

## CHAPTER III

### MITIGATION ACTIVITIES

#### (a) Status of Mitigation strategies and Measures

##### (i) Land use Planning

The National Physical Development Plan (1989) sets the policy framework for broad land use allocation in Trinidad and Tobago and gives high priority to the protection of critical areas for soil and water conservation. It advocates land use according to its capability and need for conservation, development, recreation and agricultural production.

Current information on location and type of land use must form the basis for rational land management programme to mitigate disasters. However base line data on the status of land use in Trinidad and Tobago needs to be updated. The last land use survey was carried out during the 1970's. This was followed by a land capability survey in 1974. Since then significant changes in land use have taken place over the last 22 years, yet data from these two surveys are still the basis for most planning exercises.

A new system of land use for hillside agriculture was introduced by a UNDP/FAO project (TRI/79/009) on the basis of slope, soil type and erosion potential, however it is not being practiced to any significant extent.

A landslide susceptibility map has been recently developed for Tobago. It defines the relative degree of the hazard using four classes of vulnerability (extreme, high, moderate and low) and outlines the landslide prone areas.

There is an urgent need to improve the present land use practices. This could be achieved by the following recommendations:-

- i. Soil conservation, fruit tree crops and rural development projects are needed in agricultural areas to reduce landslides and flooding.
- ii. Information available on earthquake hazards, such as expected ground accelerations, liquification susceptibility etc. should be used to amend the land use policies to reflect seismic and geological hazards.
- iii. Available information on landslide and flood prone areas should be used to modify the land use policies.

In general every effort should be made to strongly discourage new developments in hazardous areas.

(ii) Water and Forest Management

The water resources of Trinidad and Tobago are managed by the Water and Sewerage Authority (WASA). The role of this authority involves:-

- Responsibility for water planning
- Conservation and protection of water resources
- Acquisition of water rights
- Miscellaneous and general

The average rainfall for Trinidad and Tobago is 1829 mm (72 inches), an estimated 92% falls during the wet season (June - December). Approximately two-thirds of this rainfall is trapped through surface water schemes (dams) or sub-surface schemes (wells), however significant quantities are lost by evapotranspiration.

All known large volumes of underground water supplies have been developed, therefore future water requirements must be met from surface water schemes. Five of the major aquifers are associated with the coastal water table which requires that special care be taken to ensure that the salt water/fresh water interface is not disturbed by over pumping.

The aim of the prevailing watershed management policy is to reduce soil loss and increase water quantity and quality. The policy directs the management of watershed resources through the following strategies:-

- Identify the major watersheds and sub-watersheds
- Ensure that the upper watersheds and other streams source areas are kept and appropriate vegetation cover.
- Determine watersheds which require rehabilitation and rehabilitate these on a priority basis.
- Protect and manage all critical watersheds.
- Co-operate with other agencies to ensure proper watershed management.

As a result of these strategies, fourteen (14) watersheds have been designated and over 2,500 ha in critical watersheds were planted by the Forestry Division.

Shortage of funds have reduced the annual planting programme to 50 ha in recent years. Therefore a drastic increase in the annual planting programme is required if the objectives of the watershed management policy are to be achieved.

Legislation concerning the protection of watersheds and their resources is included in the Forest Act, Water and Sewerage Act, Town and Country Planning Act and the Agricultural Fires Act. However, they have not been fully effective due to the lack of adequate enforcement and the need for revision.

#### (iv) Building Codes and Practices

The CARICOM Secretariat (CARICOM Secretariat, 1985) has published the Caribbean Uniform Building Code (CUBIC) which includes details on code of practice for the design of earthquake resistant structures and the retrofitting of older structures.

Shepherd and Aspinall (1983) also estimated that peak ground accelerations with 90% probability of not being exceeded in fifty (50) years could range from accelerations of 0.36g (352 cm/s/s) for Trinidad to 0.23g (352 cm/s/s) for Tobago. Most facilities should be sufficiently earthquake resistant if designed to withstand these ground accelerations, while adhering to the CUBIC guidelines. Site specific studies would however be required for critical facilities and major constructions.

The "Cyclonic Resistant Housing in the Caribbean Project" being conducted by the Department of Civil Engineering University of the West Indies is providing valuable information on construction techniques, materials and shapes of roofs to enable buildings, new and old, to better withstand future cyclonic events.

The National Emergency Management Agency (NEMA) has also published three documents for use by non-engineering builders and laymen in constructing houses which have improved resistance to cyclones.

The standards recommended in the Caribbean Uniform Building Code seem to be followed in major building constructions. However, cultural preferences in design, traditional choices and the

utilization of indigenous materials often results in inferior earthquake resistant standards, especially in the construction of private houses.

(iv) Preparedness and Planning

The National emergency Management Agency (NEMA) of Trinidad and Tobago is entrusted with the responsibility for the management of Natural Disasters in Trinidad and Tobago. Equipped with a staff structure of a Director and four Co-ordinators with designated responsibilities for Operations, Planning, Mitigation and Relief.

The mission of the National Emergency Management Agency (NEMA) is "to co-ordinate a network of agencies and individuals within the country to direct their efforts to the maximum preservation of life and the protection of property in times of disaster "

The Agency manages natural disasters at the National level through a Task Force which consist of over twenty (20) representatives of public and private organizations.

Natural disasters are also managed under fifteen (15) smaller geographical units of Local Governments - Cities, Boroughs, Regions and Tobago. Local Emergency Management Committees co-ordinated by NEMA have been established at these levels for greater efficiency and effectiveness in disaster management.

The National I.D.N.D.R. Committee plays a very important role in disaster preparedness and planning. Its composition and functions are given in Appendix 'A'.

The major planning activities in the management of Natural disasters in Trinidad and Tobago includes the following:-

- Annual revision of the National Emergency Plan
- Annual revision of CITY/BOROUGH/REGIONAL and the Tobago House of Assembly, Emergency Management Plans. Some Regions and Borough are now in the process of preparing their first plans due to changes in the political boundaries.
- Preparation and revision of Institutional and Industrial Emergency Plans.
- Mass Casualty Plan.

- Regular revision of Hazard Maps of Trinidad and Tobago. These maps provide information on areas that are prone to flooding, landslides, earthquakes and wildfire.
- Regular revision of Critical Facilities Maps of Trinidad and Tobago. These maps provide information on the networks for water, electricity, telephone, roads etc.
- Regular revision of Disaster Response Maps of Trinidad and Tobago, and of the fourteen (14) Local Government bodies. These maps provide information on the location of shelters, health facilities, Police stations, Fire Stations, industries, and Government buildings.
- Inventory of Resources for use in times of disasters (equipment, materials, critical facilities, personnel).

Although the planning process for natural disaster management has been initiated at most levels of the society, much more effort is required at the levels of Local Government, (Cities/Boroughs-/Regions), Local communities (village councils), Institutions (schools, offices) and Industries

#### (vi) Awareness and Training

Trinidad and Tobago faces a multitude of risks from natural hazards. However, the level of awareness is uneven at all levels of the society, probably due to

- low level of information dissemination.
- the "its unlikely to happen here" attitude in spite of near misses such as Tropical Storm Bret in August of 1993 and an earthquake of magnitude 5.7 on the Richter Scale which occurred just 10 km NE of Trinidad.

The general public and government agencies must be made aware of the dangers of natural hazards, the susceptible areas, potential damage and the available measures to respond to the hazard. In the absence of this information, affected individuals and organizations cannot make informed decisions and take the appropriate actions. A comprehensive public awareness and education programme directed at individuals, professions, public and private organizations is of

paramount importance. Trinidad and Tobago is yet to develop such a programme; however, the following activities are being pursued:-

- Public education: - information on hazards, mitigation and response through technical presentation in print, classrooms, seminars, lectures etc.
- Public information - dissemination of information on hazards through brochures and the public media.

The disaster managers of the National Emergency Management Agency (NEMA) have received training in the areas of planning, relief and management. Additional training is required in recovery and response operations.

Training is urgently needed for key personnel in other public and private agencies who have major roles and responsibilities, for disaster mitigation, response, relief and recovery. This is of paramount importance to facilitate clarity of roles and responsibilities, and a smoother "running of the wheels of disaster management".

## (b) Issues

### (i) Research Challenges

There is need to establish a systematic research programme on natural hazard risk assessment for Trinidad and Tobago which should include the following:-

Tropical Cyclones: Critical facilities such as hospitals and shelters must be examined to determine their vulnerability to cyclonic events and retrofitted where necessary.

Seismic Hazard: Detailed inventories of buildings, structure and populations at risk should be compiled to undertake comprehensive vulnerability analyses for seismic hazard.

Flood Hazard: The hydrological data base of the country should be expanded to facilitate the preparation of flood plain maps for the two islands.

Landslide Hazard: A landslide zonation map has been prepared for Tobago, however, although a landslide inventory has been completed for Trinidad, landslide susceptibility analysis is required to incorporate the information in the planning process.

Tsunami Hazard: Studies such as offshore bathymetry, sea level rise, tectonics, sedimentary budget should be carried out to assess the susceptibility of the islands to tsunami hazard and coastal erosion.

(ii) Responsibilities /Enforcement

The major legislation which governs disasters in Trinidad and Tobago is the Disaster Measures Act, Chapter 16:50 which caters for the implementation of measures to alleviate the effects of disasters. Disaster mitigation and preparedness measures are however not covered in the present legislation. Regulations have been drafted under the act to allocate authority and responsibilities to Government Agencies, and Local Government for the prevention, preparation, response and recovery phases of natural and man-made disasters. The regulations are specifically designed to:-

- Reduce the vulnerability of people and property
- Prepare for prompt and efficient rescue, care and treatment to threatened and affected persons
- Provide for the rehabilitation of persons and restoration of property; and
- Provide for co-ordination and co-operation of emergency/disaster activities.

These Regulations are however, still to be enacted.

## CHAPTER IV

### WARNING

#### (a) Systems for Observing, Forecasting and Warning

##### (i) Meteorological

The Trinidad and Tobago Meteorological Service is responsible for observing, forecasting and warning the population of adverse weather conditions. Determination of adverse weather threats is done through the analysis of pertinent data received from all available sources which include actual observations at the country's two Airports, teleprinter reception, UHF/VHF Radio, Weather Satellite, and Radar from Crown Point, Tobago.

The data is analyzed to determine the actual state of the atmosphere and sea conditions around Trinidad, Tobago and the Eastern Caribbean. A prognosis is made for the next 24 to 48 hours. From this prognosis future weather conditions are determined.

The Meteorological Service issues weather bulletins to the Press, Radio, Television Stations and the National Emergency Management Agency in the form of advisories or warnings. Adverse weather bulletins are issued whenever there is a high potential for:-

- Widespread flooding
- Severe thunderstorm activity (accompanied by strong gusty winds).
- Strong (damaging) wind gusts
- Tornadoes
- Rough seas
- Tropical Cyclones

These bulletins are usually in the form of warnings and are issued at regular intervals until the event has passed.

Flash flooding is often very difficult to predict because the event may be quite sudden. Consequently, the warning may sometimes be released after the event has started. In Trinidad, flash flooding is usually associated with a large thundercloud which lingers (or is slow moving) over a particular locality as it rains itself out.



Tornado forecasting is not presently carried out in Trinidad. This is due to three factors:-

- i. Tornado occurrence was doubted in the past
- ii. The event is very infrequent in Trinidad and
- iii. The equipment required for forecasting is too costly.

#### (ii) Geological

The observation of seismic activities is carried out by the Seismic Research Unit (SRU), of the University of the West Indies (UWI) which is located in St. Augustine, Trinidad. The SRU operates the regional network for the English-speaking Eastern Caribbean islands. This network consist of thirty (30) seismic stations which are radio-linked into a central recording facility at the University. Trinidad is equipped with four stations while Tobago has three stations. Data are also obtained from the French islands of Martinique and Guadeloupe and also Venezuela. Signals from all stations are recorded together on a multi-channel tape recorder and replayed through a high-speed jet pen oscillograph. This facilitates much better time control of relative arrival times at different stations.

The accuracy of locating earthquakes is +10 km in epicentral co-ordinate and +20 km in depth, provided that the earthquake is recorded by five or more stations and is close to Trinidad and Tobago. Because of the well known difficulties in forecasting earthquakes, warnings cannot be issued.

Tsunami is a very minor additional hazard in Trinidad and Tobago, consequently there is no clearly defined system for observing, forecasting and providing warnings for this phenomenon. However, seismic observations by the Seismic Research Unit and Weather observations by the Meteorological Services, combined with international observation stations should be sufficient to detect and warn of any tsunamis which may develop within or outside of the Caribbean area.

#### (iii) Wildfires

Wildfires in Trinidad and Tobago occur during the dry season which varies in its duration and severity between the months January and May. The observation and control of wildfires are carried out by the Forestry Division of Trinidad and Tobago. Wildfires are usually detected by:-

- aircraft overflying the islands

- individual citizens and
- Forest Officers on fire patrol and in observation towers.

Warnings of wildfires are issued by the meteorological services based on existing dry conditions and actual events.

A fire danger rating system has been suggested whereby the probability of fire occurrence and severity may be forecasted daily. The preparation of this system, however, requires several years of accurate fire records which can be correlated with the relevant meteorological data. At this time there are insufficient data available. Fire records and meteorological data are being collected for this analysis by Forestry Division to evaluate the feasibility of utilizing this fire danger rating system. In the interim a very elementary fire danger indicator has been compiled; however, it has not been very useful and visual observation is still the means of wildfire detection.

## (b) Issues

### (i) Dissemination/Communication

The organizations involved in observing and forecasting natural disasters in Trinidad and Tobago are all integral parts of the NEMA disaster management system. Warnings are immediately passed on to the NEMA; where it is assessed to facilitate activation of the relevant preparedness and response systems. The information is then disseminated by the media via three television stations, 7 radio stations and 10 newspapers. The population is well serviced by the media, therefore this system of dissemination/communication has worked well. The country also has a large population of HAMS and CBERs which together with the NEMA emergency network provides additional means of communicating warnings.

### (ii) Interpretation/Education

The Interpretation of disaster warnings by the public and institutions has been very good. However, there is need to educate the public and the media on specific terms that are used in disseminating information on warnings or observations such as "hurricane watch", earthquake intensities etc.

(iii) Individual and Institutional Response

The response of individuals and institutions to natural disaster warnings have in general been satisfactory. However, due to the infrequent occurrence of natural disasters in Trinidad and Tobago and the veering away of Tropical Storms after warnings have been issued, significant sectors in the society have voiced severe criticisms.

For example, after the passage of Tropical Storm Fran in August, 1990, many businessmen were highly critical of instructions given to the public to remain at home until the storm passed. Again in August of 1993 when the island of Trinidad was threatened by Tropical Storm Bret, which eventually passed through the channel separating Trinidad and Tobago, criticisms of alarming the population were leveled at the disaster management agency. Tropical Storm Bret however went on to claim many lives along the coast of Venezuela.

## CHAPTER V

### INTERNATIONAL CO-OPERATION

#### (a) Status

There has been very little international cooperative efforts with Trinidad and Tobago in fulfilling the Decade goals. Efforts have been limited to the country's participation in the following activities:-

- Seminar on Civil Defence Training for Central America and the Caribbean Region held in Mexico City from 4 - 29 October, 1993.
- United Kingdom's IDNDR day activities (4 - 17 October, 1993) in which Colonel Mahendra Mathur of National Emergency Management Agency delivered a paper on "Maps in Action for Disaster Management".

Trinidad and Tobago's international activities have been mainly with the Caribbean Emergency Disaster Response Agency (CDERA) which has established a mechanism for co-operation in disaster management between member states of the Caribbean. Included in this mechanism is the designation of the National Emergency Management Agency (NEMA) of Trinidad and Tobago as a Sub-Regional Disaster Emergency Response Operational Unit with responsibility for Grenada and Guyana. Under this agreement, Trinidad and Tobago is required to:

- acquire and maintain on an updated basis comprehensive information on the facilities and services available in the participating states.
- maintain and test on a regular basis communications with the critical response agencies under the control of national relief organizations, CDERA and the Disaster Offices of the participating states.
- maintain independent fuel and power supplies and ensure that the relevant physical facilities are in a condition to withstand a major disaster.
- keep and maintain at the operational focal point in serviceable and optimal working condition an equipment package containing essential items.

(b) Issues

Trinidad and Tobago can assist other countries in the field of natural disaster reduction by providing expertise in the areas of disaster preparedness and response, and in the preparation of related plans and maps. Relief assistance can also be made available through various voluntary agencies in the country.

Expertise is also available in seismic observation, retrofitting and construction of cyclone resistant houses from the University of the West Indies.

Trinidad and Tobago requires the following International assistance for natural disaster reduction:-

i. Technical Expertise

- To establish an Emergency Informations System with GIS capability.
- To publish a national atlas of risk which includes seismic, landslide, cyclonic, flooding, storm surge, tsunami risks.

ii. Resources

- Financial resources to desilt rivers to mitigate floods.
- Financial resources to publish materials for public dissemination - a major education programme on natural disasters.
- Financial resources to support studies on measures to retrofit and construct low cost houses that are resistant to cyclones and earthquakes.
- Telecommunication and computer equipment.

## CHAPTER VI

### OVERALL EVALUATION AND FUTURE PROGRAMME OF I.D.N.D.R. ACTIVITIES

#### (a) Goals and Achievements

- Targets to inventory and map natural hazards, emergency response facilities and critical facilities have been met.

Preliminary work has been done in 1992 on "Natural Hazard Risk Assessment and Mitigation Project for Tobago" by the Town and Country Planning Division, and the University of the West Indies with assistance from the Organization of American States (OAS).

However, risk analysis for the major natural hazards in the country have not been achieved to any significant extent.

Reafforestation of denuded lands have been under taken by the Forestry Division, the Civilian Conservation Corp and the IDB-Northern Range Reafforestation Project. However, due to repeated annual wildfires and the shortage of funds success has been minimal.

#### (b) National Goals for the Decade

- Comprehensive national assessments of risks from natural hazards, with the assessments taken into account in development plans.

The Natural hazards and the areas of vulnerability have been identified for Trinidad and Tobago. However, risk assessment data is not sufficient to facilitate quantitative analysis. A number of agencies are in the process of assessing risks, and when completed the information will be published in a National Risk Atlas. The government and private agencies which are involved in development planning will be requested to incorporate the information in the planning process. In the interim, natural hazard risk assessments are being taken into account in development plans on the basis of qualitative information and any existing quantitative data particularly in the areas of land use.

- Mitigation plans at national and/or local levels, involving long term prevention and preparedness and community awareness.

National and local mitigation plans for natural disaster reduction have not yet been formulated, because of the state of incompleteness of the risk assessments. However various mitigation measures are being implemented at national and local levels. These include reafforestation, agroforestry, and soil and water conservation projects, land use and land capability planning, and the clearing of waterways for flood control.

- Ready access to global, regional, national and local warning systems and broad dissemination of warnings.

The Meteorological Services which has the responsibility for observing and issuing warnings on adverse weather, and sea conditions has ready access to:-

- i. Global systems through the Miami Hurricane Centre and
- ii. Regional systems through the Caribbean Meteorological Organization.

The Meteorological Services issues adverse weather bulletins directly to the National Emergency Management Agency (NEMA) and to the public by means of the electronic and press media. This system has proved to be quite reliable and effective.

The Seismic Research Unit (SRU) of the University of the West Indies has the responsibility for observing and issuing warnings on seismic activity, also has ready access to global warning systems. The SRU also co-ordinate maintains and collects the seismic data for most of the English speaking Caribbean.

#### (b) Expectations and Plans for the Second Half of the Decade

There is an urgent need for financial, technical, and scientific assistance which is specifically designed for natural disaster reduction in developing countries. This is necessary if these countries are to achieve the goals of the Decade to any significant degrees. This need has become more significant in light of the tremendous economic constraints confronting many developing countries. It is therefore hoped that attention will be given to this type of assistance for the second half of the decade.

Trinidad and Tobago's plans for the Second Half of the Decade will include:-

1. Training relevant personnel in vulnerability and risk assessment and other areas of disaster reduction.
2. Publishing a National Risk Atlas.
3. Intensifying the Reafforestation and Agroforestry activities to reduce erosion, reduce flooding and increase the quantity and quality of the water supply.
4. Improving the Emergency Communications System.
5. Replacement of the National Weather Radar which is now outdated.
6. Continuing inventory and mapping of Critical Facilities.
7. Desilting and realignment of water courses to reduce flooding.
8. Intensifying the Public Awareness and Education Programme.
9. The enactment of Disaster Regulations under the Disaster Measures Act.



## REFERENCES

- AMBEH, W.B. 1992 Earthquake Risk in Trinidad and Tobago - Seismic Research Unit, University of the West Indies.
- CHALMERS, W.S. 1992 Trinidad and Tobago National Forestry Action Programme - FAO/CARICOM/Forestry Division.
- CHIN, M.W. 1992 Natural Hazard Risk Assessment and Mitigation Project for Tobago. OAS/Town and Country Planning Division/University of the West Indies.
- CLARKE, A.L. 1993 Decisions with Respect to Early Warnings re Weather Related Phenomena. Prepared for NEMA Shelter Management Course, Trinidad.
- DANIEL, C.B. and MAHARAJ, R.  
Tropical Cyclones Affecting Trinidad and Tobago 1725 - 1986. Meteorological Division, Trinidad and Tobago.
- FIELD, R.M. 1988 Comprehensive Emergency Management for Trinidad and Tobago. Government of Trinidad and Tobago/CDPP.
- HANCOCK, M.J.D. The Formulation of a Forest Fire Protection Scheme for Trinidad and Tobago. FAO.
- MAHARAJ, R. 1988 Tornado in Central Trinidad. Trinidad and Tobago Meteorological Service.
- SHEPHERD, J.B. and ASPINALL, W.P. 1983  
Seismicity and Earthquake Hazard in Trinidad and Tobago, West Indies. Earthquake Engineering and Structural Dynamics, Vol. 11 pg. 229 - 250 (1983).

STRUCTURE, ROLE AND RESPONSIBILITY OF IDNDR COMMITTEE AT NATIONAL, REGIONAL AND INTERNATIONAL LEVEL

The Committee should be at the highest possible governmental level and that a great deal of flexibility should be exercised in the manner in which the IDNDR Committee be linked to the pertinent national disaster body.

NATIONAL LEVEL

(a) Structure

The Committee should incorporate representation from all key socio-economic development areas (such as the Planning Ministry, public works, health and education, communications etc.), together with representation from umbrella groupings of NGOs community-based organizations, and the private sector, and that they should also be given powers to co-opt any specific expertise required as circumstances dictate. Composition of National IDNDR Committee is attached.

(b) ROLE AND FUNCTIONS

The role and functions to be performed by the IDNDR, Committee:

- (a) Provide co-ordination, advice and support for the integration of mitigation activities into all aspects of development planning;
- (b) Serve as a pressure group to ensure implementation of programmes and allocation of adequate resources for activities involving mitigation etc.
- (c) Create awareness at the political and policy-making level;
- (d) Motivate all public and private sectors to integrate mitigation activities into their sectoral plans and to make adequate budgetary resources available for their activities;
- (e) Support the development of a mechanism for inter-sectoral co-ordination in respect of actions taken to identify and reduce disaster risks;

- (f) Identify agencies and institutions which can collaborate in the implementation of national plans and programmes; and
- (g) Gather feedback and undertake evaluation of activities.

(c) RESPONSIBILITY

- (i) A comprehensive risk mapping and hazard/vulnerability analysis to be systematically undertaken and the results made available to, and used by the technical and administrative decision-making authority responsible for development planning;
- (ii) International public awareness programmes and training of personnel in both disaster mitigation and preparedness targeted at special audiences;
- (iii) Adoption, promulgation and enforcement of suitable building codes;
- (iv) Development of appropriate mechanisms for involvement of the NGOs and the private sector at all stages of the disaster management process (Mitigation, Preparedness and Response);
- (v) Identification of resources within existing budget which can be redirected to accomplish disaster management objectives;
- (vi) Special priority in the application of retrofitting techniques to reduce the vulnerability of hospitals, schools and other prospective shelters and critical facilities;
- (vii) Provision of incentives by insurance and financial services for observation of proper siting, building and agricultural mitigation techniques.

#### REGIONAL LEVEL

- (i) Greater Pan-Caribbean collaboration and co-ordination in the conduct of research and the dissemination of information;
- (ii) Sharing of regional expertise at Pan-Caribbean level;
- (iii) Collaboration in the improvement of warning systems;
- (iv) Expansion of the role of CDERA and widening of its mandate to enable its functioning as a focal point for its member countries in the co-ordination of their collective initiatives in disaster mitigation;
- (v) Identification of a mechanism and resources to ensure the full participation of other countries/territories and departments in a Pan Caribbean effort to reduce their collective vulnerability to natural disasters.

There should be also created a Caribbean IDNDR focal point, which would assist in the dissemination of scientific research output for the benefit of those smaller and less well equipped national committees or focal points. This Caribbean IDNDR focal point would also assist in the development of a mechanism for the regular exchange of information and expertise.

#### INTERNATIONAL LEVEL

- (i) Optimize and co-ordinate approaches to international agencies for assistance to upgrade critical facilities (Hospitals, Schools, sea defense infrastructure, ...), seismological monitoring and research.

January, 1993

MINISTRY OF NATIONAL SECURITY

COMPOSITION OF THE NATIONAL IDNDR COMMITTEE

The Director of National Emergency Management Agency - Chairman

A representative of the Seismic Survey Unit

A representative of the Meteorological Services

A representative of the Trinidad and Tobago Chamber of Industry and Commerce

A representative of the University of the West Indies

The Chief of Defence Staff

A representative of the Ministry of Public Utilities

A representative of the Ministry of Health

A representative of the Ministry of Works

A representative of the Insurance Industry

A representative of the Red Cross

Extracted from Note for Cabinet NS:(1992)6 dated 23rd March, 1992 (page 5).

January, 1993.

MINISTRY OF NATIONAL SECURITY