedures that may be required.
5. Any repairs under construction should be well secured with sandbags, rockfills, etc.
6. Technical assistants should ensure that the level of impounding in the tanks is reduced to create increased capacity for heavy rains expected. The amount of lowering will depend on the rainfall forecast.
7. The inlet and outlet to tanks should be inspected to ensure that waterways are unobstructed by trees or vegetation.
8. The emergency tool kits with each technical assistant should be checked.
9. Water level gauges should be marked on minor tank structures not having level gauges.
10. All buildings and equipment should be secured for disaster conditions.
11. Materials likely to be damaged by rains, such as concrete in bags, electric motors, office records, etc., should be covered with plastic and well secured, even though stored inside.
12. Officers should ensure that all staff are well aware of precautions to be taken to protect their lives and personal property.

Public Buildings

Public Buildings—Special Disaster Considerations

Many of the precautionary measures to reduce damage to public buildings can be included in the annual maintenance programs for the buildings. Particular attention should be given to the following:

Roofing

- All cracked or broken asbestos sheets or tiles should be replaced with sound materials.
- All fixing hooks for asbestos sheets should be inspected, tightened, and replaced if loose. Extra hook bolts should be added to achieve nine fixing points per sheet.
- Extra attention must be given to gable ends, roofing materials on overhangs and corners.
- All roof edges should be firmly held down with strong batten or concrete.

Roof timber

- All roof timber should be inspected for rot or breakage and replaced with sound materials.
- Joints should be inspected for soundness and should be inspected for “play.”
- Timber-to-timber joints should be securely fixed with steel jointing plates or cleats of appropriate size, for all important buildings.

Timber-to-wall joints

- Trusses must be fixed by continuous anchorages to the foundations.
- Check that trusses are tightly bolted to the top of all columns to ensure that stresses are transferred.
- Check that the wall behind the purlins is sound and free from cracks.
• Pack with concrete any “play” in purlin-wall connections.

Walls
• Check wall-to-column connections for cracking. Break out loose sections and repair, and include tie bars or strips to reinforce the walls.
• Lengths of straight wall should not exceed eight feet without being piered. Piers should be fully keyed into the walls and foundations.

Eaves and overhangs
• Must be inspected, and all damaged boarding or ceiling should be replaced.

Windows
• Glass glazing putty should be scraped and renewed on steel windows.
• Window fittings (hinges, clasps, and bolts) should be inspected, repaired and tightened.

Doors
• Hinges, bolts and locks should be tested for tightness and repaired.

Wooden shutters
• The addition of wooden shutters should be considered for all important offices where the protection of equipment, records, or supplies is particularly important.
• Wooden shutters that exist should be checked for tightness of fit.
• All hinges, bolts and clasps should be inspected and repaired.
• The timber should be inspected and any damaged or rotten sections replaced. (Remember, storm shutters are your first line of defense against the storm.)

In-house building officer
• For each building an in-house building officer should be designated to bring repairs and other damage to the attention of the repair department at regular intervals.

Trees
• Trees close to buildings must be checked for rot. Dangerous branches should be trimmed.

Designated authority
• There must be some authority to indicate to the public the safety of public structures likely to be used as refuges.
• Emergency equipment
• A reserve stock of tarpaulins, polyethylene, and ropes should be maintained.
• An emergency supply of electrical generators, water pumps, and flexible pipe should be maintained for use by essential services, such as hospitals.

Reserves
• Officers and skilled workers from offices in other areas should be maintained for emergencies.

• Important documents in government offices
• Should be kept in steel cabinets.
Public Buildings—Emergency Preparations during a Disaster Alert

The in-house building officers should:

- Secure any loose items outside.
- Check roof-fixing bolts for tightness.
- Board up all wall ventilators.
- Wrap in polyethylene all files, books and equipment and place in storm-proof rooms.
- Fix wooden shutters into position.
- Test standby generators and ensure that adequate fuel supply is stored under cover.
- For buildings with radio, the radio system should be tested and repaired if necessary.
- Weight down any outside stocks which are likely to be blown about by the wind (or that may float away), such as timber, asbestos and G.I. sheets.
- Close windows and doors and check the security of bolts and casement fasteners.
- Windows on public buildings should be covered with boards (temporary shutters) if permanent wooden shutters are not available. Of particular importance are:
  - hospitals
  - food stores
  - record rooms
- Secure all temporary structures, such as workshops.
- Request that head office transfer an officer and skilled workers from other offices to the affected area for support of local staff.
- Acquire from head office emergency authorizations for the district engineer to:
  - Recruit any labor necessary.
  - Decide on the priority of buildings to be repaired.
  - Purchase materials and tools locally, as needed. 3

References

Appendix V

Gap Identification for Disaster Planning
## Gap Identification (Predisaster)

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>Plan</th>
<th>Agency Responsible</th>
<th>Authority to Activate Plan Given by</th>
<th>Person Responsible</th>
<th>ALT</th>
<th>Checked by</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coordination</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Government Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Press Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volag Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telegram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio (in-country)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio (ex-country)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Warnings and Evacuations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authority</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warning Dissemination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordinator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warning Dissemination Local Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support for Evacuations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(trucks, buses, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shelter for Evacuees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplies for Evacuees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Critical Facilities Protection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Installations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric Power</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Installations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Installations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Works Department</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment and Repairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials and supplies for Repairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Gap Identification (Predisaster)

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>Plan</th>
<th>Agency Responsible</th>
<th>Authority to Activate Plan Given by</th>
<th>Person Responsible</th>
<th>ALT</th>
<th>Checked by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vital Government Offices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buildings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Records and Valuable Documents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search and Rescue Participants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Routes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment and Supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power and Light</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplies and Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Support Staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment and Vehicles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplies for Repairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Supply Containers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitation System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment and Vehicles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplies for Repairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications / NAVAIDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fueling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aircraft Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wharves and Warehouses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tugs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Custom Materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Critical Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Problem Facilities Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refineries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation Installations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Areas where warnings must be hand carried</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fisherman</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Industries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area, Industries Likely to Experience Secondary Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Gap Identification (Emergency Operations)

<table>
<thead>
<tr>
<th>PHASE 1 (1–24-48 hours) ACTIONS</th>
<th>Plan</th>
<th>Agency Responsible</th>
<th>Person Responsible</th>
<th>ALT</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disaster Assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial Emergency Needs (Victim)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damage Assessment and Blockade ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey of Available Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epidemiological Surveillance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search and Rescue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Records</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Police</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Military</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifelines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Relief</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Aid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food for Relief Workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food for Victims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material Aid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shelter Operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Dissemination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Gap Identification (Emergency Operations)

<table>
<thead>
<tr>
<th>PHASE II ACTIONS</th>
<th>Plan</th>
<th>Agency Responsible</th>
<th>Person Responsible</th>
<th>ALT</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Detailed Assessment**
- Interim Victim Needs
- Detailed Damage Survey
- Priority Repairs ID
- Epidemiological Reports
- Vital Statistics
- Estimate of Economic Loss/Damage
- Inventory of Resources

**Relief Program**
- Interim Aid
  - Food
  - Materials
  - Shelter
  - Tools
  - Economic Assistance
  - Job Programmers/Work Schemes

**Salvage-Operations**
- Equipment Recovery
- Materials Recovery

**Other Operations**
Appendix VI

Predictions, Forecasts and Warnings

Introduction
An understanding of the prediction, forecast and warning systems is essential to the completion of a workable general disaster plan. Therefore the following explanation from Vol. 11, Preparedness Aspects, of the Office of the United Nations Disaster Relief Coordinator’s series, Disaster Prevention and Mitigation: A Compendium of Current Knowledge, pp. 31-35, has been reproduced.

Predictions, Forecasts and Warnings
It is axiomatic that if a timely warning can be given of an impending or probable event which may bring disastrous consequences in its train, then it will be possible to reduce the severity of those consequences. The degree to which this reduction can be affected will depend upon the interplay of three main elements: the accuracy of the warning; the length of time between the warning’s issuance and the expected onset of the event; and the state of pre-disaster planning and readiness. Included within this last is a sub-element, that is the degree to which the public responds to the warning and takes correct precautionary action.

The first two of these elements are not necessarily mutually exclusive. For example, flood warnings can be issued by hydrological services hours and sometimes days in advance of a flood on major tributaries. Forecasts of flood crests at downstream points on main rivers can, depending on the length of the rivers and the size of the drainage areas, be made even longer in advance.

An emergency organization should of course welcome even general or imprecise warnings whenever they can be given, provided the degree of imprecision is appreciated. To some extent, this degree will depend on the sophistication of the equipment available to the appropriate technical service and the skill of the members of that service in interpreting the data available. It is obvious that attempts to impose a longer period of warning than would be scientifically or technically justified would inevitably result in an excessive number of unnecessary warnings which would tend to lower public confidence in the whole emergency organization.

These questions were considered at some length in a report entitled “The Quantitative Evaluation of the Risk of Disaster from Tropical Cyclones” issued by the World Meteorological Organization in 1976. The authors emphasize strongly the connection between the capability of the forecasting service and the point at which preparedness measures should be implemented. Some may be able to be put into effect during a warning period, but others may have to be instituted at the beginning of the cyclone season, or included in even longer-term action. An example is given, although it should be recognized that the times may vary from one country to another:
• Every 12 hours an extended projection of the storm track for periods up to 72 hours ahead is made available by the forecasting service so that all the authorities responsible may initiate certain preparedness measures;
• At least 36 hours ahead the forecasting service shall nominate the coastal sector along which a tropical cyclone watch should be mounted. This would also be the signal for further preparatory action to be taken;
• 12-18 hours before the tropical cyclone’s landfall the forecasting service shall issue warnings specifying the areas concerned, the expected wind strengths and rainfall conditions, the likely points of storm surge, etc. The hydrological service shall issue warnings in regard to river flooding and the possibility of flash floods.

**Cyclones**

Application of these principles can be found in the work of the World Meteorological Organization’s Tropical Cyclone Project. Of proven worth are the regional activities which consist principally of collaborative action specifically designed to protect people and property from tropical cyclones. In 1977 a working group (the RA IV Hurricane Committee) was established to promote these activities within the framework of the Tropical Cyclone Project.

At its first session, held in San Juan, Puerto Rico, in 1978, the Hurricane Committee took a novel approach to its problem by drawing up a hurricane operational plan, which has since been approved by the countries of Regional Association IV. The plan defines the observing, forecasting and warning responsibilities of all cooperating countries. It was felt that a plan of this kind was essential if the most effective cooperation were to take place between the countries in preparing for and issuing meteorological forecasts and warnings of all tropical cyclones affecting their area.

**Heavy Rain**

Meteorological information can of course be useful in other ways besides the forecasting of storms and floods. Rainfall, when reported in certain areas, is or can be an indication that locusts will start to breed, and if this information reaches agencies like the Desert Locust Control Organization in sufficient time, preparatory measures can be taken for the spraying of breeding areas or for immediate action in places which are attacked. Because of the paucity of meteorological stations in locust breeding areas, the Food and Agriculture Organization has experimented with the use of meteorological satellites to provide rainfall data. These experiments have been successful, but so far they have not been able to cover all the locust-prone areas of the world.

**Frost**

Frost is another hazard which can be forecast, and timely warnings to farmers can often prevent heavy crop losses.

**Forest Fire**

For some kinds of event it will be quite impracticable to indicate when an event is going to, or is most likely to, occur. General warnings that a high forest or bush fire risk exists may be given after a prolonged period of drought coupled with exceptionally warm weather, but apart from the normally remote contingency of natural conditions producing spontaneous combustion, some
external impetus—a carelessly discarded cigarette, for example—will be needed to initiate the event. Similarly, some precautionary measures might be taken if seismological activity were to be detected in an area in which a major dam was located, or if forecasts were made of unusually heavy rains in the catchment area of the reservoir.

**Volcano**

Volcanic eruptions may sometimes be presaged by earthquake activity and ground deformation, but unless some definite relationships have been established for a particular volcano, it will not be possible to use these indications to predict the timing of an eruption with any real hope of accuracy. Their usefulness may be increased when they are combined with other indications, such as increased steam emission or temperatures, or changes in chemical compositions of volcanic gas emissions.

**Earthquake**

For earthquakes themselves, no accurate warning system has yet been devised. The term commonly used in connection with earthquakes is “prediction”; that is, a probabilistic statement that accumulated observations seem to signal more or less clearly the occurrence of an earthquake of a specified magnitude at a specified location and time. A “warning” here is a notification that steps should be taken to deal with an impending danger. It is the result of successive evaluation of precursory phenomena. Because the inaccuracy in the time window is large, the issue of both predictions and warnings raises wide-ranging questions of public policy which go far beyond the competence of the emergency planner, and special advisory committees are established to evaluate all observations and to advise local or central governments. Planners will know if their areas are likely to experience earthquakes, and will act accordingly. They will do well to remember that a major destructive earthquake is unlikely to recur in the same segment of a fault until several decades or more have elapsed since the previous event—the time needed for sufficient stress to build up. In the main seismic regions, it is the recently quiet zones (“seismic gaps”) which present the greatest danger of future large earthquakes. In these zones of anomalously low seismic energy release, there may be a progressive buildup of small to moderate earthquakes, days or weeks before a major earthquake occurs again. Monitoring these zones by the various geophysical methods available therefore seems now to be one of the priorities for seismologists. It can be seen, however, that “prediction” is limited to relatively large areas in which earthquakes are liable to occur within a period that is not yet possible to determine.

**Tsunami**

The current state of knowledge permits much more precise warnings to be given for tsunamis. Even though their frequency is comparatively low, and lower still in relation to any particular location, it has been estimated that since 1859 more than 70,000 lives have been lost in the Pacific due to tsunamis; and it is a fact that several million people live or work in tsunami hazard zones in that area. Moreover, their number is increasing.

Regional warning systems have been established in the northern part of the Pacific basin by the United States, Japan and the U.S.S.R., to give some measure of protection against the effects of locally generated tsunamis. These monitoring systems are real-time links from seismometers and tide gauges to the respective centers. Local Tsunami warnings in these systems may be issued on the basis of earthquake information alone.
The Pacific Tsunami Warning Center in Honolulu operates the International Tsunami Warning System. It receives information about major earthquakes in the Pacific region, evaluates the earthquakes’s tsunami potential in terms of epicenter and Richter scale magnitude, determines through tide gage measurements if a tsunami has been generated, and issues appropriate warnings and information to minimize the hazards. The international monitoring system is at present composed of 24 seismic stations and 53 tide stations throughout the Pacific Ocean. The system employs teletypewriter and voice communication links to acquire date and disseminate information to countries in the region. Transmission times range from 10 minutes to one hour, depending on the efficiency of communications relay points. The time of receipt of tsunami wave reports at Honolulu varies with the travel time of the tsunami from its origin to the tide gages, the dependability of equipment and observers, and the communications links.

In general, warnings delivered by these systems include earthquake locations (50 km), earthquake Richter scale magnitude (0.3), tsunami arrival time (20 minutes), and reports of wave heights as recorded by the tide gages. The earthquake parameters and tsunami arrival times throughout the Pacific are usually disseminated from Honolulu to the 52 international warning points within one hour after the occurrence of the earthquake.

The International Coordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU), at its eighth session held in Suva, Fiji in April 1982, recommended that watches and warnings be issued on a time-stepped basis and that “the initial warning cover areas within three hours’ tsunami travel time of the epicenter and the initial watch cover areas within three to six hours’ tsunami travel time of the epicenter. Both areas are to be expanded every hour until it is determined that a danger to the entire Pacific exists or that no further danger exists.”

Slowly Developing Disasters

For droughts and other kinds of agricultural disaster involving crop loss or crop failure, as well as for the effects on food supplies of man-made disasters, the global Information and Early Warning System on Food and Agriculture, operated by the Food and Agriculture Organization (FAO) of the United Nations, provides its member states—which include potential food aid donors—with reports of varying degrees of urgency and comprehensiveness. These include:

- Food Outlook, which is published monthly and contains a concise analysis of up-to-date information affecting the situation and outlook for basic foodstuffs throughout the world. It covers cereals, sugar, oilseeds, oil and fats, cassava, pulses, milk and milk products, meat and fertilizers.
- A series of special reports with a restricted readership, including Foodcrops and Shortages, which is issued monthly to governments. It gives an up-to-date account of crop conditions and production prospects in both developing and developed countries. It identifies countries where current crop conditions give cause for concern as well as those which already suffer from abnormal food shortages. A special report on cereal import requirements of low-income, food-deficit countries is issued four times a year to bilateral and multilateral food aid donors.
- Special alerts, which are issued whenever the food supply situation threatens to deteriorate in a specific country or a group of countries which may need assistance in coping with the situation. These alerts, which are sent to potential food aid donors, are the primary vehicle for early warning of potential food shortage, to facilitate prompt remedial action. In cases of
regional food shortages involving a large number of countries, special reports are issued.
For instance, the System reported regularly to donors on the food supply and import position
in the 26 drought-affected African countries during the African food emergency in 1980/81.

- Sahel Weather and Crop Situation reports which, as their title indicates, are limited to
  conditions in drought-prone countries south of the Sahara. They are issued every 20 days
during the period from June to October.

The information contained in the last two kinds of report is also issued by telex, because it is
particularly time-sensitive.

The System itself, drawing on sources as diverse as satellite imagery and local market trends,
forms a remarkable example of the value of a central synthesizing point for information from all
over the world. The Climate Impact Statements issued by the National Oceanic and
Atmospheric Administration (NOAA) of the United States have a much more limited distribution
but supplement the other information available and form a useful source, particularly for
potential donors. So far as epidemics are concerned, the World Health Organization (WHO’s)
“Weekly Epidemiological Bulletin” serves the same purpose in its field as does the FAO system.

References

4. Prediction errors are inherent in every forecast that is issued. The average error in a 24-
   hour forecast of the position of a tropical cyclone center is about 200 km. Errors likewise
   arise in the prediction of landfall and in the size of area to be affected by the tropical
   cyclone. These considerations are, of course, largely operational, but provision for the
   errors likely to occur has to be reflected in the total cost of preparedness.
5. World Weather Watch, Regional Association IV (North and Central America) Hurricane
7. To assist in implementing this recommendation, a feasibility study was undertaken at the
   Pacific Marine Experimental Laboratory, Seattle, Washington, U.S.A. Its text can be found in
   National Oceanic and Atmospheric Administration Technical Memorandum ERL PMEL-37
   (December 1982)
Disaster Preparedness

Course Evaluation

This information will be used to improve the course for other students. Thank you for taking a moment to complete this form.

Date you finished the course: ____________________________________________

What is your present position? ____________________________________________

How many years have you spent in disaster-related work? _____________________

How many years of formal education do you have?

☐ 0 to 6 years ☐ 7 to 12 years ☐ 12 to 16 years ☐ more than 16 years

How was the content level of this course?

☐ too difficult ☐ about right ☐ too easy

Was the course material relevant to your work?

☐ yes ☐ no

How useful were the self-assessment tests to you?

☐ very useful ☐ OK ☐ not useful

How valuable was the total course?

☐ very valuable ☐ of some value ☐ not valuable

Additional comments: ____________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Please copy and return this form by mail or fax, or send the information via e-mail to:
University of Wisconsin–Disaster Management Center
432 Lake Street
Madison, Wisconsin 53706, USA
Fax: 1-608-263-3160 E-mail: dmc@engr.wisc.edu
Examination Request Form

This exam must be proctored (supervised) just as it would be for a course taken on campus. Generally, proctors do not charge for this service. In all cases the academic department offering the course must approve the choice of proctor. Qualified proctors include university or college registrars, deans or counselors or professors; high school principals or counselors; directors of educational services at universities, other educational organizations, correctional institutions or the armed services; certified librarians in a supervisory position; or the delegated officials at university testing centers. Students residing outside of the United States may also request, as their proctor, a local director of educational services or an officer of the United States embassy or consulate. Please copy this form as needed.

Date Submitted ____________________________________________________________

Course Title ______________________________________________________________

Student Information:

Name _________________________________________________________________

Mailing Address _________________________________________________________

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________

Proctor Information:

Name _________________________________________________________________

Title ________________________________________________________________

Organization __________________________________________________________

Complete Mailing Address (Please provide street address, in case courier service is used.)

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________

Phone Number OR Email Address ___________________________________________