FUTURE NEEDS FOR DISASTER PREPAREDNESS IN THE PACIFIC REGION

This paper was prepared by the Pacific Islands Development Program for the Disaster Preparedness Strategies Seminar, March 23-25, 1983
Suva, Fiji
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The preparation of this paper and other PIDP disaster preparedness activities have been supported in part by the Office of Foreign Disaster Assistance of USAID under Grant No. PDC-0000-G-SS-2215-00.

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East-West Center
The future needs for disaster preparedness in the Pacific region must be assessed in terms of what governments can possibly do to prevent and prepare for disasters, the current state of preparedness and what island governments desire. It is necessary, therefore, to review in general terms the full range of pre-disaster planning alternatives, disaster mitigation options and disaster preparedness possibilities.

At the November 1982 Seminar on Natural Disasters organized by the Kingdom of Tonga with support from the Australian Development Assistance Bureau (Kingdom of Tonga 1982) and at earlier regional meetings on disaster preparedness held in 1976 and in 1979, many specific needs within the three general categories of pre-disaster planning (prevention, mitigation, and preparedness) were identified (see SPEC 1980). These included:

- the development of disaster resistant housing designs, building codes, and technical assistance programs aimed at building houses that will withstand hurricane force winds and earthquakes;
- the establishment of agricultural development programs aimed at reducing crop losses and economic vulnerability;
- the development of national or regional training programs for operational ministry personnel in pre-disaster planning, mitigation techniques and preparedness;
- the development of legislation for pre-disaster planning and emergency management; the development of infrastructure to support emergency services;
- the development of more adequate regional and national warning systems;
- the refinement of emergency management policies and procedures;
- the development of more adequate disaster impact assessment techniques;
- the installation of more suitable and reliable communications systems;
- the development of disaster insurance schemes;
- the development of mutually acceptable regional and multilateral agreements for disaster assistance; and
- the development, or refinement of national and sub-national disaster plans.

As already described in the paper on Disaster Preparedness and the State of Preparedness in the Pacific Region, national governments with assistance from regional and international organizations and bilateral assistance agencies have certainly taken steps to meet some of these pre-disaster planning needs. However, from a simple review of the list of future needs generated by three regional meetings held to date, it is clear that much more can be done.

ASSESSING DISASTER PREPAREDNESS NEEDS AT THE NATIONAL LEVEL

While papers such as this and other papers prepared for this Seminar may be useful in summarizing the disaster preparedness needs of the region as a whole and can provide a foundation for exploring regional approaches for meeting those needs, national or territorial governments, and not regional or international organizations, should identify their own requirements and decide if and how they are going to fulfill them. There are several ways in which this can be done. A good point to begin is for a national planning office or a government department with responsibilities which cross-cut the operational ministries (e.g., public works, agriculture, defense) to assess the risks posed by natural disasters, to
examine what can be done to prevent or mitigate the disasters that threaten a country or territory, to work with government departments and ministries with responsibilities in the areas affected and to develop prevention or mitigation plans. These would include an assessment of national and sub-national resources that could be brought to bear on the problem as well as an examination of what regional and international organizations or bilateral assistance agencies can provide.

Following an assessment of disaster prevention and mitigation options, governments could then review their disaster preparedness needs. This could include a review of what past needs have been and what, given the threats and the risk, they are likely to be. Then, following the procedure outlined above for prevention and mitigation, governments can assess their resources and the resources available to them from outside agencies. Such an assessment should include relief and rehabilitation needs as well as emergency management requirements. Plans for meeting the needs identified can then be developed and decisions on the financing and implementation of such plans can be made by the appropriate body.

A formal analysis of needs and alternatives at the national or territorial level would certainly make an assessment at the regional level more fruitful. However, it is clear from discussions at the Tonga Seminar (Kingdom of Tonga 1982) and from PIDP's preparedness survey (Franco, Hamnett and Makasiale 1982) that the governments represented at this meeting are aware of many of their own needs. Therefore, a review of the pre-disaster planning needs enumerated above will be presented in the remainder of this paper. It is hoped that this review will not only identify future directions for regional approaches to preparedness, but also assist national governments that wish to further assess their own

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preparedness requirements in terms of the full range of pre-disaster prevention, mitigation and preparedness options open to them.

HOUSING DESIGNS

It is clear from both the regional meetings on disaster preparedness and from recent studies that disasters have resulted in tremendous losses to the countries and territories of the region (see Cuny and Perez 1982a-d; Oliver and Reardon 1982; Reardon and Oliver 1982; Eaton 1982). The destruction of houses and public buildings have accounted for a significant percentage of those losses. A number of countries and territories in the region have developed low cost housing designs for structures that were designed to withstand hurricane force winds and earthquakes. However, some of these designs have been criticized for both their cultural inappropriateness and design faults. Some countries and territories have even designed disaster resistant houses that incorporate features of traditional housing styles, but this is not the case with most of the disaster rehabilitation housing currently being built in the region. There is a need, therefore, for the development of culturally appropriate disaster resistant housing. An alternative open to governments would be to solicit the assistance of an international or regional organization or bilateral assistance agencies to develop such designs. Moreover, some of the designs already developed in the region could be evaluated and shared by governments in the region to reduce the cost of further development.
BUILDING CODES

In some countries and territories, there are policies on types of buildings, building designs, and housing styles that are considered suitable by national governments. However, in most cases, the provisions of building codes that are intended to mitigate disaster damage have been imported from outside the region. Moreover, in many countries where building codes do exist, they are only applied to government buildings and urban areas.

The past experiences of some housing departments and ministries have shown that it is difficult to enforce building codes. Officials in many governments feel there is a need for culturally and economically suitable building codes, and clear policies on the enforcement of such codes based on an analysis of the costs and benefits of alternatives. Technical assistance for such an analysis and for the development of appropriate codes could be requested by territorial and national governments.

TECHNICAL ASSISTANCE IN BUILDING DISASTER RESISTANT HOUSING

Although building codes may, with adequate enforcement, encourage an increase in disaster resistant housing, assistance to potential house builders in designing and constructing houses may be a better investment. Such programs have been developed in other parts of the world and they have been fairly successful. Technical assistance programs of this type have been incorporated into low cost rural housing programs in some countries in the Pacific and new ones are now being developed. If other countries plan to embark on low cost housing programs, it would be useful for them to learn from the experience of others. There is a need, therefore, to test
the cost effectiveness of technical assistance in housing design and construction.

Public education programs on building techniques and training for rural dwellers have been suggested as another approach to developing disaster resistant housing. Such an approach could possibly increase the percentage of disaster resistant houses and therefore help meet the need to reduce housing losses as a result of natural disasters.

AGRICULTURAL DEVELOPMENT AND DISASTER PREPAREDNESS

Although adequate data are not available to accurately assess the relative losses resulting in housing and other areas from disasters, it appears that the financial costs of disasters in agriculture are probably greater than they are in housing. There have been some efforts by agriculturalists in the region to assess the relative vulnerability of crops and to encourage farmers to avoid disaster prone areas. Moreover, some countries and territories have attempted to redirect their agricultural development in both the short and long run to avoid future losses in agriculture. There has not, however, been any systematic attempt to incorporate pre-disaster planning into agricultural development on a national level. There is a need, therefore, to identify strategies for reducing the vulnerability of agricultural systems to natural disasters and for pre-disaster planning to be incorporated into agricultural development and rehabilitation.

An option open to governments through their agriculture departments and through regional and international organizations would be to begin to
draw upon traditional wisdom and knowledge about various crops to develop agricultural systems which are less vulnerable to natural disaster.

In some countries in the region, there have been adequate supplies of indigenous crops following major disasters in areas unaffected by the disaster. However, the governments of these countries have not had the means of moving that available food to disaster stricken areas. There have been cases in which a bi-lateral assistance agency provided funds to purchase and ship food from a country in the region to a country recently struck by a disaster. There has also been "local" food provided to a disaster stricken country by its Pacific neighbors. However, such arrangements have not been made in advance and, as mentioned below, countries have been unable to predict what kind of assistance they will receive and therefore it has been difficult to plan a relief strategy in advance. There is a need, therefore, to attempt to plan agricultural, transport, and marketing system to allow for the provision of relief food from within a country and to develop standing agreements with their neighbors for certain levels of relief.

TRAINING FOR OPERATIONAL MINISTRY STAFF

Specialized disaster preparedness units and ministries concerned with emergency preparedness have been involved in preparedness planning, and their staffs have been involved in training programs at home and abroad for several years. However, ministries concerned with housing, infrastructure, public health, economic planning, the planning and implementation of development projects, communications, and agriculture have not had the benefit of pre-disaster planning assistance. Such operational ministries
and departments through the course of the regular activities can either increase or decrease the impact of disasters as a result of their normal activities. There is a need, therefore, for staff in such operational ministries to be aware of the threats of natural disasters and how their activities either enhance or reduce disaster vulnerability. Moreover, if such operational ministry personnel were aware of the opportunities open to them to mitigate or reduce the impact of disasters, they would be in a position to contribute to national or territorial pre-disaster planning. Governments could either nationally or regionally seek assistance in developing training programs for ministry personnel which would heighten awareness and increase their capability to mitigate and/or plan for disasters.

**DISASTER PREPAREDNESS PLANNING**

Government officials from throughout the region have indicated that there is a need to examine: the institutions which are tasked to manage a country's emergency services; review disaster policies; identify operational capabilities; review existing emergency planning and management structures both at national and provincial or state levels; modify or improve them where necessary; develop the manpower and facilities required for effective disaster management; establish better liaison between government and private organizations; and develop operational procedures for better cooperation among the agencies concerned.

There is also a need to develop policies that clearly define roles and tasks for organizations and individuals responsible for emergency
management. These should include guidelines for international aid agencies.

Because of frequent staff turnovers, there is a need to develop orientation programs on emergency procedures for new staff. Program training schedules for ministry personnel (e.g., transport, health, utilities, Electricity Commission, Department of Agriculture, and Housing Commission) are also needed as they are assigned responsibilities in emergency situations.

Good planning may not be effective unless operational needs are adequately identified and weaknesses remedied. Departments and organizations must, therefore, have full compliments of staff who are aware of emergency procedures including means of moving supplies and manpower. It is also necessary to establish pre-disaster agreements for use of vehicles, ships, and aircrafts for use in disaster situations (e.g., helicopter for quick impact assessments, ships and aircraft for transporting relief supplies out to the affected regions).

Operational headquarters linked with provinces, districts, or states by reliable communication networks are also required. Information centers, where media representatives and the general public can go to for information, are also necessary to allow emergency managers to perform their duties without bother.

Interdepartmental task forces have proven useful in some countries for coordinating activities during emergency situations. They have also been effective in disaster planning and for ensuring that policies and decisions are carried out properly. Task forces should consist of representatives from the ministry responsible for emergency services, health, housing, public works, public utilities, defense, transport, communications,
government supply, and private organizations like Red Cross and church groups.

Some countries have found that such task forces are not the most effective form of organization for disaster management. Rather, they have found a simpler management structure with fewer individuals with clear authority in relevant ministries or departments more desirable. What is needed, therefore, is an assessment of alternatives in terms of the needs, resources, and structures of each government.

DEVELOPMENT OF INFRASTRUCTURE TO SUPPORT EMERGENCY SERVICES

The review of existing infrastructure such as electricity, water systems, road networks, airfields, wharfs, warehouses, and hospitals are required to determine allocations of funds for improvement and procurement of equipment as reserves for emergency. Alternative sources of electricity like photovoltaic cells should be examined for use when main sources of power have been disrupted. Emergency generators, where possible, should be purchased and stocked for use when main sources of power are destroyed. Water systems which are disaster resistant and which are unlikely to become contaminated should also be developed. Plans to have houses installed with water storage tanks as alternate means of water supply if normal system is damaged or polluted during disaster is another alternative. Provincial health centers and hospitals to accommodate disaster emergencies should also be evaluated. Program priorities to extend existing port facilities, improve airfields and roads should be developed to meet disaster preparedness needs. Bridges should be built in locations where they are not likely to be damaged by floods, landslides, and other disasters.
LEGISLATION

Few countries and territories have the legislation necessary for disaster planning and preparedness, emergency management, relief, and rehabilitation. Such legislation is important for the government departments which are given the administrative responsibilities for disaster planning and management. Enabling legislation is normally required to give departments and ministries the legal power to marshall the country's resources required to perform their jobs effectively.

New legislation is often necessary when the responsibilities of emergency management changes from one department to the other. Periodic review of existing legislation and necessary amendments to allow flexibility for future operations are also required.

DISASTER WARNING SYSTEMS

Established regional hurricane and tsunami warning systems can provide most countries and territories of the region with information about the potential threat from storms and tsunamis. This information is then evaluated at a national or territorial level and internal warnings or watches are issued.

In some countries there are also volcanic and seismonic monitoring systems. Although such monitoring systems rarely provide data which can be translated into advanced warning of a local tsunami or a volcanic eruption, technical advances in this area are slowly being made. There is a need, however, for better internal warning systems: once a storm or tsunami warning is received in a country or territory, information must be passed to those responsible for emergency management and the general public. Both the general
public and individuals responsible for emergency services must know how to respond.

EMERGENCY COMMUNICATIONS

Communications within the countries and territories of the region and between the region and the outside world have increased markedly in recent years. In some areas, the disaster vulnerability of these improved communication systems has not been evaluated and back-up emergency communications equipment does not exist. What is needed, therefore, is for the governments to have contingency plans for use of alternative communications equipment in disaster situations. Preparedness planning should detail sources of information and allocate channels and lines to organizations and individuals responsible for emergency services.

Communication plans should include an assessment of police and defense force communication systems. Such systems have often not been incorporated into emergency communications plans, and in some cases, police and defense force communications equipment have not been used when they were needed. Land lines should be evaluated in terms of their vulnerability and back-up communication systems should be developed in the event that normal means of communications break down. Radios should be strategically placed as relay stations to relay information from places which are great distances from national and provincial headquarters. Standing arrangements should also be made with potential aid countries to provide back up emergency communications.
IMPACT ASSESSMENT TECHNIQUES

Generally, impact assessment techniques are methods and procedures used by the governments in the region to determine the extent of damage resulting from a disaster. Following a disaster, these surveys are conducted in order to determine immediate relief and long term rehabilitation needs. Initial assessments are usually made to determine immediate needs for medical care, shelter, relief food, and water. Other assessments are made for the purposes of designing agricultural, infrastructural, housing, and economic rehabilitation programs.

In some countries of the region, the national governments have some formal policies and terms of reference for assessing damages in events of disaster. However, government officials in some countries and territories feel these policies and guidelines need reviewing, to sort out priorities in assessing disaster impacts. Outside technical assistance may be available to help develop assessment techniques suitable for local needs.

RELIEF POLICIES AND PRE-ARRANGED AGREEMENTS FOR DISASTER ASSISTANCE

Governments from the region have the primary responsibility for providing immediate medical assistance, emergency shelter, food relief, and, in some cases, potable water. Experience has shown that once a certain type of disaster relief is provided, it will be expected. There is need, therefore, for a careful assessment to determine the type of relief scheme that will encourage self help and enhance rapid rehabilitation.

Governments in the region have received considerable overseas assistance in providing medical assistance, food relief, and temporary shelter following disasters. Often offers of help from overseas agencies are made before
governments have had time to assess the needs, establish an internal relief policy, and mobilize existing resources. However, a pattern of overseas assistance has developed in many countries and territories such that standing agreements for disaster assistance could be developed. This would help meet the need for relief planning. Such pre-arranged agreements could be negotiated once governments determined the type of relief programs that are in the long term national interest.

EVALUATION OF DISASTER INSURANCE SCHEMES

Hazard insurance for buildings, businesses, and some development projects has been suggested as a need in Pacific countries and territories. Such insurance is also commonplace in many more industrialized countries and it has been suggested that Pacific Island governments should either develop national insurance schemes or invite private insurance companies to do so. What is needed, however, is an evaluation of insurance options for Pacific countries and territories.

PUBLIC EDUCATION

At the Tonga Seminar on Natural Disasters, a strong need for public education on the nature of disasters, mitigation efforts the public can make (e.g., in agriculture, house building, etc.), immediate pre-disaster preparedness measures (e.g., trimming tree crops, securing roofs), evacuation plans (where applicable), first aid, and other areas. Such public education activities could be done in schools, on the radio, and by private voluntary organizations. Public education on pre-disaster planning could be conducted in conjunction with direct technical assistance programs (e.g., on reducing
housing vulnerability), and with training for government officials. Public education on disaster preparedness could also be provided by organizations such as the Red Cross.

CONCLUSION

As noted earlier, there is a wide range of future pre-disaster planning needs which have been identified by governments in the region. In recent years, all governments have attempted to meet some of these needs but much more could be done.

Disaster mitigation, disaster preparedness, emergency management, and relief and rehabilitation are the responsibility of national governments which must deal with a whole range of problems not directly related to natural hazards. Many of these problems are generally viewed as more important or at least more pressing than pre-disaster planning except when a hurricane or tsunami strikes, a drought or frost affects an area, or a volcano erupts.

Senior public servants and elected officials are constantly required to evaluate the relative importance of various development and program alternatives in the face of scarce financial and human resources. And, when there have been no recent disasters, pre-disaster planning efforts may not have priority over other concerns. However, given the tremendous costs of disasters and that many of the pre-disaster planning activities mentioned above are not expensive, the benefits far outweigh the costs.

The paper on "Future Alternatives for Meeting Preparedness Needs" prepared for this Seminar outlines the full range of pre-disaster planning activities in which governments could become involved. Many national and territorial
governments, as already mentioned, have developed some of them, and they must evaluate where to go from here.

On a regional level, there are certainly programs that could be developed to help meet national pre-disaster planning needs. It is hoped that this meeting will seriously evaluate the options discussed in the Seminar which have been developed in the Pacific and elsewhere. It is also hoped that the participants in this Seminar will indicate what regional alternatives to meeting pre-disaster needs are most desirable to their governments.
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