

## 2.3 Legal Problems Associated with Selected Natural Phenomena

### 2.3.1 Floods <sup>38/</sup>

Earlier studies in this series discussed the destruction caused by riverine floods and by coastal floods (resulting from the action of tropical storms or tsunamis), and the spatial implications of flood control.<sup>39/</sup> The Land Use Aspects volume outlined the different legal devices available to regulate land-use within a flood hazard area, particularly zoning regulations, building codes and the public acquisition of land. The fundamental legal problems relating to building codes and public acquisition, already discussed in this study, generally hold true with regard to all types of natural phenomena. Here the problems peculiar to zoning for flood control are reviewed.

Briefly, the strategy inherent in zoning for flood control is to divide the flood hazard area into zones of prohibited or restricted uses. Figure 1 illustrates a floodplain zoned for land-use regulation. In the prohibitive zone the maintenance of an unrestricted floodway is essential. Therefore, all construction is prohibited and the area is zoned for agricultural, recreational and open space purposes. In the restrictive zone the flood hazard is less. Therefore, limited building development is permitted, but subject to stringent building code provisions relating, for example, to minimum ground floor levels. In the warning zone, flooding is rare and therefore all uses can be permitted provided that they are not prohibited or restricted by another regulation.

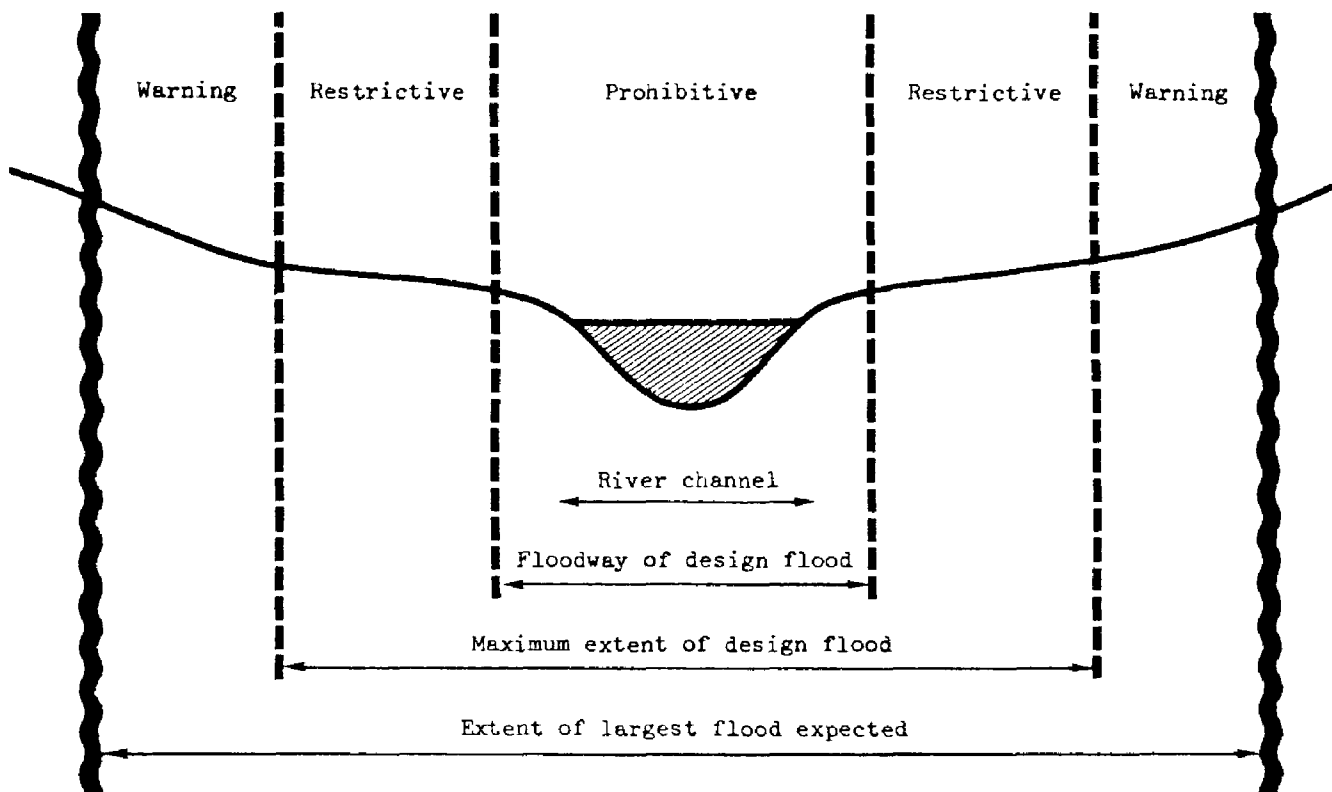
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<sup>38/</sup> Guidelines for Flood Loss Prevention and Management in Developing Countries, (ST/ESA/45), United Nations, New York, 1976 (Sales No. E.76.II.A.7).

<sup>39/</sup> Disaster Prevention and Mitigation, Vol. II : Hydrological Aspects, UNDR0, Geneva, 1976; and Vol. V, Land Use Aspects, UNDR0, Geneva, 1977.

Figure 1

A floodplain zoned for land-use regulation



Two principal legal questions must be considered regarding zoning for flood hazard areas. The first is whether the central Government has 'enabled' the municipality to pass a flood zoning regulation. The second relates to the constitutionality of the regulation, assuming that there is statutory authority.

Although, as has been seen, many developed and developing countries have zoning enabling legislation, each particular enabling statute must be reviewed to determine whether it is stated broadly enough to encompass zoning for flood control purposes. Each statute commonly empowers municipalities to impose specified restrictions and indicates the purposes for which those restrictions may be imposed. Some zoning enabling statutes could be construed in such a way as to exclude the power to zone for flood control. It is not possible to assess the extent to which this has proven to be a significant problem in practice because there have been no comparative studies of flood zoning legislation, but it is not thought likely that it has.

The more troublesome question is undoubtedly the constitutional validity of the zoning regulation itself. First of all, it can be argued that any particular flood zoning regulation is a taking of property without compensation and is therefore unconstitutional. (This problem has already been discussed in the section on zoning). The next source of difficulty is the 'equal protection' provision contained in most national constitutions. It is a condition of constitutional validity that flood zoning regulations treat all property owners alike. Where, for example, one of the objectives of a regulation is to prevent channel encroachment (because channel encroachment results in significant increases in flood flows and flood hazards), an owner of regulated property may be able to claim that others equally responsible for such a burden, such as public agencies, are exempted from regulation; in such a case, the regulation would be unconstitutional.

The other principal difficulty with 'equal protection' provisions relates to the density requirements contained, explicitly or implicitly, in zoning and subdivision regulations. For example, a flood zoning regulation may permit family residences of only a certain minimum area, say an acre, in the flood fringe of a flood plain; residences of a lesser area are prohibited. From a constitutional point of view, it could be argued that property owners who possess less than an acre are not in need of greater protection, and are being treated unequally. Hence such a regulation might be held unconstitutional by the courts.

The last problem that deserves mention is the international aspect of flood control. It has already been seen that a variety of tools exist to regulate the problem of human settlements in flood plains. So long as the problem exists within a single national jurisdiction, the various legal tools mentioned in this study can be applied without inordinate legal difficulty, although the inter-jurisdictional problems may be considerable. But when a river basin falls under the national jurisdiction of more than one country, regulation becomes a great deal more difficult.

Neighboring countries have often developed flood control systems in isolation, not appreciating the extent of their inter-dependence.<sup>40/</sup> It is doubtful whether any rules of international law exist in this situation. There are no rules of customary international law about flood control. A second source of international law is general principles of law, but such general principles of law which may exist with regard to flood control (e.g., the general principle of good neighborliness),

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<sup>40/</sup> K.K. Franji and B.C. Garg, Flood Control in the World, New Delhi : International Commission on Irrigation and Drainage, 1976.

are sufficiently imprecise that they are incapable of immediate application in flood control. These matters are dealt with in a number of bilateral treaties but, commonly, the provisions on flood control relate only to the maintenance of existing flood discharge conditions. This lack of State concern with the international dimension of floodplains is also reflected in the absence of scholarly studies by international lawyers.<sup>41/</sup> Research is required into the international legal aspects of floodplain management.

### 2.3.2 Earthquakes <sup>42/</sup>

Earthquakes produce a number of effects, such as surface faulting or ground shaking, which may result in loss of life and damage to property.

With regard to the problem of surface faulting, a number of legal devices can regulate the type and density of structures, if any, to be allowed within the area of an active fault. For example, in the vicinity of active fault traces the area can be zoned to prohibit structures altogether, and to permit only certain uses such as agriculture and recreation. At the very least, municipal zoning regulation should prohibit the building of structures for human occupancy or for public service facilities (such as bridges and utilities) on active fault traces.

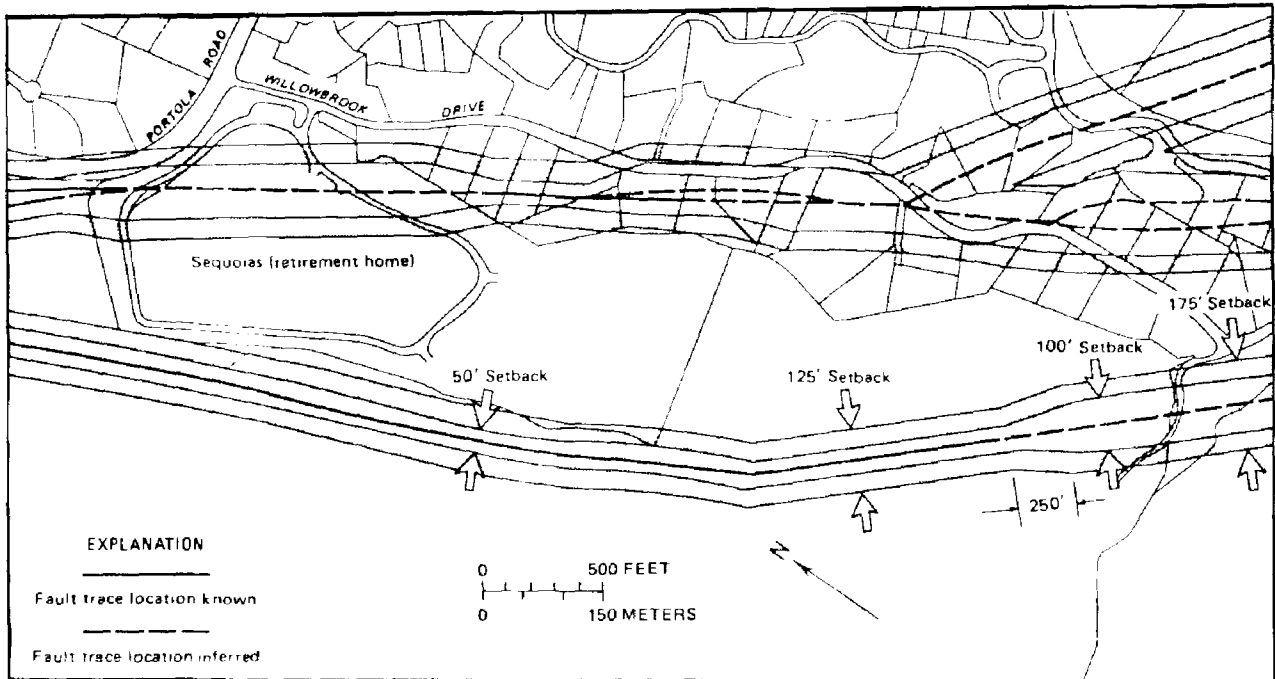
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<sup>41/</sup> The singular exception is the study by the International Law Association in 1972. See their Model Treaty on Flood Control, cited in F.J. Berber, "Flood Control", in International Law Association, Report of the Fifty-Fifth Conference, London: International Law Association, 1972.

<sup>42/</sup> See especially Disaster Prevention and Mitigation, Vol. 3, Seismological Aspects, UNDRO, Geneva, 1977, and Vol. 5, Land Use Aspects, UNDRO, Geneva, 1977. See also D.R. Nichols and J.M. Buchanan-Banks, Seismic Hazards and Land-Use Planning, Geological Survey Circular No. 690, United States Department of the Interior, Washington, D.C., 1974.

Municipalities can also establish fault hazards easements requiring various setback distances, depending on the nature of the structure concerned. Figure 2 illustrates, by way of example, the setback regulations of Portola Valley, California.

Figure 2



Example of minimum easements required for building setbacks from active fault traces by town ordinance in Portola Valley, California. All new building construction is prohibited within 100-foot wide, lightly shaded zone (50 feet on each side of the well-located portion of the San Andreas fault); structures with occupancies greater than single family dwellings are required to be 125 feet from the fault trace (dark shading). Where the location of the fault trace is less well known, the more conservative setbacks of 100 feet for single family residences and 175 feet for higher occupancies are required. (from Nichols and Buchanan-Banks, 1974.)

A second geological phenomenon produced by earthquakes is that of ground shaking. It is often earthquake-generated ground shaking which causes the most destruction. Ground shaking is one of the most difficult seismic hazards to predict and quantify, for it depends on the amplification effects of local geologic deposits, the characteristics of the earthquake source (e.g., magnitude) and the distance from the fault. Nonetheless, it is known that ground shaking is more severe on sites underlain by thick deposits of saturated sediments rather than those located on bedrock. As a result, unless precautions are taken, the greatest losses from ground shaking occur where tall structures are built on thick, relatively soft, saturated sediments.

A number of legal implications can be drawn from these findings. First of all, areas likely to be subject to severe ground shaking can be zoned for low-density land use. The most likely challenge to the legal validity of a seismic zoning regulation is on the reasonableness of the regulation relative to the available data. It is essential, therefore, that the regulation be based on a rigorous risk analysis of the area. Secondly, appropriate building code provisions can be adopted for areas with varying ground shaking characteristics. The third implication relates to existing hazardous structures. Older, non-earthquake resistant buildings constitute one of the greatest sources of destruction. This problem can be dealt with by the adoption of a hazardous building abatement ordinance which would require the improvement, or the ultimate demolition, of buildings considered particularly hazardous (although special arrangements might have to be made for buildings which are classified as being of architectural or historic importance). The most practical way to proceed is to select first those buildings that are regarded as most hazardous and having the highest occupancies, and then to deal with structures posing a lesser danger and with lower occupancies.

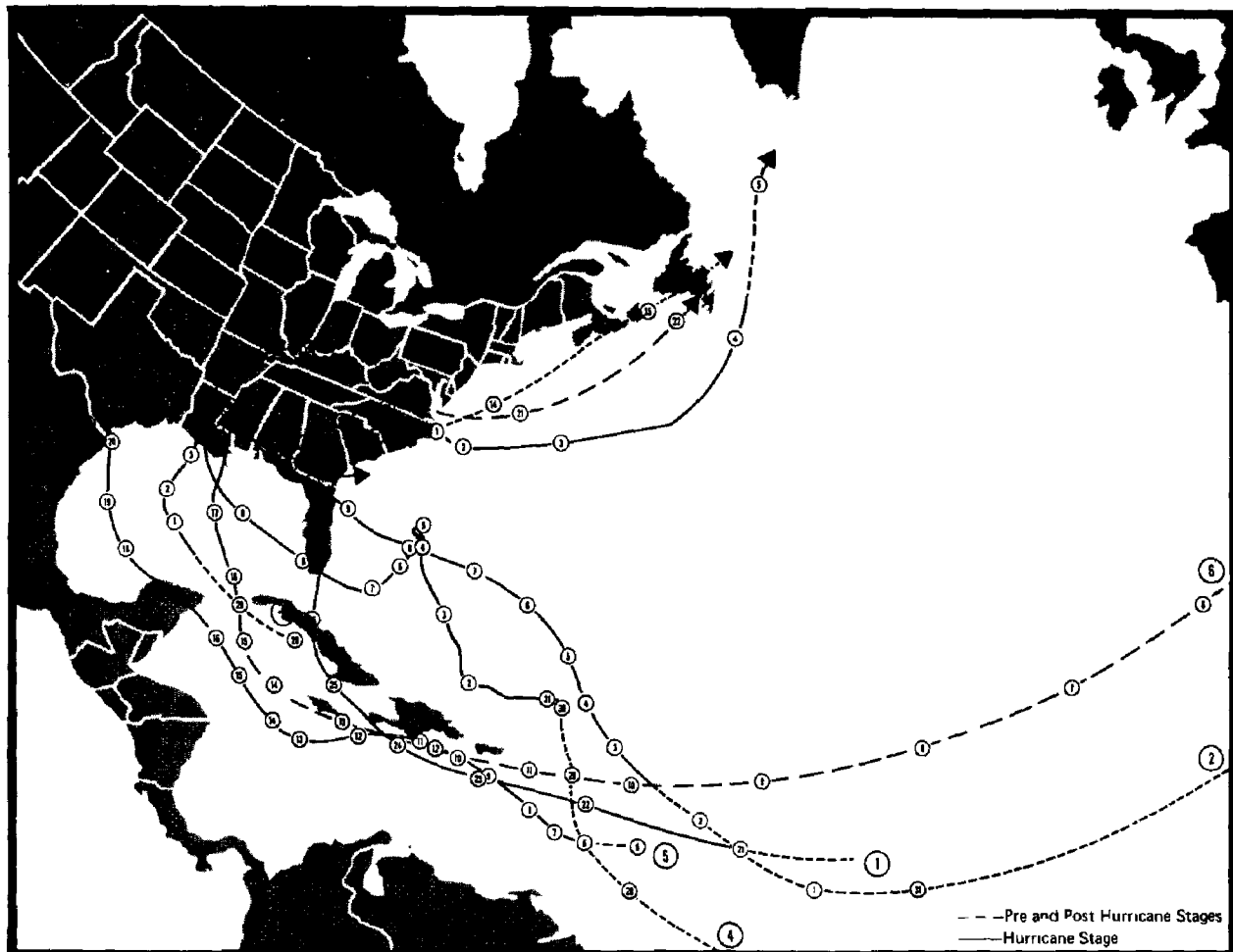
### 2.3.3 Tropical Storms

Tropical storms are known as hurricanes in the Atlantic Ocean, typhoons in the Pacific Ocean and cyclones in the Indian Ocean. They are extraordinarily destructive phenomena. Destruction is caused not simply by the force of the wind itself but by the rainfall associated with them, by flooding and also by storm surges.

Although it is possible to establish with some precision fault zones and the location and extent of floodplains, the area of concern for tropical storms is many thousands of square kilometers. Figure 3 shows the paths of the most destructive hurricanes affecting the United States of America in the years 1964-1967. The legal consequence of this is that zoning by itself becomes a less appropriate tool for disaster prevention.

In the absence of prohibiting structures in certain areas altogether, the usefulness of building codes is obvious. Building codes can be designed to ensure that structures can withstand the violent winds associated with tropical storms. A building code used in one of the hurricane areas of the United States of America has increased the cost of construction by 6%, but it is estimated that it has the effect of reducing by 60% the damage from winds of up to 240 km per hour. Mauritius is a good example of a developing country which has been dealing successfully with the problem of wind damage. Its building code has required the progressive conversion of dwellings from light structures with galvanized iron sheet roofing to heavy load-bearing structures with concrete roofs.

Whatever the value of zoning may be from region to region, subdivision regulations at least prove useful in providing for adequate escape routes. Approximately 90% of all lives claimed by tropical storms are in fact caused by the accompanying floods and storm surges. The single most effective means of saving lives endangered by tropical storms is prompt evacuation. The success of evacuation efforts depends on the adoption of appropriate preparedness measures.



DATES OF HURRICANE	AREAS MOST AFFECTED	DEATHS (U.S. only)	DAMAGE BY CATEGORY
1. August 20-September 5, 1964 CLEO	Southern Florida, Eastern Virginia		8
2. August 28-September 16, 1964 DORA	Northeastern Florida, Southern Georgia	5	8
3. September 28-October 5, 1964 HILDA	Louisiana	38	8
4. August 27-September 12, 1965 BETSY	Southern Florida, Louisiana	75	9
5. September 5-22, 1967 BEULAH	Southern Texas	15	8
6. August 14-22, 1969 CAMILLE	Mississippi, Louisiana, Alabama, Virginia, West Virginia	255 (68 missing 11-10-69)	9
7. July 30-August 5, 1970 CELIA	Texas, New Mexico	11	8

Figure 3

Devastating Hurricanes Affecting the United States of America,  
1964-1970

The track for Celia is not shown. Category 8 damage ranges from  
\$50 million to \$500 million; category 9 from \$500 million to  
\$5 billion.

(from Disaster Preparedness, Office of Emergency Preparedness, Executive Office  
of the President, Washington, D.C. 20504, Vol. I, p.50).

### III. LEGAL ASPECTS OF DISASTER PREPAREDNESS<sup>43/</sup>

#### 3.1 General

The inevitability of the occurrence of certain natural phenomena makes it imperative that countries should plan their emergency procedures in the event of a natural disaster. By so doing, lives may be saved and property damage reduced when a disaster occurs.

For events such as tropical storms and storm surges, it is difficult to tell precisely where the disaster will strike until only a few hours before. Even for events such as riverine floods and earthquakes, whose spatial location can be determined with reasonable accuracy, and therefore for which zoning and other preventive measures can be taken, the actual occurrence of the disaster may take governmental authorities by surprise.

Much of the confusion which often ensues after a disaster strikes is caused by the lack of detailed preparedness plans. National priorities aside, the comparative absence of such plans lies in part in the episodic nature of disasters, which is difficult to deal with in legal and in administrative terms. A consequence of this is that even in developing countries where preparedness plans presently exist, they may often be incomplete or out of date, and therefore unable to provide a practical guide for effective action. For example, after the floods of July and August 1975 in the Yemen Arab Republic, relief supplies were flown in but many remained at the airport for weeks because there was no system to receive them.

The degree of disaster preparedness varies greatly from country to country.<sup>44/</sup> Many developing countries have no

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<sup>43/</sup> Disaster preparedness refers to measures taken to organize and facilitate timely and effective rescue, relief and rehabilitation in cases of disaster. This study discusses only the legal aspects of preparedness.

<sup>44/</sup> The State of Disaster Preparedness, League of Red Cross Societies, Geneva, 1974.

preparedness plans at all, but in some, rudimentary plans exist. Although this stage of preparedness may be said at least to constitute a step forward, it is doubtful whether many of these plans, relying usually on the establishment of ad hoc committees, can actually cope with a major natural disaster. The illusion of preparedness is created, and consequently a number of developing countries have already become aware of this problem and have sought UNDRO's assistance in devising preparedness plans suitable to their particular circumstances.

Every preparedness plan, despite the variety of natural phenomena that cause disasters, must deal with the same central legal issues. They must clearly outline the duties placed upon governmental and non-governmental agencies and upon individuals; ensure that there are no jurisdictional loopholes, so that no disaster-prone area is without a preparedness plan; and deal with any necessary problems of inter-jurisdictional co-operation. The plan must also ensure that agencies which are assigned particular tasks have sufficient legal power to carry them out. Few preparedness plans deal with these matters comprehensively. A model in this regard is the Example State Disaster Act in the United States of America,<sup>45/</sup> and repeated reference will be made to it.

### 3.2 Disaster Preparedness Legislation

#### 3.2.1 Declaration of Disaster Emergencies

Legislation should make provision for the declaration of a state of disaster emergency. The legal consequences of such a declaration may be far-reaching: the ordinary procedures of governmental agencies may be suspended; emergency plans are activated; private property may be commandeered; the free movement of persons may be restricted; troops may be deployed to the disaster-stricken area; and supplies, equipment and facilities

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<sup>45/</sup> The text of the Example State Disaster Act can be found in Disaster Preparedness, Vol. II, Office of Disaster Preparedness, Washington, D.C., U.S. Government Printing Office, 1972.

may be made available. Since the legal consequences of a state of disaster emergency are so important, it is essential that the executive order or proclamation establishing the state of disaster emergency should be both widely publicized and also filed with the appropriate records-keeping offices. It is advisable, moreover, for the sake of problems that may arise after the disaster, such as the question of compensation for property taken.

It is also advisable that some brief statutory limitation be set on the duration of the state of disaster emergency. Because the powers to be exercised during a state of disaster emergency. Because the powers to be exercised during a state of disaster emergency are so substantial, it is appropriate to restrict their exercise to some period defined by law. <sup>46/</sup> For example, Section 5(d) of the Example State Disaster Act of the United States of America provides that:

...The state of disaster emergency shall continue until the Governor finds that the threat or danger has passed or the disaster has been dealt with to the extent that emergency conditions no longer exist and terminates the state of disaster emergency by executive order or proclamation, but no state of disaster emergency may continue for longer than (30) days unless renewed by the Governor. The Legislature, by concurrent resolution, may terminate a state of disaster emergency at any time.

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<sup>46/</sup> Some constitutions deal with the problem of a state of emergency and provide for a limitation to be set on its duration. See also, for example, the constitutions of India, Article 352 (two months); of Peru, Article 70 (30 days); of Trinidad and Tobago (one month). A number of other constitutions make provision for the declaration of a state of emergency, but make no provision for a time limit. See, for example, the constitutions of Venezuela, Articles 240-244; Panama, Articles 52-53; and Paraguay, Articles 79 and 181.

A longer period is provided by Article 9 of the Brazilian Decree No. 67.347 of October 1970:

The federal decree declaring a state of public disaster shall remain in force for a maximum of six months; it may be renewed.

Lastly, the powers to be exercised by the chief executive officer should be clearly outlined. The legislation will have to ensure that the chief executive officer has sufficient power to suspend normal governmental routines, activate the necessary emergency measures, and ensure law and order. Section 5(g) of the Example Disaster Act of the United States of America, which confers extraordinary power upon the State Governor, is a model and can usefully be quoted in full:

In addition to any other powers conferred upon the Governor by law, he may:

- (1) suspend the provisions of any regulatory statute prescribing the procedures for conduct of State business, or the orders, rules, or regulations of any State agency, if strict compliance with the provisions of any statute, order, rule, or regulation would in any way prevent, hinder, or delay necessary action in coping with the emergency;
- (2) utilize all available resources of the State Government as reasonably necessary to cope with the disaster emergency and of each political subdivision of the State;
- (3) transfer the direction, personnel, or functions of State departments and agencies or units thereof for the purpose of performing or facilitating emergency services;
- (4) subject to any applicable requirements for compensation under Section 13, commandeer or utilize any private property if he finds this necessary to cope with the disaster emergency;
- (5) direct and compel the evacuation of all or part of the population from any stricken or threatened area within the State if he deems this action necessary for the preservation of life or other disaster mitigation, response, or recovery;
- (6) prescribe routes, modes of transportation, and destinations in connection with evacuation;

(7) control ingress and egress to and from a disaster area, the movement of persons within the area, and the occupancy of premises therein;

(8) suspend or limit the sale, dispensing, or transportation of alcoholic beverages, firearms, explosives, and combustibles; and

(9) make provision for the availability and use of temporary emergency housing.

### 3.2.2 The Disaster Preparedness Unit

In countries where natural disasters often occur, it is desirable to establish a disaster preparedness unit. The size of the unit would depend on the incidence and the magnitude of disasters affecting the country.

One of the most important matters is the location of the disaster preparedness unit within the decision-making structure of the national bureaucracy. It is desirable that the unit be located within the office of the chief executive of the Government, whether at national or regional level. This office is best placed to co-ordinate the whole spectrum of activities necessary to disaster preparedness. The Fundamental Law for Disaster Preparedness of 1961 in Japan provides that the Central Disaster Relief Counter-measure Committee is established in the Prime Minister's Office. This approach is also taken in the preparedness plans of other countries. For example, in Greece Legislative Decrees 857/1971 and 356/1971 establish a National Disaster Committee under the chairmanship of the Prime Minister. In Honduras, Decree Law No. 33 of 1973 provides that the Permanent National Emergency Council is established in the Office of the President.

In most countries possessing preparedness plans, however, the disaster preparedness unit is located within the Ministry of the Interior. Less appropriate is the establishment in a number of countries of the unit in sectoral ministries such as the Ministry of Social Affairs. The location of the preparedness

planning unit in such a ministry undoubtedly encourages the curative, rather than the preventive, approach to disaster thinking.

The principal legal duty of the disaster preparedness unit is the preparation and maintenance of an up-to-date disaster plan. A disaster plan is the central aspect of preparedness, and therefore its preparation is the most important legal duty placed upon the preparedness unit. It is desirable that the plan should be given the force of law. But this issue is not as important, ultimately, as the difficulty of ensuring, as a matter of practice, that the plan is intimately known to those who must implement it and that it therefore can be implemented faithfully when a disaster occurs.

The legislation establishing the disaster planning unit should clearly outline its powers and duties. The most careful articulation of these matters is found in the Example State Disaster Act of 1972 in the United States of America. Section 6(f) of the Act provides that:

The Division of Disaster Emergency Services shall:

- (1) determine requirements of the State and its political subdivisions for food, clothing, and other necessities in event of an emergency;
- (2) procure and pre-position supplies, medicines, materials, and equipment;
- (3) promulgate standards and requirements for local and interjurisdictional disaster plans;
- (4) periodically review local and interjurisdictional disaster plans;
- (5) provide for mobile support units;
- (6) establish and operate or assist political subdivisions, their disaster agencies, and interjurisdictional disaster agencies to establish and operate training programmes and programmes of public information;

(7) make surveys of industries, resources, and facilities within the State, both public and private, as are necessary to carry out the purposes of this Act;

(8) plan and make arrangements for the availability and use of any private facilities, services, and property and, if necessary and if in fact used, provide for payment for use under terms and conditions agreed upon;

(9) establish a register of persons with types of training and skills important in emergency prevention, preparedness, response, and recovery;

(10) establish a register of mobile and construction equipment and temporary housing available for use in a disaster emergency;

(11) prepare, for issuance by the Governor, executive orders, proclamations, and regulations as necessary or appropriate in coping with disasters;

(12) co-operate with the Federal Government and any public or private agency or entity in achieving any purpose of this Act and in implementing programmes for disaster prevention, preparation, response, and recovery; and

(13) do other things necessary, incidental, or appropriate for the implementation of this Act.

### 3.2.3 Local Disaster Preparedness Units

It is rare for a disaster to strike an entire country. Rather, disasters strike particular communities, and it is therefore necessary for local governments to have disaster services of their own. Most national preparedness plans neglect this. It is rare for preparedness legislation to deal with local planning.

Local planning, however, is an essential part of a national preparedness strategy. The United States of America, the Republic of Korea and Japan are three of the few countries whose legislation places a legal requirement on local communities to adopt preparedness plans. The Example State Disaster Act in the United States of America chooses the county as the appropriate local government unit and provides, in Section 8, that each county must maintain a disaster preparedness agency. The Act goes on to

provide that the State Governor is required to determine which municipalities are also under a legal obligation to establish preparedness agencies.

The most systematic allocation of responsibility for local disaster planning is provided by the Fundamental Law for Disaster Preparedness of 1961 in Japan. Article 16 provides that disaster preparedness planning units are to be established in every city, town and village. This legal requirement is well beyond the present capabilities of most developing countries. Nonetheless, circumstances may determine that this is the very best strategy to pursue over the course of time. For example, the Philippines is an extremely disaster-prone country and, moreover, is spread over a number of islands. The national communications network is weak, as is the transportation system. As a consequence, the Government has adopted what under the circumstances is undoubtedly a wise policy — over the next several years it is endeavoring to create self-sufficient Disaster Co-ordinating Councils among the 42,000 Baranjays, the most disaster-prone Baranjays being dealt with on a priority basis. The national plan also provides for the establishment of a great number of Regional, Provincial and Municipal disaster preparedness councils. Overseeing the operation of the entire system is a National Disaster Co-ordinating Council, set up in 1976, which has the duty of establishing policy guidelines on disaster preparedness and of dealing with any disasters which are beyond the capabilities of a single region.

It cannot be claimed that any one level of government is the most appropriate level for decentralized planning, because circumstances among countries vary. However, regardless of the local unit of government ultimately chosen in each country as having legal responsibility for decentralized planning, it is essential that the legal requirements actually correspond to the capabilities of the local authorities themselves. Otherwise, paper agencies will be established which will merely create the illusion of preparedness.

One final point concerns the possible necessity of co-operation among a number of the local preparedness agencies. Established political boundaries are not always appropriate for the provision of disaster services, and it may be essential to make legal provision for interjurisdictional co-operation. But such provision is rarely made. An example of a statute which does in fact bear this consideration in mind is the Example State Disaster Act of the United States of America. Under the terms of Article 8(d), the Governor may require two or more political subdivisions to form a joint disaster preparedness unit if he finds that the establishment of such a joint body is made necessary by circumstances or conditions that make it difficult to provide appropriate disaster services otherwise.

#### 3.2.4 The role of Existing Services

It needs to be emphasized that there are a number of governmental services already in existence which are trained to meet various types of emergency, the three most obvious being the police, fire-fighting and military forces. The literature on disaster relief underscores the valuable contributions which these forces have made in preserving life and property and in maintaining order. A well-conceived disaster preparedness plan should aim to supplement these forces and not to replace them.

The preparedness plans of some countries give special recognition to the role of normal governmental services. Perhaps the best example is the "Plan ORSEC" (Organisation des secours) of France, whose purpose is to provide the départements (administrative units) in the country with a preparedness plan which is at once both a distribution of responsibilities and an inventory of existing resources in the département.<sup>47/</sup> The ORSEC Plan does not

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<sup>47/</sup> See Grassin, Jean, "The ORSEC Plan - France", in Emergency Planning Digest, January - February 1977, Emergency Planning Canada, Ottawa. This article summarizes the plan's legal basis, structure and operation.

establish any new emergency organization; it is primarily an organization chart. The Plan, moreover, lays down the action to be taken by the various authorities involved in operations, so that efforts can be co-ordinated under the sole authority of the Prefect.

Section 3 of the Example State Disaster Act in the United States of America also gives legal recognition to the role of existing forces:

Nothing in this Act shall be construed to:

3. affect the jurisdiction or responsibilities of police forces, fire-fighting forces, units of the armed forces of the United States, or of any personnel thereof, when on active duty; but state, local and interjurisdictional emergency plans shall place reliance upon the forces available for performance of functions related to disaster emergencies.

Australia provides another example. When, in 1974, the Natural Disasters Organization absorbed Australia's existing Civil Defence Organization,<sup>48/</sup> new emphasis was given to the threat of floods, cyclones, bushfires and other natural disasters. A principal feature of the re-organization was the expansion of the direct involvement of Australia's Defence Force and, in fact, the Natural Disasters Organization is now located administratively within the Ministry of Defence.

### 3.2.5 Financing

Even in the few countries with relatively elaborate disaster preparedness plans, the question of financing is commonly given little legislative forethought; yet, experience has shown that when a disaster occurs funds are needed urgently.

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<sup>48/</sup> It would be appropriate to point out here that in developed countries civil defence organizations have had to become increasingly oriented toward coping with civil emergencies caused by natural disasters. Australia's legislation formally recognizes this change of emphasis.

At the very minimum, it is desirable to create a disaster emergency funding committee to vote funds and to take action should the legislature not be in session. Consideration might also be given to the establishment of a disaster contingency fund. Many developing countries would find it difficult to create a reserve fund which may not in fact be used for a number of years. However, a number of states in the United States of America have created such funds and have found them of real usefulness.

### 3.2.6 Compensation

It is necessary to consider the legal position of a person who has rendered personal service or whose property has been used, and perhaps damaged or destroyed, as a result of governmental efforts to mitigate the harm caused by the disaster. In the Republic of Korea this has been formulated with some precision, <sup>49/</sup> but in almost no other country has this been done.

It can be assumed that in every legal system individuals must bear certain costs arising from the use of their services or property when a disaster occurs.<sup>50/</sup> However, where the cost borne by a particular individual is high, it is not inappropriate that he be compensated by the State. It is necessary, therefore, to establish statutorily what individuals owe to the State as a matter of legal obligation and what the State has the right to demand, but only upon payment of appropriate compensation.

### 3.3 The International Dimension

The presence of foreign relief workers and the sending of relief supplies from abroad give disaster relief a truly

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<sup>49/</sup> See Executive Ordinance No. 1072 of December, 1962, Articles 17-21.

<sup>50/</sup> See the unusual provision in the Constitution of the Yemen Arab Republic. Article 16 provides that "all Yemenis shall display solidarity in meeting costs arising out of public misfortune and disasters".

international dimension. Ideally, the disaster preparedness plans of developing countries should also have an international dimension. The various questions relating to this aspect of preparedness plans are to be treated in subsequent UNDRO studies; therefore, only a brief outline of some of the problems encountered need be given here.

A number of Ministries are usually concerned with the international aspects of disaster relief. To take a few examples, the Ministry of Finance is concerned with customs facilitation and tax exemption for relief supplies coming from abroad. The Ministry of Foreign Affairs is concerned with facilitating immigration procedures for foreign relief personnel. The Ministry of Labour is concerned with questions related to work permit exemptions for international relief workers. The Ministry of Supply is concerned with co-ordinating the receipt of relief supplies coming from abroad. If problems such as these can be handled in disaster preparedness plans, the reception of foreign relief workers and foreign relief supplies can be greatly facilitated when the need for them arises.

Special problems may arise, however, if units of foreign armed services are offered for, or engage in, relief operations. Where they are already stationed in a country stricken by a disaster, "status of forces" agreements which exist may provide for this eventuality. If no agreement of this kind has been negotiated in advance, arrangements may be made to provide armed forces' relief units to work under the auspices of the United Nations, or a bilateral agreement may be concluded between the donor and the recipient country.<sup>51/</sup>

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<sup>51/</sup> For a discussion of the legal status of disaster relief units made available through the United Nations and circumstances if the disaster relief unit has a legal status separate from that of the United Nations, see the Comprehensive Report of the Secretary-General, Assistance in Cases of Natural Disaster, United Nations Economic and Social Council, New York, 13 May 1971 (E/4994).