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Disaster Mitigation

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ABSTRACT

Disaster mitigation is the term used to refer to all actions to reduce the impact of a disaster that can be taken prior to its occurrence, including preparedness and long-term risk reduction measures. The need for evacuation is likely to be a constantly recurring one in disaster circumstances. Whether there is long warning, no warning, or short warning, disaster managers should be able to handle the evacuation process with reasonable effectiveness. If there has been insufficient study and analysis of the disaster threat, if preparedness levels are inadequate, if disaster-prone communities are attuned to the possibilities (and the risks) of evacuation, and if everyone, including the community, is not absolutely clear about the responsibility for decision making and the evacuation process. The problems of evacuation are clear. So are the various factors involved. They have been spelled out in practical terms over many years. Therefore, if the requirements are followed, there seems very little reason why evacuation failure should occur.

Keywords: Disaster, Mitigation, Circumstances.

INTRODUCTION

Disasters today are seen in much the same way as disease was in the early 19th century: unpredictable, unlucky and part of the everyday risk of living. Concentrations of people and rising population levels across the globe are increasing the risk of disasters and multiplying the consequences of natural hazards when they occur [1]. A disaster is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins [2]. Just like the fight against disease, the fight against disasters has to be fought by everyone together and involves public and private sector investment, changes in social attitudes and improvements in the practices of individuals.

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. In order for mitigation to be effective we need to take action now

before the next disaster to reduce human and financial consequences later (analyzing risk, reducing risk, and insuring against risk). It is important to know that disasters can happen at any time and any place and if we are not prepared, consequences can be fatal [3]. Mitigation also entails the protection of the economy from disasters. Economic activity in the more industrialized societies is complex and interdependent, with service industries dependent on manufacturing, which in turn relies on supplies of raw materials, labor, power and communications. This complex interdependency is extremely vulnerable to disruption by hazards affecting any one link in the chain. Newly industrializing societies are most vulnerable of all [4]. Agricultural sectors of the economy are most vulnerable to drought but also to floods and high winds, disease and pest attack and pollution. Industry is more vulnerable to earthquake damage and the disruption of transportation and utilities networks. Commerce and finance are most

vulnerable to disruption of production, population migration and to breakdowns in communications systems. Mitigation measures that focus on protecting the most vulnerable elements and activities at the weakest links in the different sectors of the economy will help protect the achievements of economic development. Mitigation involves not only saving lives and injury and reducing property losses, but also reducing the adverse consequences of natural hazards to economic activities and social institutions [5]. Disaster mitigation is the term used to refer to all actions to reduce the impact of a disaster that can be taken prior to its occurrence, including preparedness and long-term risk reduction measures. It includes both the planning and implementation of measures to reduce the risks associated with known natural and human-made hazards, and the process of planning for effective response to disasters which do occur [6].

Ways to reduce Disaster Mitigation

Protection against threats can be achieved by removing the causes of the threat, (reducing the hazard) or by reducing the effects of the threat if it occurs (reducing the vulnerability of elements at risk). For most types of natural disaster, it is impossible to prevent the actual geological or meteorological process from occurring: volcanos erupt, earthquakes occur, cyclones and wind storms rage [7]. The focus of mitigation policies against these hazards is primarily on reducing the vulnerability of elements that are likely to be affected. Some natural hazards can be reduced in certain circumstances. The construction of levees along the banks of certain rivers reduces the chance of them flooding the surrounding areas, for example, and it is possible to prevent known landslides and rockfalls from developing further by stabilizing land pressures, constructing retaining walls and improving drainage of slopes [8]. The destructive agents of some natural hazards can be contained by engineering works or diverted away from important elements in channels and excavations. In some cases tree planting can be an effective way of either reducing the potential for floods and mudslides or

to slow desertification. The potential for reducing the hazard level is given in each of the hazard profiles. Obviously, preventing industrial accidents from occurring in the first place is the best method of mitigating future industrial disasters. Fire prevention, chemical spillage, technological and transportation accidents are all hazards that are essentially preventable [9]. In man-made risks of disaster the focus of disaster mitigation is in reducing or preventing the hazards from occurring. Engineering system safety is an important part of reducing risks from industrial hazards. A growing body of knowledge from the experience of long-established industries is applicable to the newly-industrializing regions.

The Impact of Disaster on National Development

Effects on Contemporary Development

It goes almost without saying that disaster can have very serious effects on the contemporary development of a nation. This is especially so in revenue producing areas and infrastructure [10]. Typical examples include:

1. Crops which have been developed over a number of years to produce an export capability may be destroyed or seriously damaged; for instance, the organized growth of coconut and oil palms as a source of copra and palm oil. Such destruction or damage can result in loss of development capital, destruction of production sources (e.g., the trees themselves), loss of processing facilities and equipment, loss of employee housing, and so on.
2. Loss of livestock, through an outbreak of animal disease or rural wildfire, can devastate valuable national resources such as meat or wool trades [11].
3. Land inundated by a cyclonic storm surge or tsunami can bring about salinization with severe consequences to both domestic and export food sources. Similarly, drought may cause severe restrictions on wheat growing,

with consequent damage to or loss of a valuable export market.

4. In the case of infrastructure, losses from disaster can be crippling for ongoing national programs. For instance: Damage to harbors and wharves can drastically limit maritime transport capability, thus, restricting export and import activity, loss of aircraft and airport facilities may pose serious constraints similar to those which apply to the maritime aspects mentioned above, loss of roads and bridges may curb important ongoing construction and other programs, loss of buildings and facilities can seriously hamper the conduct of business and commerce, domestically and internationally [12].

The overall effect of disaster on contemporary progress and development may, therefore, be one which halts a nation in its tracks. This could be compared with the effects of a heart attack, in that it takes some time before the patient can resume business as usual [6].

Effects on Long-Term Development

The aforementioned contemporary effects can obviously be crippling for ongoing programs. However, some long-term consequences may be equally bad, or even worse. As a simple example, damaged coconut palms may take 7-8 years to rehabilitate. By this time, a valuable export capability may have become outdated, or lost to other countries [9]. Also, some of the wider economic, social and other effects may bear heavily on long-term development. One major general fact against which long-term effects should be judged is that when disaster strikes, it deprives a nation of many of its current vital resources. These resources have to be renewed or rehabilitated before even moderate development can continue [1]. The national effort and cost required to make good this kind of loss in resources must obviously detract from what is available for long-term development. So, the first effect on long-term programs which arises from disaster impact is the economic and

material loss, which is likely to cause delays in commencing and/or continuing such programs. A second major effect may be on the development planning process. Most countries nowadays work to planned periods of development, such as a series of 5-year national development plans [10]. Disaster can seriously upset this sequence of planning and implementation, possibly as follows:

- It may disrupt the current plan.
- It may make it difficult to forecast development progress, and to predict the likely status at the end of the ongoing plan. These factors will then create problems in determining the start-up parameters for the next planning period. (The effect of this aspect will obviously depend on the point within the ongoing plan at which disaster strikes).
- It may raise problems in formulating the scope and content of the next (or follow-on) national development plan because the postdisaster recovery process is difficult to define accurately. In other words, unanticipated delays in recovery may dictate that resources have to be deflected from planned development [11].

National Development and Disaster Management Policy

It is clear that disaster can have far-reaching repercussions on a nation's image. It can also pose serious restrictions on national development. It follows, therefore, that there needs to be a prudent connection between development and disaster management policy. However, this connection does not usually come about automatically. In this regard, there are two important interrelated points [4]. First, most major departments within government have a tangible and practical connection with disaster management. They have clearly defined roles and responsibilities throughout the total process of prevention, mitigation, preparedness, response, and recovery (especially in these last three segments). These roles and responsibilities are formally laid down in the relevant counter disaster

plans. Second, those government departments primarily concerned with development planning do not usually have direct and practical connections with disaster management. These planning departments and sections would certainly be involved in actions affecting recovery and perhaps to some lesser extent with prevention and mitigation [6]. But, generally speaking, they do not have the active day-to-day association with disaster management which ensures a clear and strong working relationship. These two factors suggest, therefore, that some kind of bridging or linking mechanism is required between national development and disaster management. There are, however, some important prerequisites to an effective linking of disaster management activities with those of national development [1]. In most cases, from the disaster management side, these are likely to include:

- The need for the government to recognize clearly, at the highest level, the repercussions which disaster can have on the nation generally and on national development in particular. (If this recognition does not exist, or is

not readily forthcoming, then it is obviously up to those who have the responsibility for dealing with disaster to promote such recognition by whatever means are feasible. This needs to be done realistically, not in an exaggerated form; otherwise, it will not achieve credibility) [7].

- The need for a clear definition of disaster management policy
- Clearly allocating disaster management responsibility at ministerial level.
- Establishing and maintaining an effective disaster management capability.
- A national disaster management office or section capable of maintaining a sound day-to-day liaison with other government departments and agencies.

Obviously, it is assumed that similar prerequisites must exist from the national development side. Also, that a meaningful working relationship applies throughout the ministerial and departmental processes of government.

CONCLUSION

The significance of disaster in today's environment sometimes comes under question. Why do we need to bother so much? After all, disaster has been with us as long as recorded history, and presumably even longer. Generations of people have had to withstand disaster.

They have suffered the consequences and recovered from them, and life has continued. Basically, this is true. However, certain factors need to be considered in relation to modern challenges which face disaster management.

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