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Introduction of Manual

# U.N.D.R.O. DISASTER MITIGATION MANUAL

## EXECUTIVE SUMMARY

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### 1. INTRODUCTION; AIMS, OBJECTIVES AND POLICY FRAMEWORK OF THE DISASTER MITIGATION MANUAL

#### AIMS AND OBJECTIVES

This Executive Summary is an introduction to the **UNDRO Disaster Mitigation Manual**. This Summary emphasises policy guidelines, while the full Manual contains technical details, data and case studies

Both this Executive Summary and the full Manual are important. Both should be adopted by governments to assist their disaster mitigation activities. This will reduce the over-reliance on disaster relief, which is the inevitable consequence of inadequate resources, poor planning and lack of foresight.

The objectives of this Executive Summary, and the full Manual, are to disseminate the experience of disaster mitigation that has been gained from a number of projects over several years in many countries. In this way the risks from natural disasters will be reduced, and vulnerable communities will be protected.

The **aims** of the Disaster Mitigation Manual, as introduced here, are four-fold:

- \* To stimulate awareness amongst national and regional planners to include disaster mitigation and related preparedness aspects into their overall land use planning proposals;
- \* To help those senior planning officers to understand the nature and extent of the various risks faced by communities and settlements, including the effects of natural disasters on industry, commerce, and agriculture;
- \* To demonstrate ways and means to reduce those risks, within the limits of the national socio-economic and socio-cultural context, through proper decision-making and planning;
- \* To introduce various measures to implement disaster mitigation plans at the different levels, based on risk assessment results and proper decision-making.

The focus of the Manual particularly includes disaster mitigation planning for the poor, who are most affected by natural disasters but

who are often forced by their economic circumstances to settle on disaster and hazard prone land.

Two aspects of disaster vulnerability are addressed. First, there is the physical vulnerability of communities and nations, in the form of the impact of disasters on buildings and infrastructure. Secondly, there is the vulnerability of people who do not have the resources to protect themselves or to recover from disasters, owing to their low income or poor access to credit. The emphasis here, and in the full Manual, is on the first of these two, but they are interconnected and the second cannot be ignored.

The audience for this Executive Summary is the senior planning officers of government who are responsible for disaster mitigation and other related government policy areas. The audience for the full Disaster Mitigation Manual is the technical and planning personnel within the same and other organisations, who are responsible for preparing and implementing disaster mitigation work.

### THE POLICY FRAMEWORK

Effective disaster mitigation does not just happen. It is created.

Moreover, it is created by hard work within government and non-government organisations, by striving to reduce the risks from disasters and the vulnerability of their communities and settlements.

The policy framework with which this occurs has three aspects:

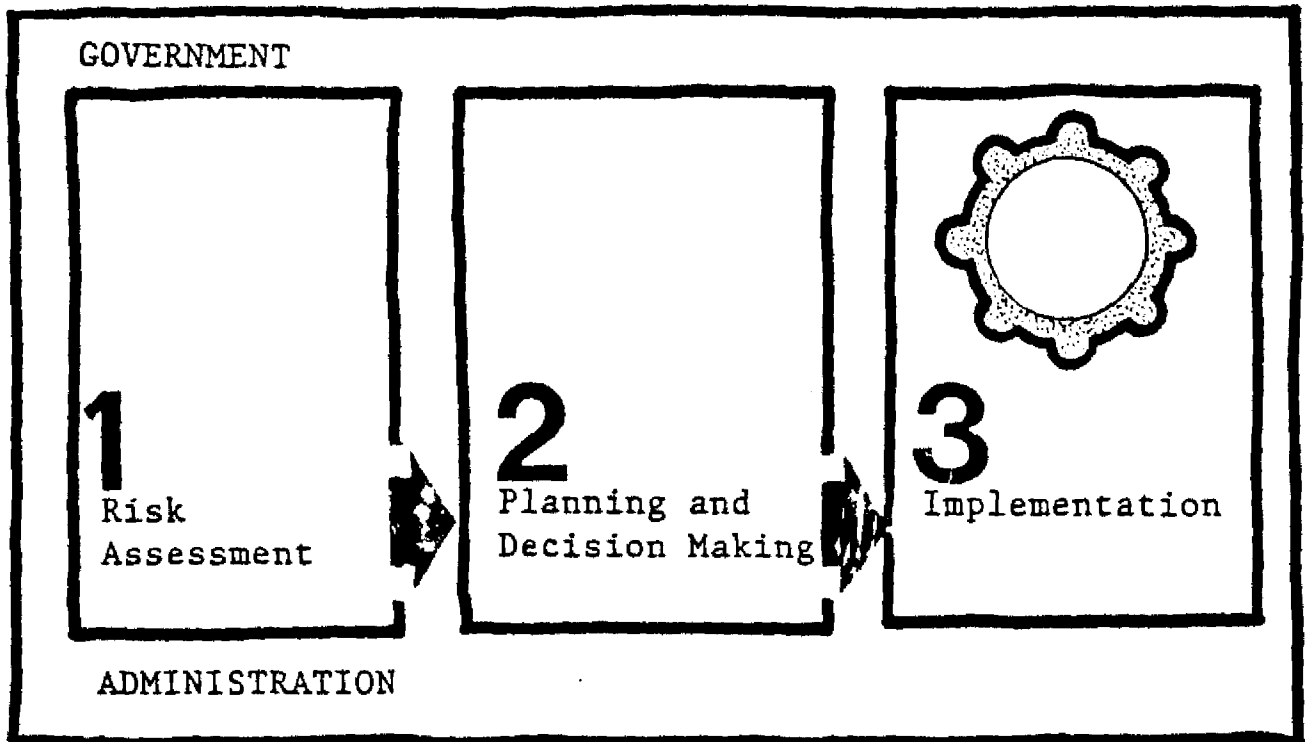
- \* **risk assessment:** defining the disaster and hazard problems to be faced;
- \* **planning and decision-making:** organising a response to these risks;
- \* **implementation:** translating plans and decisions into action 'on the ground'.

But these three important activities cannot operate in a vacuum. The context, or fourth aspect of the policy framework, is the **government administration**, which provides opportunities, and constraints, for disaster mitigation planning.

This policy framework is represented by the diagram in Figure 1.1. Many policy guidelines arise from this framework, and these are summarised in Table 1.1. In turn, these policy guidelines are elaborated in later sections of this Executive Summary and in the full Manual. Both the policy framework and the policy guidelines stress that the three phases of effective disaster mitigation planning lie within the sphere of government administration, which affects the efficiency and nature of all other activities.

Figure 1.1

Policy framework diagram  
summarising the context and the  
phases of effective disaster mitigation



Policy Guidelines

Table 1.1

Policy Guidelines for disaster mitigation

GOVERNMENT ADMINISTRATION FOR RISK REDUCTION

- \* Disaster occurrence is a dynamic and uncertain process.

*Therefore, the government institutional framework for disaster management should exhibit potential for change and growth as knowledge of disaster management grows, competence improves, and provincial and local communities develop self-reliance;*

- \* Almost everyone, every agency, every voluntary group, industry, government department has some measure they can contribute to risk reduction practice.

*Therefore, through its institutional arrangements, the essential task of government is to recognise this potential, respond to initiatives, allocate responsibilities, and coordinate effort where this is necessary. It is also important for governments to provide a lead, and give examples of disaster mitigation practice in all that they do;*

- \* Disaster mitigation is wide ranging in scope, and complex in its relationships with government ministries and agencies.

*Therefore, for effective disaster preparedness planning and risk reduction, a clear allocation of roles and responsibilities is essential. Such task definition is needed between central, provincial and local government, and between sector agencies, to facilitate the necessary cooperation, coordination and efficient use of scarce resources.*

RISK ASSESSMENT

- \* National governments need to develop their risk assessment capability

*Therefore, it is necessary to set up research and development organisations, where these are not already established, to undertake all the necessary stages in risk assessment.*

- \* Data is necessary on hazard and disaster occurrence.

*Therefore, collect information in a systematic manner on the frequency, magnitude and location of the relevant hazards.*



Table 1.1 (Policy Guidelines) continued

- \* Data is also necessary on vulnerability.

*Therefore, collect information in a systematic manner on the vulnerability of communities, buildings and economic activities to the effects of natural hazards and disasters.*

- \* Prediction of future hazards and disasters is a key to effective mitigation planning.

*Therefore, develop the predictive abilities of the research and development organisations responsible for risk assessment.*

- \* Risk assessment should not be undertaken in isolation from planning and decision-making.

*Therefore, establish, maintain and develop links between the geo-scientists working in risk assessment organisations and the land use planning and other organisations, so that the results of risk assessment programmes can be useful and used.*

#### PLANNING AND DECISION-MAKING

- \* Efficient allocation of resources. Expenditure on disaster mitigation means that other uses of the scarce resources cannot be made: the opportunity for other expenditure must be forgone. The economic health of the country in question is affected by decisions concerning disaster mitigation.

*Therefore, the efficiency of expenditure on disaster mitigation must be maximised, and the resources allocated to disaster mitigation should be valued at their 'opportunity cost' (the value to society of the next best alternative use of those resources).*

- \* Comprehensive planning and decision-making. Decision-making for disaster mitigation can easily be dominated by short-term considerations, especially immediately after a disaster or the threat of a disaster which will create a 'window of opportunity'. However, policies, plans and projects developed in this way without due care are liable to be ineffective or inefficient, and to have unintended consequences.

*Therefore, decision-making for disaster mitigation should be as comprehensive as possible, and review a range of alternative strategies against clear criteria (such as economic efficiency, or social equity) so that objectives are met and the performance is evaluated to ensure the spread and continuation of best practices.*

Table 1.1 (Policy Guidelines) continued

- \* Planning and decision making is a continuous process. It is not something that is only undertaken occasionally, when it appears necessary, or by particular agencies which have 'planning' in their titles. Disaster mitigation planning should occur in virtually all agencies, all of the time, at a level proportionate to the risks being faced.

*Therefore, adoption of more systematic approaches can be initiated at any stage and not just with the definition of a new problem or the occurrence of a disaster: it is not wise to wait until everything is in place before beginning the disaster mitigation planning process.*

#### IMPLEMENTATION

- \* The major opportunity to develop and/or implement measures will occur in the wake of a major disaster. This is due to the temporary high profile of disaster preventive action, which should be taken advantage of to secure resources and decisions.

*Therefore, plans should be developed and where there are political or other obstacles to their implementation they should be maintained in readiness for implementation at the appropriate time, such as when a disaster provides the necessary opportunity for swift action.*

- \* Experience indicates that the poor are most at risk from disasters.

*Therefore, priority is necessary for appropriate measures to protect the the poor and their property. Such measures will include economic inputs and community level programmes.*

- \* A balanced implementation strategy includes 'fail safe' measures which can be used if other measures are not acceptable or are not efficient.

*Therefore, it is advisable not to confine mitigation to a single measure, such as laws. Implementing hazard mitigation planning is strongest when there is an interrelated strategy of many parallel approaches.*

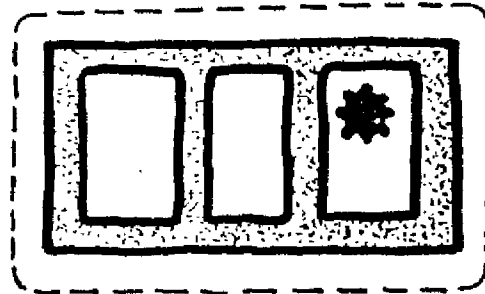


## 2. GOVERNMENT ADMINISTRATION FOR RISK REDUCTION

### POLICY GUIDELINES FOR INSTITUTIONAL DESIGN

There are three main policy guidelines for the design of institutions and institutional arrangements for hazard and disaster mitigation. Care needs to be taken when adapting existing arrangements to meet these guidelines, so as to fit

disaster mitigation functions with other areas of government policy.



- \* Disaster occurrence is a dynamic and uncertain process.

*Therefore, the government institutional framework for disaster management should exhibit potential for change and growth as knowledge of disaster management grows, competence improves, and provincial and local communities develop self-reliance;*

- \* Almost everyone, every agency, every voluntary group, industry, government department has some measure they can contribute to risk reduction practice.

*Therefore, through its institutional arrangements, the essential task of government is to recognise this potential, respond to initiatives, allocate responsibilities, and coordinate effort where this is necessary. It is also important for governments to provide a lead, and give examples of disaster mitigation practice in all that they do;*

- \* Disaster mitigation is wide ranging in scope, and complex in its relationships with government ministries and agencies.

*Therefore, for effective disaster preparedness planning and risk reduction, a clear allocation of roles and responsibilities is essential. Such task definition is needed between central, provincial and local government, and between sector agencies, to facilitate the necessary cooperation, coordination and efficient use of scarce resources.*

However, each country operates in a different economic and political environment, which affects all that its government does. The international political situation may also be crucial, as will be the state of the national economy of the disaster-prone country.

Plans for disaster mitigation therefore have to be realistic, and be designed to operate within the current political and economic situation, rather than against it.

## INITIATION

There is no one perfect way to begin. There have been many points of departure. Risk reduction measures against natural hazards may have been routinely practised by public works engineers and river basin authorities. Local communities may practise measures to lessen risk of loss of homes. However, none of this may be happening.

But disaster strikes. A government emergency response is made. It is recognised as being less than effective. There is a call to ensure a more efficient response, for efforts to be made to reduce the risks. Government thus decides to intervene in national life to achieve risk reduction and to ensure disaster preparedness.

Interventions by government in disaster management activities can be thought of as constituting a disaster 'cycle' (as shown in Figure 2.1).

This cycle is followed by another of rehabilitation, reconstruction and of improved preparedness and relief organisation. In this second cycle opportunities arise to apply carefully thought-out risk reducing or mitigating measures.

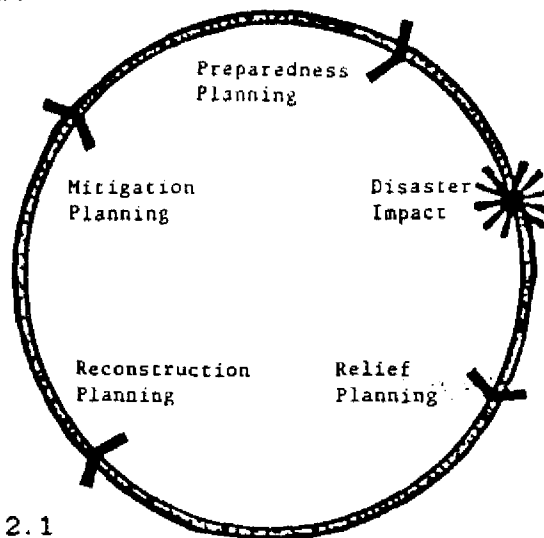


Figure 2.1

Preparedness and risk reduction - or mitigation - can be thought of as being two sides of the same coin. To the extent that mitigation is not practised, so preparedness needs to increase in scale. Humanitarian issues dominate the relief phase and penetrate that of preparedness. Economic issues tend to dominate mitigation procedures and practice. The role of government is always central, however, and its administration must reflect this role.

## PATTERNS OF ADMINISTRATION

Once decided on a national response to natural hazards and disasters a Government will generally establish a small Task Force (or 'limited time period committee') to define an organisation and propose its terms of reference. Establishing this task force requires political will and resources.

The terms of reference for the task force or committee's own work may have been given only in outline. An early assignment will be to develop its own terms of reference in an expanded form in order to brief itself and its advisers (see the example in Table 2.1).

The task force and its advisers will be most effective if they are asked to prepare their recommendations to fit within the existing pattern of

Table 2.1

Suggested Terms of Reference  
for a National Hazard Mitigation Task Force

- \* reviewing existing data relating to national hazards and disasters;
- \* recommending an organisational framework that can ensure effective use of existing and supplemented resources so as to respond to the risks;
- \* assessing the role and functions of any separate government organisation set up to carry through risk reduction, preparedness and relief actions;
- \* recognising the recurrent, maintenance and new project responsibilities of government departments, so as to assess the need for additional resources to review how mitigation of the risks might be approached strategically;
- \* drafting the content for a Law/Ordinance (should one not exist);
- \* establishing the role and duties of individuals and organisations in a counter disaster framework;
- \* devising a time schedule, in draft, of the implementation periods for acting on the recommendations made;
- \* advising on the role for non-government organisations
- \* advising on any further assistance that may be required to act on the recommendations if they are accepted by government.

(Note: this Executive Summary and the associated  
Manual does not address itself to the  
planning of disaster relief measures)

government administration. Four basic forms of national organisation offer different opportunities and constraints (see Figure 2.2):

Figure 2.2. Models of government administration  
for risk reduction

- \* In Model 1, above, the organisation/directorate is embodied in the Chief Minister's Office and includes high level representation from Ministries and their executive departments;

This model is successful if the Chief Minister gives full support to disaster mitigation. However, if this commitment is not sustained, then this model will not operate satisfactorily.

- \* In Model 2 the organisation/directorate is itself made a Ministry (possibly incorporating Reconstruction and Rehabilitation as parallel ministerial tasks);

This model gives clear identity to disaster mitigation, but takes away important disaster mitigation responsibilities from other key Ministries and agencies.

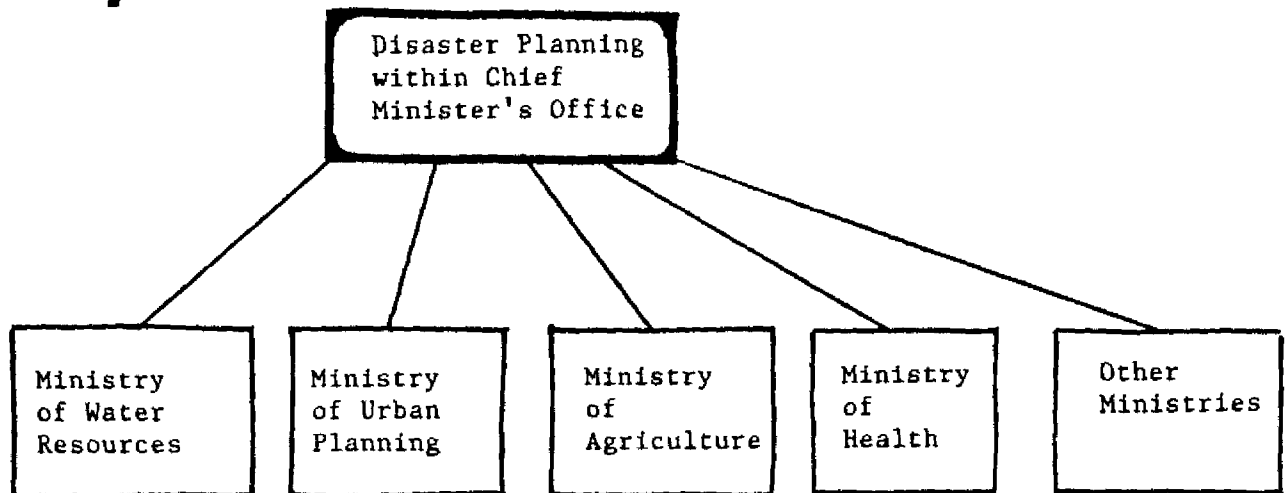
- \* In Model 3 each Ministry or its executive department has a Disaster Preparedness and Mitigation Unit which has a representative on a co-

Key :

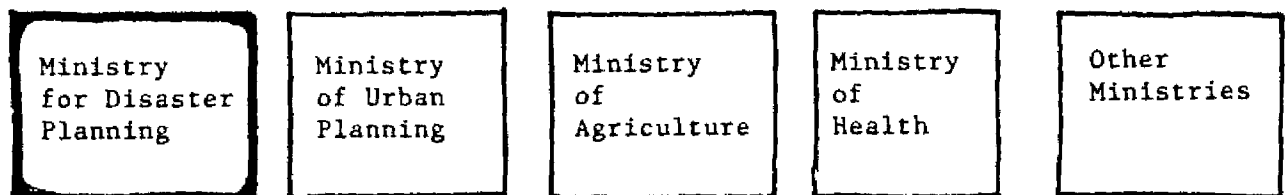
Disaster  
Planning

Government  
Ministries

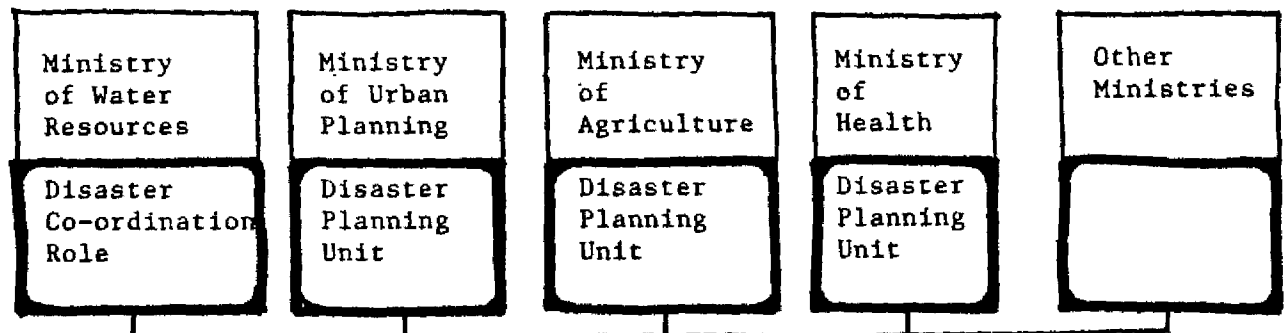
Model 1



Model 2



Model 3



Model 4

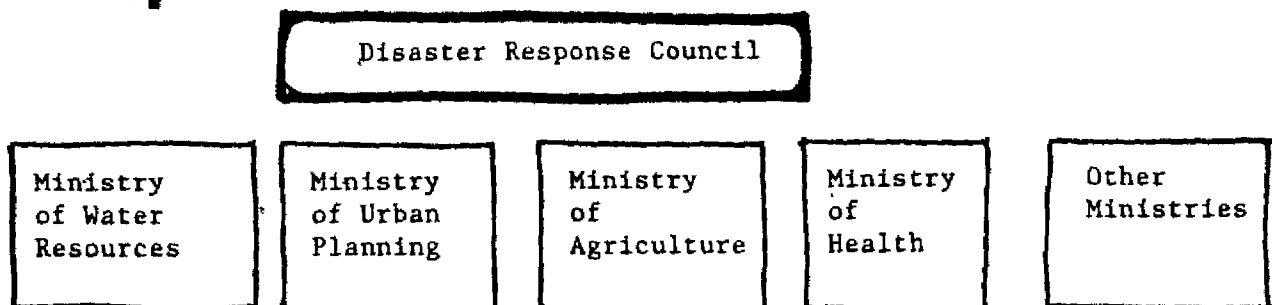


Figure 2.2. Models of government administration for risk reduction



ordinating committee which is managed by one of the Ministries (e.g. Ministry of Social Welfare, or Housing and Local Government);

This can perpetuate unsatisfactory competition between Ministries and result in 'buck passing'. However it does ensure that all responsible agencies are involved.

- \* In Model 4 disaster mitigation is the responsibility of a semi-autonomous body. A Disaster Response Council or a Counter-Disaster Assistance Organisation is established, reporting infrequently to the Chief Minister (although perhaps only through the Annual Report process);

This model can result in mere tokenism, although a separate 'think tank' for disaster mitigation can be useful.

Two variants of these include:

- \* Any of the above but with Emergency Services, Search and Rescue and Relief Organisation operating almost completely independently of the National Disaster Management Organisation - which is responsible for overseeing the disaster cycle as a whole;
- \* Any of the above but with representation on government committees of private industry, commerce and voluntary agencies.

Government precedent in administration will influence the choice between these six possible systems. Some general criteria apply, however, if effectiveness is to result:

1. The expression of political will needs embodiment at the highest possible level. This is essential, since both preparedness and risk reduction practises are 'horizontal' activities and cut across the 'vertical' responsibilities of sector ministries.
2. The National Disaster Organisation should have a permanent staff. This need not be large.
3. Using its legal standing the Organisation has leading and co-ordinating functions throughout all government departments on the subjects defined in its operating terms of reference.
4. On the whole the Organisation should rely upon the existing government structure. For this to be effective, the Organisation has to obtain and maintain the commitment and support of departments and authorities having access to resources and expertise.
5. Any national level Organisation should have an internal administration that reflects both its terms of reference and the political will and need for continuity of leadership and direction.

This leadership, guidance and direction can only be effective if the representation of interested parties is complete. In addition to senior representation from Ministries and Departments, authorities having a specific geographic responsibility have significant interest and resource contributions to offer (e.g. urban development bodies, irrigation projects and river authorities). Universities, Engineering Institutes, voluntary agencies all can offer contributions in planning and implementation.

#### **OBJECTIVES OF THE NATIONAL DISASTER ASSISTANCE ORGANISATION**

When the Task Force has reported, the Government may then respond and set up a more permanent body to develop the recommendations or express the will embodied in a Disaster Management Act.

The work of this more permanent National Disaster Organisation is directed towards co-operating with other organisations and communities to achieve greater local self-reliance in responding to the risks from natural hazards. The National Disaster Organisation thereafter organises its programme of activities to reflect these aims and means, as suggested in Table 2.2.

As the co-ordinator of national counter-disaster operations the Organisation allocates by delegation the necessary responsibilities to other agencies and departments. In this respect hazard and risk reduction studies are primarily a task of regional and international liaison and interpretation. However the Organisation needs to identify measures designed to prevent the effects of natural phenomena resulting in major disasters.

Detailed execution of the measures are then the responsibilities of designated departments, as are preparedness and relief measures designed to achieve rapid effective response in face of natural hazard. This includes short term rehabilitation, which involves immediately executable programmes often to be carried out through voluntary agencies within one month of the declaration of a provincial or national disaster. These measures should be so designed as to not pre-empt more widely based medium and long term mitigation rehabilitation and construction.

#### **RISK REDUCTION IN THE NATIONAL DISASTER MANAGEMENT PLAN**

It is impracticable and undesirable to attempt to concentrate all arrangements for disaster management in the National Disaster Organisation, because many mitigation measures are local in origin and routine in nature. The concept of disaster management is, therefore, based upon the following specific policy guidelines:

- \* The encouragement and support of local self-reliance in the face of disasters, and of local accountability for performance under emergency conditions.

Table 2.2

Programming responsibilities  
of a National Disaster Organisation

- \* monitoring and evaluating the execution of functions designated under the Disaster Management Act 198xx
- \* establishing liaison with agencies and persons pursuing hazard and risk reduction studies and the commissioning such studies;
- \* preparing a National Disaster Management Plan;
- \* ensuring that disaster prevention and mitigation measures are reviewed by appropriate agencies, when development projects are at a feasibility stage;
- \* ensuring that disaster mitigation procedures are followed within responsible agencies and by the private sector;
- \* the promotion of community self-reliance and accountability in disasters;
- \* ensuring national preparedness;
- \* the identification of, and the setting of, performance levels in relief work;
- \* the possible stock-piling of emergency supplies;
- \* establishing and maintaining effective liaison with Provincial and Metropolitan disaster organisations;
- \* undertaking public awareness campaigns and assisting other organisations to do so;
- \* organising and encouraging training programmes for teams and for key persons;
- \* evaluating applications for disaster assistance preparedness and mitigation funding (through a sub-committee);
- \* superintending the activities of the National Emergency and Co-ordination Centre (if this is a separate body);
- \* other programmes as may arise or be delegated to the Organisation.

(Note: this Executive Summary and the associated Manual does not address itself to the planning of disaster relief measures)

- \* The allocation of responsibilities for the detailed planning and execution of relief operations in the provinces and metropolitan areas to their respective governments.
- \* The defining of the National Disaster Organisation function as ensuring that Provincial, Metropolitan and local community plans come into being and to provide co-ordinating functions linked with regional and international level preparedness.
- \* In so far as it is possible, emergency planning should conform to the normal administrative chains of command, where these are responsive to the communities' needs.
- \* To ensure that mitigation and preparedness responsibilities are spread widely; to use available resources effectively through delegation to existing agencies as an extension of their specialist skills.
- \* The National Disaster Management Plan allocates responsibilities so that agencies and departments can contribute to the collective purpose, undertake mitigation strategies in areas of the specific concern, and prepare emergency and contingency plans that can be integrated with others to support local self reliant effort.

In this way mitigation procedures do not constitute a separate programme of government. Rather the attitudes conveyed lead to changed designs and practices in a wide range of existing programmes. The mitigation strategy will form just one of the plans of the national disaster plan portfolio. The objectives will include:

- encouragement of self-reliance
- ensuring that mitigation supports developmental efforts
- ensuring that guidelines to good practise are widely known.

The following also have to be considered:

- \* information for plan preparation
- \* characteristic knowledge bases
- \* formulation of a national risk reduction strategy
- \* mitigating measures
- \* the risk reduction strategic plan
- \* risk reduction in the community
- \* mitigation and the economy
- \* risk reduction and the development process

## THE WORK OF THE DISASTER ORGANISATION

The effectiveness of a Disaster Organisation is highly dependent upon the administrative and technical leadership of its chief officers, together with their ability to maintain a representative committee structure and a coherent decision making framework.

In this respect, it is human for committees to sink rapidly to the lowest level of representation offered by any one of its constituent members. Status is involved. *One does not attend a committee which colleagues of the same level of office in parallel organisations ignore.* Then the Disaster Management Organisation becomes side tracked. Its work perhaps supported by enthusiasts but 'out of sight' of the government administration as a whole.

*This must not happen to your committee!* The presence and pressure for action by the Chief Minister or Cabinet Minister responsible is a help. It is easier to maintain high level representation if those who have to attend do not have to do so too often. And when they do attend they find the meetings very well structured: pointing to big decisions and with well summarised background papers indicating what decisions would be consistent with the objectives of the task force - to improve preparedness and improve risk reduction - and satisfy wider government economic and developmental objectives.

The use of a separate executive group and a working group to handle or study particular elements of the disaster organisation's work is a key to keeping key meetings clear for major items of decisions. With such a framework of committee and workshop there is a greater possibility of considering issues thoroughly and in an environment suited to coming to decisions. Such choices are not finally a matter for a Disaster Organisation but their mitigation report will form a key element in the justification to government of project design, cost and location.

#### INSTITUTIONAL AND POLICY APPRAISAL

Evaluating the disaster mitigation effectiveness of government and its administration requires a two-fold approach:

- \* appraising existing government policies in all relevant areas
- \* appraising existing government practice
- \* appraising existing government institutions relevant to disaster mitigation

**Government policies.** To alleviate disaster-caused problems in a meaningful way governments may have to stop or shift certain other policies which at first sight do not appear to be relevant to disaster mitigation.

Complete policy shifts may be necessary, for example to stop subsidising agricultural developments in disaster-prone areas which encourage people to move there. It may also be necessary to discontinue public building programmes in these areas, since any government development will encourage private development and thus increase vulnerability.

Therefore all related government policy areas need to be reviewed by a National Disaster Organisation, to prevent the build up of vulnerability caused by the unintended effects of government land use, agricultural or indeed any other policies. Implementing any such policy shift may involve, or necessitate, institutional change. This is because the

institutional status-quo may block policy change and thus inhibit comprehensive and meaningful disaster mitigation.

Any planned approach to disaster mitigation by a National Disaster Organisation must also examine all government policies and practices which might be exacerbating vulnerability in the relevant area. Those sectors which need attention in this respect include at least the following:

- \* agricultural policy
- \* building regulations
- \* land use planning
- \* transportation policy
- \* regional development policies
- \* social security support services
- \* forestry
- \* water resources

The questions to be addressed in this policy analysis include the following:

1. Is any aspect of these government policies directly or indirectly contributing to the occupation of disaster-prone areas?
2. Are any government policies or practices directly or indirectly exacerbating the vulnerability of communities occupying disaster-prone areas?
3. What policy shifts are needed to reduce the vulnerability-increasing effects of existing government policies?

These questions should be addressed at a senior government level, with adequate inter-departmental consultations.

**Government structures.** The institutional structures of those parts of government with responsibilities for disaster mitigation may not be adequately tailored to the types and levels of risk experienced by the country concerned.

Government institutional structures therefore need to be evaluated to determine their efficiency and effectiveness in responding appropriately to reduce risks and vulnerability. Consideration should be given to the appropriateness of the following:

- \* institutional policy objectives
- \* administrative jurisdiction
- \* financial resources
- \* enforcement powers
- \* administrative flexibility and discretion
- \* staff quantity and quality
- \* decision making effectiveness

What is important in this analysis is that disaster mitigation in many situations may be more to do with correcting certain existing policy and

institutional imperfections, rather than the investment of new resources in the hope of 'buying' communities out of their vulnerable situations.