

Disaster Management – Key Trends and Policies

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ABSTRACT : Disaster management is the bailiwick of dealing with and circumventing the risk. It involves those precautions and safety measures (e.g. mass decontamination, convalescence, quarantine, emergency evacuation as well as supporting and rebuilding of society) that are taken after occurring of a disaster event. In general, emergency management is an uninterrupted and continuous efforts of individual department, groups and local communities to manage and ameliorate the hazardous impacts resulting by disaster. The process of emergency management phases involves into mitigation, preparedness, recovery and response. Action taken depends upon the perception of risk that is going to expose. Disaster management plans and strategies relies on activities on which government and non-government bodies are involved. As the activities at each level affect the whole community at all levels. It is common to place the responsibility for governmental emergency management with the institutions for civil defense or within the conventional structure of the emergency services. In the private sector, emergency management is sometimes referred to as business continuity planning. In this paper current policies and strategies of government for different disaster has been revised and highlight the flaws lies in polices and strategies to handle the situations occurred after eruption of disaster. After overviewing the current disaster management system some response and preparedness are presents for guiding the government to revise his policies and safety measures for various departments which are directly responsible to do needful activities and rehabilitation work to mitigate the effects of disaster.

Relationship between Development and Disaster

There is a significant relationship between development and disaster management as the both are affected each other. The disasters have great undesirable influences on both conventional and informal sector of national priority and as it destroyed the whole economic and social cycle of a country because approximate costs of the damages caused by the disaster are often underestimated. However, disasters consequently having adverse effects on the life of individuals and households by loss of assets and breadwinner adherents. It slow down the nonfunctional economy through the direct loss of substructure, housing, equipments, industrial plants, domestic paraphernalia as well as the lives of human beings. The loss of employment and economic losses are the indirect losses of the disasters. There are following two important contradictions are referred in the context of above cited section:

- **Disaster Provides Development Opportunities**

Disaster can provides the opportunities of the development, because the development programs are designed to reduce the vulnerability and weakness of disasters and their negative consequences. For instance, in the project of house building, it has been encourage to use of homemade bricks that have the ability to withstand in heavy rainfall and stormy weather, as a results the chances destruction are very rare during next tropical storm.

- **Vulnerability can be Reduced through Development**

Vulnerability of the system can be reduced with the help of development, because development process highlights the areas of high-risks and parts where the action must be engaged formerly the occurrences of another disaster assaults. The policymakers can motivate general public by encouraging them to participate in seminars for the realization of vulnerability, and use other common communication sources like TV, radio, newspapers and brochures for spreading the awareness and enable them to participate in the activities of rehabilitations and risk-reduction, in order to reduce the huge loss of infrastructure and life. For example, the Pietermaritzburg flood disaster of 25 December 1995 highlighted a need for speedy development in Eden-dale, and Yellow River Flood (China 1931) - 1,000,000-4,000,000 dead. If the people have the basic training of disaster management then the loss of human being might be reduce.

- **Disaster Set Back the Development Process**

Whenever a disaster creep then, development process set back and investment of years are washout as the result wheel of progress of a country stop revolving. For example in 2005 earthquake in Pakistan destroyed the whole infrastructure of road and utility system. There is discussion as to what the lethal and lethal disasters of all time truly are, because of inconsistencies in death tolls, specifically with disasters that arose in the last century.

- **Development can Decreases the Vulnerability of Community**

Development can reduce the susceptibility of the community by forming the possibilities of employment, flock of people migrate towards the cities for seeking job opportunities and earn livelihood for their families. But in some cases large migration toward the main cities are creating problems for the inhabitants as cities become more congested which decreases the living standards of common people and endanger the health of people who are already settled by deploying the sanitation conditions.

General Approaches for Disaster Management

Disasters are unwanted upshots and events, when the consequence of disasters are happened then every efforts are made to minimize the negative impacts of such unsought events. Therefore it should be the need of the hour to take some administration steps to deal with the disaster. The disaster management must include operational activities and administrative decisions that includes preparedness, prevention, recovery, response and rehabilitation at all government levels. In disaster management not only government official bodies are involved but also community based organizations, NGOs and non-government bodies are involved to play their role. There are number of approaches to view the role of disaster management. The more traditional approach regarded to disaster management as the number of phased sequence of action. The key element of traditional disaster management are shown in the figure 1.

Key Elements of Disaster Management

These are the some key elements are presented that are not only ways that the disaster can manage and meant to prompt institution dealings with disaster to develop better preparations for dealing with disaster.



Figure 1: Key elements of Disaster Management

- **Prevention**

Government department and municipal authorities conducting certain activities before occurring of disaster to prevent the hazards of disaster. These activities including with constructing of dams or spills of water to control the flood water or those areas that are in fire veld zones, government bodies conducting control burning programs and ensuring that there are proper socioeconomic development programs and active workshops for the

training of community. The participations in these training workshops, enable them to learn how to deal with disaster and lessen their losses. The dynamic possession and participations of the people along the disaster management field prevent major setback.

- **Mitigation**

The term disaster mitigation is refer to measures those steps that are taken to reduce the destructive and disruptive effects of hazards and minimize the scale of probable disaster. As the plan of the disaster is established by the local communities so disaster mitigation might be occurred at any time. Thus every single plan of disaster mitigation is must be tailored with the concerns of local municipal authorities. For instance in coastal towns the local municipal authorities may construct building codes so as to reduce the losses, flood warning and blockage of drainage system during rainy seasons and strong winds associated with cyclones. In the ruler areas the plans are made to deal with fire veld, droughts and improved water management. The disaster management can be achieved through the proper engineering, spatial planning and municipal management and conflict free resolutions.

- **Preparedness**

The preparedness is the key element of the disaster management as it involves the preservation of portfolios of resources and personnel training for managing other essential components to avoid or minimize the hazardous effects of the disasters. These preparedness are including with regular and ongoing projects arranged by the local government department. The preparedness is the logistical readiness to deal with the disasters and may enhance the response mechanism, rehearsals, developing procedures and long term and short term approaches including with public awareness and training and developing of early warning system. Through the risk assessment it can be identify those areas and people that may be at high level of risk and alert them before the occurring of disaster. Therefor the risk assessment is also essential and complementary enlargement strategy for the local municipal austerities. The development of suitable housing projects for those who are living in urban areas, flood predisposed cannot be neglected and cannot be undertaken without the risk assessment. Preparedness are made for ensuring the strategic reserve of food, equipment, water reservoirs, medications, shelter-houses and other essential commodities are required to maintained before the national or domestic catastrophes existence. Development and disaster reduction efforts are made to deal with negative impact of disasters simultaneously.

- **Response and Relief**

Response and relief are the one of the important elements of the disaster management. In case of disaster does occurred then response and relief work will be started immediately and there should be no delay in the relief work. To deal with the disasters every department have to make some special arrangements to deal with emergency and they have standby team associated with relief equipment and ready to response in case of emergency warning alert. Delays in the rehabilitation work will occurred if the municipal and government departments have no clear plans to deal with such event and they have not formal training to deal with disasters. Therefor it is very important that every department have some special strategically plans and preparations to take initiative step for quick relief and response. For example if flood warning has occurred in the area along with the hurricane, then fear and chaos breakout. Then the members of public municipal committees are overwhelming emergency amenities with the pleas for help is rush towards the flood affected area. A well trained team of government with local players are well primed and they well known where to go and what to do. If the circumstances is unmanaged and crises is in way, then the people rush away in all directions, waste of valuable time, and made some serious mistakes as the results rehabilitation work is effect and relief work may be delayed. Therefor rescue and search plans need to be clear and all key role players should be well trained and they know their role of activity. The development of basic rescue operation such as shelter, water supply, food, medical aid, and financial aids also included in the relief and response work.

- **Rehabilitation**

Interventions and rehabilitation work is also needed after the occurrence of disaster event. In many manners rehabilitation is most difficult period for the disaster fatalities, because it is associated with lot of activities like job producing opportunities, construction of civil work, medical aid, social and financial support along with national development. As the after effects once the disaster have passes are not to be forgotten by the victims on immediate basis. Rehabilitation for the victims requires special efforts and commitment through the several role players. The training programs and aptitude must be made to knob such events are very indispensable. Replication of should be lessened by appropriate control mechanism of financial resources. In specific cases, "expand and contract" model is consider an optimal model. In the "expand and contract" model local municipal authorities and local government personals are conducting disaster management training programs in their routine activities with the help of local NGOs and welfare associations. These training sessions are expanded when they are needed. It is very imperative to note that disaster are unpredictable events and when they came into existence than rapid response is required. Therefor government does not completely depend on the normal procedure and routine work, thus government authorities needed special procedures to

implement specific appropriate response so they engage special workers they have distinctive skills, techniques, knowledge and attitude to deal with disasters. The top ten deadliest disaster took in the world history are shown in table a:

Table (a): Top ten world deadliest disasters:

Rank	Death toll (estimate)	Event	Location	Date
1.	1,000,000–4,000,000	1931 China floods	China	July 1931
2.	900,000–2,000,000	1887 Yellow River flood	China	Sep. 1887
3.	830,000 ^l	1556 Shaanxi earthquake	China	Jan. 23, 1556
4.	500,00	1970 Bhola cyclone	East Pakistan	Nov. 13, 1970
5.	316,000	2010 Haiti earthquake	Haiti	Jan. 12, 2010
6.	300,000	1839 India cyclone	India	Nov. 26, 1839
		1737 Calcutta cyclone	India	Oct. 7, 1737
8.	273,400	1920 Haiyuan earthquake	China	Dec. 16, 1920
9.	250,000–300,000	526 Antioch earthquake	Byzantine Empire	May 526
10.	242,769–655,000	1976 Tangshan earthquake	China	July 28, 1976

General Weakness and Constraints in Current Disaster management System

There are many weaknesses and flows and the current disaster management system, this study presents a brief review and analytical compression in the following terms.

At Policy, Planning, and Legislative level.

- Lack of policy frame work and legislative: without policy frame work, disaster management has no definite planning structure
- Preciously strategies and policies did not take into account due to lack of qualified and adequate persons both at local and national level.
- The misapprehension of disaster management: as the people having no any control on priority given to civil protection and they do not fulfill their responsibilities to mitigate the effects of disasters.
- Reluctant behavior of Civil Protection Authorities.
- Inadequate legislation process and sometime more confusing and complicated and fail to meet the requirements of social, political and institutional level.
- The lack of partial existing guiding principle at private and public sector both at national and regional levels as they does not know their role to play for disaster management.
- Absence of planning or plans are without any reference: In certain circumstances there is lack of planning, so in absence of such pre-planning or plans designed without any reference are preemptive and distressed the mitigation measures which are already in progress.
- Preceding standards for involvement of state was depend on the level nature of destruction caused by the disaster in its place, it should be depend on the needs of societies exaggerated by disasters.

At the Part of Comprehensive Development Approach of country

- In past the disaster were seen in the context of emergency response, therefor there was no formal and non-formal long term planning is exist for the development programs by the government authorities. Thus in case of disaster event rescue and evacuation response to tackle the disaster was directed at the provision of emergency needs.

- Development strategies of county are without concept of disaster management: as the susceptibility and vulnerability concept of disaster management strategy creates the development set-back due to this chances of poverty and other causal factors remain are persists.
- Lack of maintenance of basic infrastructure. Poverty and underdevelopment are basic apparent of the disaster. Hence, poor maintenance of the infrastructure and lack of attention towards development work leads the scarcity and destruction during the disaster event especially in rural and deep urban areas.
- Uncontrolled and unmonitored population: in the third world countries over population is one of the biggest challenge for the government. On the other hand government stake holder and authorities are also not show any serious attention to control and monitor the ever increasing population, therefor entire inhabitants is vulnerable to risk during the disaster situation. Thus special attention and deliberation might be assumed to those areas overload with population during the disaster situation. The need of the hour is to educate the people regarding population control system.

At level of Response and Preparedness in Disaster Situation

- There is no any set rules/criteria are present for clearly define disaster situation. In this circumstances disasters are judged on the account of destruction and set-backs.
- Lack of public awareness and people are ill prepared to cope the disaster situation. The most vulnerable situation happened with the farmer as they does not have any proper source of information or they are ill informed. In practice in many countries consciousness crusades have tended to launched after commencement of disaster.
- Nonexistence of data and acquaintance information regarding to disasters management and its impacts. In this context nutrition and poverty issues are highlights as the result difficulties are creates when trying to identify and target those areas who need rapid response and relief during the period of drought.
- Insufficiency of early warning system.
- Nonexistence of affective disaster management policy: such policies required previous known data related to hazard and risks disaster of previous disaster situation so due to unavailability of required central reporting points and information the disaster management system receives severe kind of operational constraints.
- Non-availability of reliable and clearly defined channels of communication: the existing municipal and political organizations should have to play an important role for broadcasting of warnings, but their ability in this context is very limited. Moreover political influence and employment on political basis is also one of the big hurdle.
- Unstructured weather forecasting system of weather bureau department.
- Absence of acceptable regional and national policies.

At the Institutional Level

- The nonexistence of synchronization between departments and political platform
- Ineffectual management system that is frequently reflected as poor receptiveness to deal with disaster situation.
- Absence of perpetual reduction of risk and disaster management coordinate system both at provincial and national level. This is compulsory to ensure for mobilizing of expertise, data collection, planning and setting up of disaster management structure in rapid response to integrate trained people for relief work both local and national level throughout the country, whenever major disaster event took place and major loss of livelihood.
- Several functionaries fail to understand that what are the holistic meaning of disaster management and risk reduction entails.
- The adequate influential capacity have to decide the ability of government to deal with disaster. But, there is big impuissance lies in the institutional/influential capacity at the level of provincial and municipal levels due to shortage of structural resources or the government fail to provide sufficient fund for proper function of strategies or have no or very little planning in the event of disaster.
- Accessibility to emergency services and resources are not equally distributed between metropolitan corporations and communities. As the distribution of these services are based on the importance of area, priority, and grey and richest living zones.
- Financial constraints in departments also considering partial capability to retort efficiently with minimum resources.
- Shortage of funds. The shortage and release of funds is a long, slow, time consuming and a complex procedure. The complexity in mobilizing of funds in addition dishonesty in resource management creates difficulties in disaster mitigation.

Consolidative Supportive Mechanism for Disaster Management

This section highlights some of the integrative supporting mechanism for the disaster management. These supporting mechanisms outlines some of the ways in which disaster can be deal with as continuous procedure

rather than a specific or timely event. The aim of key points that are outlined here is to enhance the preventative and proactive lateral of the disaster management. The preceding section will deliberates to identify the gaps and techniques that are used to support the different facets of disaster management from deterrence to reaction and rehabilitation. The integrative support mechanism for the disaster management are given below:

- Better resource management
- Use of early warning and information system
- Vulnerability tracking and risk mapping
- Improvement of efficient proactive information system
- Formation of institutional training and development programs
- Preparedness of people at communal level regarding how to deal with disaster
- Easy access of information
- Pre-emptive rapid response unit
- Availability of funds and insurance
- Honestly use of financial incentive
- Continuous research programs
- Disaster management become the compulsory subject for students
- Training and education and awareness seminars with the help of regional and international assistance.
- To minimize the vulnerability proper planning is essential. It is also compulsory to make certain mechanism in proper way in order to reduce or minimization of the impact of disaster.
- The role of international humanitarian assistance should be seen in broader context in term of piece, democracy, good governance, human rights, development, building confidence, prevention from conflicts and keeping amity of world.

Constructional role of media. The media is an impotent pillar of the state so government should have to take necessary steps to make sure its involvement in national strategies and plans for public awareness and risk reduction along with the managing the situation during disaster. The various form of communication can be used successfully:

- To promote the function.
- To communicate warnings.
- To prepare communities.
- To report accurately what has happened (during and after a catastrophe).

Figure 2 shows hierarchy of the major key player in the early warning system

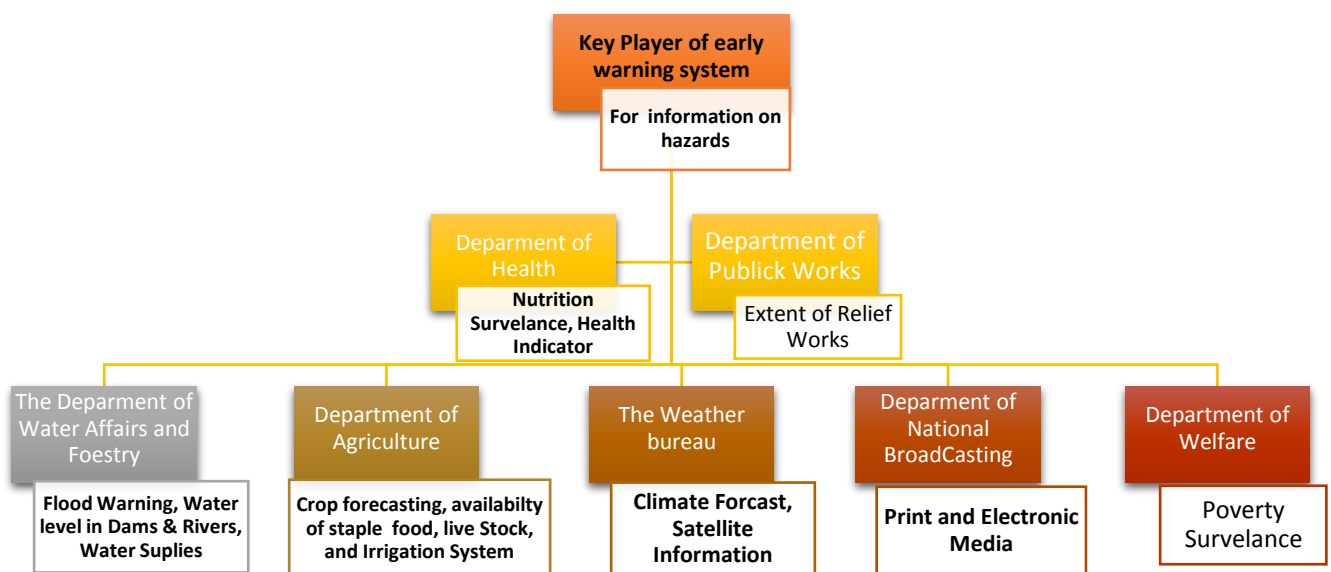


Figure 2: Hierarchy of major key player in the early warning system

Suggestion for how to deal with Different Disaster Events

Famine or Drought

The use of latest technology for the forecasting about weather and climate systems of southern hemisphere, international meteorologists become able to predict droughts. But there is still need of further development, as warnings about the droughts will never be perfect. As the distresses of are never be uniform because the droughts are usually happened for the longer period of time span. The national Department of Agriculture, is expected leading agency to deal with droughts and manage crop forecasting, made availability of staple food, livestock, and keep alive irrigation system. The Department of Agriculture is one of the main key player to initiate necessary steps for Preventing and responding to reducing the impact of prediction or initial drying. The Agriculture Department will also provide disaster relief assistance in case of flood, fire, tower, prison, storm and storm. In the past, aid for aid was mainly in the form of subsidies to cover the economic damage to the white commercial sector and to cover its debt. The Great Chinese Famine of China in 1958-1961 and Holodomor Famine of Soviet Union in 1932-33 having more than 4.3 billion and 8 million death toll respectively. This engulf of the deadliest famine of the world partially caused by the human swallow's number of human beings over the world due to mass exacerbated starvation:

Prevention and preparedness

Working against drought in the long-term

- The Ministry of Agriculture has to acknowledge long-term drying effects is the best way to reduce the negative effects.
- Recognize that state farmers cannot continue to save, more security approaches are offered in the agriculture sector.
- The Minister of Agriculture has set up a working group to develop a dry policy.
- Develop a national drought management strategy incorporation with other national departments.
- Improve early warning systems, promote close co-operation with the Office of Meteorological Standards and through the monitoring system established by the water and forestry issues and by providing better cultivation and anger.
- Prepare a better communication and information system linked to the local community, which not only offers farmers, but also provides the appropriate advice for managing the resources available in each province.
- Establish an effective system of financial excitement, such as crops and other emerging insurances, to save crop revenues from good crops and potentially emerging collateral. Target farmers.
- Start the water demand and management policy for rural areas with the help of the Ministry of Water and Forests.
- With the help of local municipalities and rural development programs, establish and promote better management of land management.
- While it is necessary to provide management specialists and targets for rural public works programs to ensure "water drought" and water scarcity in rural areas.

Preparing and responding for drought

There are large numbers of procedures/measures should be taken by the Department of Agriculture to response drought. Some of the necessary steps are as under:

- Improve the information system of early warning.
- Make policy for national crops forecasting. This is necessary for traders to make statistical probabilities for their good market, as currently market is suffering by price fluctuation.
- Harvest condition and predictions in former homelands. Yield failures provide warning that incomes will fall in an area, and alert other departments, notably Health, Welfare and Public Works, that nutrition and income support may be necessary.
- Update the condition of grazing lands, livestock and the access of livestock to water.
- Satellite data with comparisons from former years.
- Mobilizing other state resources, to cushion or reduce the impact of drought.
- Mobilizing the support of provincial and local governments.
- Preparing a communication strategy and advice for farmers and other communities on how to deal with the drought.
- Mobilizing the resources of non-governmental organizations, community-based organizations and the private sector in assisting with relief efforts, particularly in poorer areas.
- Coordinating with the emergency services and committees.
- Launch new TV programs or channel for farmers.

Water management

The Department of Water Affairs and Forestry is one of the chief national authorities. During disaster interrelated to water aspect this agency leads an important role for the broader water disaster management. As far as disaster management concerned Department of Water and Forestry Affairs have large responsibilities including with management of water resources and substructure to serve rural and urban sector for native and industrial usage and also for irrigation of agriculture. The Department of Agriculture is mostly considered as relevant for drought-related field of prerogative, as far as disaster management is apprehensive, is rain-fed agriculture.

Some of the major water management problems are the following:

- The focus of the Department for Water supply and Forests Affairs almost alone in water management.
- Focusing on specific areas of water management has limited itself to excluding, for example, the former areas of the country. In this way, hundreds of survivors stabilize without resources, particularly water and independent.
- Even a degree where the basic infrastructure of the water company commissioned the front communities, communities of the property, is not out of this infrastructure for various reasons. In this sense, encouraging preservation is sometimes programmers.

Prevention and preparedness

The Department of Water Affairs and Forestry, has applying new water management methodologies, in order to effect ecological water management rehearses, which are following below:

- The Department of Water Affairs and Forestry should publish a White Paper on Water Supply and Sanitation, describing the activities related to clean water.
- On the demand side water-management, the Department of Water Affairs and Forestry lunch various programmes like "save water to save nature" for practices of water conservation.
- Develop policies and strategic plans for raising the water level underground water reserves.
- The government should have to revise her policies substantially related to water usages and sanitation to afford holistic management of water.
- The government identifies the responsibilities of different of her tiers and other important pillars of state regarding the provision and sanitation of water services.
- Establish a special task force to stop pilfer and illegal connection of water, along with encourage the people about the better use of water and its storage.

Floods and dam failures

Torrents and floods are the instinctive spectacles that occur asymmetrically interludessomewhere in drain systems of streams and rivulets. Though flood cannot be observed as unforeseen, but it strike is highly impulsive due to unpredictability. The destructions caused by the floods are varies widely over at large scale so, within no time it become minor flash to major disaster event. For instance in Yellow River flood in 1887 and Yangtze Huai River flood in 1931 were a series of devastating floods in China. These floods are some of the deadliest floods of the history as both of floods have death toll range from 3 to 4 million and according to contemporary studies estimation about 53 millions people are directly affected by both of these two floods. Both these two floods destroy huge amount of farmland and residency areas.

- The operational procedures are corporeal processes, these are built to control flood run off and overflows of rivers for this purpose dams are edifice for flood attenuation, or construction of river draining work such as construction of embankments for urban protection from water storm.
- Non-structural measures involve in instance the rough guide and execution of serviceable use of land on floodplains, proclamation, lawmaking and guidelines for dam safety, further preparedness for flood and eventuality contriving, establishing flood warning system, etc. nonfunctional procedures are mainly aimed at mutable configurations of activities.

Indigenous agencies commonly believe that flood prevention strategies and instructions at the national and provincial levels are not strong enough. Local authorities can establish sound flood management practices by incorporating them into local laws. Nonetheless, flood management, particularly nonfunctional flood management, is supplementary important to the people than to water management issues. Therefore, it will be more logical to establish a multidisciplinary, cross-sectorial, and comprehensive flood management agency. The Ministry of Water and Forests can provide technical flood management information to such a complete institution. The integrator can also connect with other for sharing of important information such as technical data (demographic, social, etc.), that is available in a form useful information to the target the disaster affected area. The disasters of the civil houses, ensigns, and standards, and the springs of water: the counsel of the management of other, etc., which, due to the expertise of the threshing floor or of social institutions by the appearance of the Departments of the others.

Prevention and preparedness

The large disasters resulted by the floods can be prevented with a little planning and observing the safety precautions. Many of the flood damages are occurred due to poor planning and construction of living localities

near the high risk flood plains without following the safety measures. The damages of the flood can be prevented by following preparedness and precautions.

- The establishing of leading flood management agency at national level that deal with flood management issues. This national flood management agency have to ensure that policy for the flood management is well being introduced at nationwide and try to maintained policy structure at all level as the part of envisaged part of national disaster management.
- The role of local, provincial, and national government should be clearly identify for flood management system.
- Coiffing a configuration of economic support for preventative flood management practices.
- Arrange the development and maintenance of communication strategy.
- Providing of development and prosecution of customary or "evasion" standards and observes for how mudflats would be castoff.

Figure 3 illustrate the critical services interrupted by the floods and require substitute reinstatement

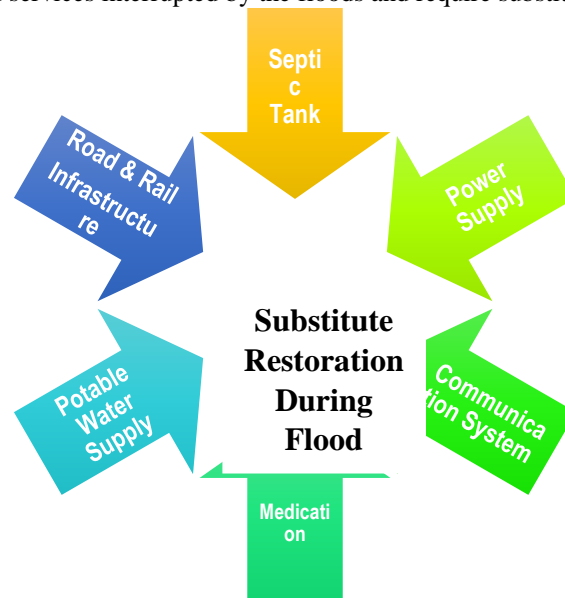


Figure 3: The reinstatement of substitute during flood victim

Fire hazards

In the modern world the worth of the property devastated by the fire is rapidly increasing due to several reason some of them are over population and unplanned construction building for living purposes. The almanac estimation of losses caused by the fire is imminent up to 1 billion \$. The adversity caused by the single fire rapidly spread from its originating point and within no time whole building is glanced at fire. In 1997 Indonesian Forest Fire, Black Dragon Fire of China in May, 1987 and Peshtigo Fire in Wisconsin USA on September 1871 were probably one of the three largest fires ever to occur. The fire were caused by the due to changing in the tropical conditions and forest vulnerable to fire during associated with drought in respective years. The total economic value of damages are predictably estimated around 14.73 billion. On the other hand more than 1 million people were directly affected by the fire conversely thousands of people were died due to these fires. The destruction may increase if another disaster such as strong wind, earthquake is simultaneously erupted. In this situation the loss of property any human life cannot be estimated.

Prevention and preparedness

- Government should have to revise his policies for national building regulation in the urban areas for the prevention of fire hazards through the strict legislation laws.
- The fire fighter having a complete team included with paramedical staff, police representative inspector of relief work to deal emergency. The firefighting act empowers the chief of every province to take extraordinary steps
- The deed related to fire brigade services confers a wide range of power obtained by this department on the incident of fire. The fire fighters having authority to enter into a building, close streets, obtain help from general public or call other department for rescue even they have right to demolish any building or obstacle in their relief work while dealing with fire.
- Fire brigade generally handle dangerous materials exasperated. The planned building partner health examination and approval is still time to prevent an accident mitigation. Handling of hazardous material in different ways Errata to receive instruction. Departments of large databases larger, so too protective clothing, chemical equipment and the equipment undergraduate hazardous materials.

- The fire brigade services is also agency that respond to disaster caused by the road coincident they and other buildings responded, like large scale instances causing deaths.
- The contemporary fire brigade bill needs to be applied to an expanded emergency case where anyone can “invite” the volunteer's pool.
- Established event information, which is an effort to provide quick information and statistics on the national system of fire and harmful substances being irritated. This information can be related to a national event management system that must ultimately form part of the data collected by IDMC.

In the situation of predicting forecasting of weather conditions for the fire exposures rate is also affected especially in the forest and grass land. In this case the department of weather plays an important role for advising the people, agricultural communities and forestry sector by giving them early warnings.

Responding to fires

In circumstance of fire, the primary those who square measure seemingly to retort to a hearth disaster square measure the rescue servicing entities of authority area. Conversely, it's clear that the majority of the well-resourced emergency services square measure primarily founded in municipal cities, and these square measure suitable to take care of a variety related to fire incident like operational fire-fighting, marine, aviation, wildfires, and many more. In countryside zones, emergency services square measure fragile, and infrequently communications in these parts are troublesome. In retorting to fires, the agency will perform sure arrangements, and these include:

- Mobilizing speedy group's response, with certain countryside as well as joint medicinal facilities units.
 - Request for help to inter-governmental cooperation in situation of a significant catastrophe. the most deceitful pretenses, during this circumstance, square measure seemingly to be the auto department, the Department of Water Affairs and biology, Environmental Affairs, university laboratories, traffic authorities, hospitals, state veterinary services and provincial health departments.
- In cases that involve rural areas, native authorities ought to work with the Department of Agriculture and biology sectors to take care of explicit fireplace hazards.

Bomb explosions and civil discontent

According to police act and constitution, it is the responsibility of law enforcing agencies to deal with civil unrest, bomb blasts and commandeering of airplanes.

Prevention and preparedness

There are a numeral of preemptive measures by which police and law enforcing authorities are directly involve forensuring civil conflict and terrorism are minimized or identified early on. Some of the prevention and preparedness for bomb outburst and civil unrest are follow:

- Develop national contingency policies, strategies and guiding principle with the help of local and provincial authorities and other important organizations regarding to deal with emergency created by the civil unrest and bomb explosions. The basic motive of these policies is that what kind of important step should be taken to stop such kind of disasters.
- Activate government and nongovernment intelligence agencies along with other relevant institute and develop an effective coordinate system among them for sharing information to each other and relevant department.
- The security agencies establish such coordinating activities and polices for the security mechanism and improve their system of intelligence by the corporation with neighboring states to secure her boarder management system to control illegal movements. There should be contacts of national security agency and international security organization like Interpol. The basic purpose of these corporation are well planned and clear and does not infringe with countries laws.
- There should be proper system of communication system in working order its operating coordinating committee structure have to provide useful framework for amalgamating of early warning system for disaster and inform to common people through the relevant bodies.
- The security agencies and public awareness units are emerging strategies for the persistent training of institutes and the complete community as a whole on how to turn the course of bomb outbursts and turbulence circumstances.

In the situation of bomb blast and turbulence situation the policy and law enforcing agencies should have to take following steps for the relief and reintegration of the people protection and trying to control the situations so that people does not come out against the government policies:

- The coordination of accomplishments concerning with roles of the relevant authorities and departments or security agencies for the command and control during the disaster event and hazardous circumstances. In this situation government have to engage the cordoning off areas for maintaining security protocols.
- The security agencies used its own alternative framework during the situation of disaster or for the assistance during the emergency and involve rescue agencies. The special task force and security police

units equipped with all necessary requirements such as bomb disposal experts, rescue dogs, forensic experts and hostage negotiators.

- The security agencies would notify families during the case of major disaster to avoid loss of life and support of other agencies for the assisting of victims

Refugees and displaced people

The disaster aroused by influx of refugees of large scale people from one country to other country during civil conflict, war or famine is also one of the biggest course for security and implications of resource of a country. The Department of Home Affairs and Interior Ministry have to deal with the influx of refugees. As the flee of the people from neighboring states caused by the conflicts within country or outside the country become threat for security and resources of a country because it became nearly impossible to provide basic necessities and shelters. For instance during the Mozambique civil war large number of refugees migrate to South Africa from the conflicted areas. Famine and other natural disasters are also one of another cause of migration. The Department of Home Affairs and Interior Ministry took opposite measures to control the unmonitored movements of the refugees. The relevant department also seeks national and international support through UN for ensuring the adequate needs of refugees. In terms of the UN General Assembly resolution 46/182 of 1997, the UN provides for a coordinated humanitarian response. There are well-established international protocols for dealing with refugees. In 1996 South Africa acceded to the UN Convention Relating to the Status of Refugees (1951), the Protocol to the 1951 Convention (1967) and the OAU Convention on Refugee problems in Africa (1969). The following preventions and preparedness should be taken in case of immigrants.

Prevention and preparedness

As it is almost impossible for a country to control the influx of refugees during the course of crises and major disaster occurred in neighboring countries due to humanitarian reasons as every country who is member of UN have to obligate the laws for human protection and welfare. However, there are certain ways and actions that can be taken by a country to deal with the problem created by the refugees in the following ways effectively:

- There should be clear policy of the Department of Home and Foreign Affairs on discerning among immigrants and "illegalization" and improve his security at the boarder of the state moreover charitable assistance can be granted to refugees on the guarantee of human right watch as the refugees will return back to their native home land after settlement of disaster.
- Every country should revised her foreign policy with neighboring states for the development of effective mechanism of monitoring the potential of refugees during political conflicts or probable impact of natural or other disaster.
- There is surveillance of mechanistic between neighboring countries which can help to classify probable sites of administrative conflicts or the possible controls of natural or other tragedies.
- The government should have to develop intra-governmental mechanism between relevant departments particularly involvement of Department of Home and Foreign Affairs and Department of Transportation for the mobilization of resources and refugees.

Responding to refugee circumstances

The following steps are required to taken by relevant departments for controlling of refugees influx:

- Initially government have to review his capacity for the adoption of refugees, for this purpose government have to engage appropriate departments such as The Department of Health and Department of Public Welfare and Department of Water activities for welfare and relief of refugees.
- Government also call international UN humanitarian assistance and foreign affairs.
- The Department of Home and Foreign Affairs take responsibility for the mobility status of refugees while they stay in country, so the said department have to manage special data and registration center for monitoring of refugees.

Epidemics and other health disasters

Those vulnerable parts of the world where the poverty rate is higher, there health indicators and malnutrition are notably higher. The relative department trying to provide targeted mechanism to affected victims but there is still space of need of do more. In case of drought, the disquieting fatality of malnutrition is rapidly increasing and also effect the relief work. The epidemics and health disasters not only increases the economic issues for poor household but also raise the social problems. As economical support is an essential need for poor household and also for better medical treatment, but health disaster become serious course of malnutrition. Therefore, the ratio of health care to your diet and be a critical part of a larger early warning of the disease, especially in slowly so that the disasters. If disasters fast attack, play a large role in the management of the Ministry of Health to victims, or a natural person and the injury caused disasters that cause or plague blast downsizing. According to World Health Report (WHO), every year the world unremitting sustained about 2.3 million deaths from malaria so, during the first half of the 20th century there were hundred million death toll. Eradication to, world almost 300 million human died due to smallpox during the period of 1900-1995.

Prevention and preparedness

Epidemical health and disease initially at the level of planning and support to the country's safety provided by the system. We know that poverty, informal the needs of the small towns thereof, of the evolution of the infrastructure, as it was not enough for thought to be stoic, and the water of the facilities, it can be to overburden and disease, or make one. In the national level, the Ministry of Health created a secondary service, National Services, and to date has not entered into force, the formal system. I create new address management systems in collaboration with regional and indigenous government. The most advanced disaster management department will review plans to reformulate these plans take into account regional and community participation to health. There are other actions that can be taken by the Ministry of Health, in cooperation with provincial and local health departments authorities, such as the development of early warning systems in both urban and rural areas. The department have already initiated communicable procedure may be set up in each province Disease Control Function and the diseases caused by the epidemic established committees epidemic. In the current situation the government is mainly focus on the most vulnerable conflicting issues erupted in the rural and deep rural part the country. Thus the communities needs to be provide in the relief in the form of capacity building for self-support during the initial phases of disaster, therefor they needs trainings to deal with disaster, first-aids services and contingency planning and crisis management activities.

- Develop contingency plans and policies for emergency medical services and mass mobilization of medical aids.
- Establish the early warning system and communication network.
- Plans are being developed in consultation with other State departments and role players, including the Private Sector and NGOs. These would include the involvement of district health centers and clinics forming the local focal points in terms of control and coordination, especially in rural areas. Specific emphasis must be placed in providing logistical support at short notice.
- In addition to the provision of communication systems for health facilities, attention must be given to the establishment of Province-wide radio communication systems for the control and co-ordination of emergency medical services in times of disaster. These communications systems should link with relevant authorities.
- The epidemical contingency plans should be formulated for acquiring the supplies of medicine at large scale.
- The Department of Health launch people training programs and counsel them about health care reservoirs and first aids preparations the govt. should give consideration the health care programs launched by the health department.

Responding to Eruption of Outbursts

- In the event of an outburst, indigenous healthcare centers should acquire the initial steps. This comprises treating of patient and categorizing the sources of epidemics.
- This is the national obligation of national and provincial government to assists each other in case of disaster event.
- To deal with outburst, particularly in solitary confinement requirements to be required, healthcare units frequently need maintenance from other units and agencies when dealing with contamination and perilous discarded wastes.
- Provincial and national healthcare units may also demand supports from local and international NGOs and private welfare associations to play their role for the support and rehabilitation of the people in the case of emergency and disaster management.

Earthquakes/dolomite land/nuclear radiation

The wide variety of geological structure formation of the earth possess to various kind of structural risks. If the continuous development is not well managed then it may cause a serious kind of destruction or disaster. Mining activity, earthquakes and volcanos eruption and dolomite of land are the typical land subsidence and sink holes. Mining slums that are dumps into large dams some time have large amount of uranium and radioactive element may cause complications and problems for the mining waste management. In 1920, Haiyuan (China) land sliding triggered by Haiyuan earthquake have death toll 100,000. In 1916, White Friday avalanches in Italy occurred during the First World War killed hundreds of people. The Vargas tragedy occurred in the state of Venezuela on 14 December 1999, the torrential rain cause flash floods and debris flows have death toll more than 100,000 people. The estimated losses in these deadliest disasters about 20 million casualties were reported in the United States Geological Survey and damages to infrastructure were also very high. If the mining waste does not deal with properly then it may cause serious kind of disaster, therefor the mining waste does not handle by the conventional ways. The Department of Mines and Energy Affairs (DMEA) and Department of Environment and Tourism Affairs (DETA) have to take responsibility to deal in the case of mining disaster.

Preventing geological and mine-related disasters

- The Department of Mining and Drilling should have to regulate and monitor the all activities take place in country and ensure all the safety measures before issuing and starting new project.
- The relevant department works closely with the Department of Water Affairs in managing potential forms of hazards such as the possible contamination of ground and surface water systems as a result of mining activity or the release of hazardous material.
- In case of earthquake, there should be 24/7 operational national seismologic network that compartments seismic reconnaissance on 24hrs basis.
- The government should have to take steps for regularization of mining companies and make sure that each company have their own set rules for workers to deal with disaster and hazardous materials and they fulfill all the requirements necessary for workers safety.
- The Department of Water and Forestry Affairs should have to develop legislative framework to deal with the issue related with mining disaster and it's certain types of hazards linked with mining waste management.
- The parastatal institutions in having over the year industrialized information system and data based on the hazardous and risk of different geological formations.
- The Council for Nuclear Safety and Control has have to play his important role for conducting the advisory and training seminars for general people to avoid and prevention in nuclear disaster.

Responding to Earthquake

- During an event of mine disaster or any other geographically relevant disaster, this indigenous agency called to play her role, while emergency services and other departments trying to help to deal with the fatalities. As far as operational matters are concerned, the local authorities' engineering departments will also help ensure that measures are taken for the stability of the regions.
- In the situation of large disaster that affects the large number of geo-structural infrastructure and people there is need of both local and national agencies to come allied and take part in jointly relief work as a combined force unit.
- During the disaster occurred due to explosion of nuclear explosion or bomb blasting situation all the concerned department like The Department of Meteorology, The Department of Weather Bureau and The Department National Disaster Management along with the help of international agencies take part in the relief work to mitigate the dangerous effects of the radioactive gases/elements. The weather bureau department track and predicts the concentration movement of hazardous gasses in the atmosphere.

Aircraft/maritime/road and railway disasters

There is several network of rail, road, air, and shipping across the world that is used for transport of freight and people between towns, cities and continents. These source of communications are the integral part for development of a country. Therefore the Department of Transportation (DoT) of any country tries to keep its source of logistics in continuous operating condition. Every year the DoT making policies, laws and guidelines for the safety of all means of transport routes. As it is the primary responsibility of DoT to take primary steps and responsibility at national level to avoid disaster and safety of all routes by developing number of procedures and regulations to avoid hazardous accidents as safe as possible. However, apart from all safety measures and steps taken by DoT, accidents do occurs due to various factors involved like carelessness of drivers as they not follows the instructions and guidelines enforce by the relevant authorities and departments. The Granville Rail crash in New South Wales occurred in January 1977 at western suburb of Sydney when a train shuttled large number of crowd, derailed on the road bridge that collapsed onto two of the other passenger trains. This accident is the worst rail disaster in the history of Australia due to several people died 214 were serious injured and more than 1300 people were affected by this accident. In case of major accidents routes and blocked and transportations of logistics are badly suffered. So various emergency procedures and steps are taken to cope the disaster as well as reaction mechanism and deceitfulness. Some of the major fatal disaster in the history of the rails is described in the table below:

Serial No.	Death Toll	Cause of Accident	Event	Location	Date
1	157	Train caught fire in Tunnel because heaters are unsafely installed	Kaprun Train Disaster	Austria	Nov.2000
2	300	A passenger train rolls backward in goods yard	Lgandu Train Disaster	Tanzania	Jun.2002
3	107	Train derailed on sharp curve	Amagasaki level crossing collision	Japan	Apr.2005
4	10	A Passenger train struck with Freight train	South Carolina Train Collision	New York City (USA)	Feb.2018

Prevention and preparedness

- The DoT in coincidence with related organizations for example the traffic department, civil aviation authority along with local and provincial authorities are responsible for ensuring the appropriate legislation and regulation in order to safe smooth flow of different means of transportations and interconnect different hubs and linkage of logistics transportation.
- The DoT incorporation with relevant agencies/organizations forms appropriate plans to deal with contingencies appear during different disasters which affects the rehabilitation and relief work.
- Government should have setting up plans at national level for interdepartmental coordination and communication mechanism for the certain areas such as transport of hazards waste, oil spills, and other valuable material. The more specialized treatment and clearance mechanisms.
- The more specialized and clear mechanism is required for improvement and expansion for transport disaster management system both at local and national level.
- Under rest working or continuous long duty hours performed by the drivers is also one of the major cause of accidents, therefor government should have to take necessary steps to avoid under rest working enforced by the transport operators. Moreover special rest houses equipped with all necessary facilities required for crew rest.
- The DoT generally depends upon the services and forecast announced by the Weather Bureau, so all the necessary steps taken by the DoT for safety of maritime community at sea surface as well as for aviation operation for flight planning and safety is associated with information provided by the Weather Bureau, so the correct forecast of the Weather Bureau helps to reduce the risk of major disaster.
- The DoT is responsible to ensure and fulfill all international obligations and conventions for the maritime and aviation transport.

Hazardous material/pollution/tropical cyclones and tornadoes

The catastrophes caused by the harmful material/tropical cyclones or tornados have produce pollution and serious kind or destruction at large level. Therefor government is expected to deal such kind of disaster. But in most of cases the local bodies, NGOs and other private sector also plays their critical role for the development and rehabilitation of the victims. In the modern era of industrialization whereas the development and progress of one’s country is mainly depend upon the industry but on the other hand every industry either it is large or small is producing large amount of hazardous waste and pollutants. This uncontained and poorly managed industrial waste is very dangerous for human life and brings damages to environment and water reservoirs. The poor enforcement regarding disposal of waste material endanger the life of a common person and damaging to environment. Although there are very few site are available in the world for the proper disposal of waste and hazardous material, so need of hour is to develop new sites for waste management. The Daulatpur-Saturia Tornado in in 1989 was the costliest and deadliest disaster of Bangladesh history having 1300 death toll and 12,000 injuries and estimated damages were 1.5million \$, while Haiphong typhoon hits the north parts of Philippines on 1881 is the 2nd most deadliest disaster of the world as it affects more than 300,000 fatalities. The Indian Ocean Tsunami up to 100ft high stuck with the people living along the surroundings coasts of Indian oceans were badly affected by this Boxing Day Tsunami, estimated 2.2million were killed in 14 countries and estimated damages were 15billion \$.

Prevention and preparedness

The main areas that are effected with hazardous pollutants and cyclones disaster are classified into four group. Figure 4 illustrate each of the media affected by the hazardous material.

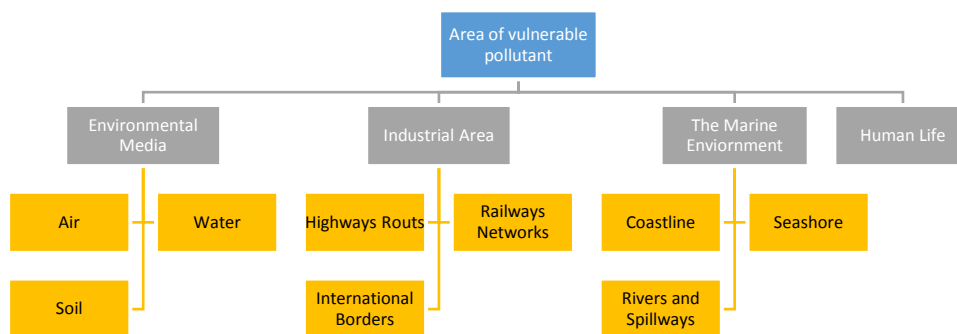


Figure 4: The main areas of disasters directly affected by unauthorized and unchecked hazardous industrial waste and pollutants

The following bullets helps to determine the safety preparedness and prevention took for mitigation of disaster affects.

- The government should have to develop policies for waste management to ensure that national strategies for the generation, transportation and disposal of wastes and pollutants and charge have fines from the felony persons.
- The Department of Water and Forestry take necessary steps for the preventing of national water reservoirs.
- The Department of Water Affairs and Forestry should take necessary steps for establishing of waste management and ensure its proper monitoring in order to safe nature by controlling pollution and perilous particularly along the main transportation routes or whereas hazardous materials are likely to be located.
- The national department relevant to waste management should have to establish monitoring of national waste management system for proper disposal of waste at waste disposal vicinities
- The Department of Fire Brigades and National Emergency Services introduces data captured structure system for continuous monitoring of incidents caused by precarious materials.
- In case of marine contamination, national department of disaster management have permission to call international assistance for support for relief work to save marine life.
- The govt. should have broadcast guidelines required for new fangled infrastructure projects which are more prospective and having significant impact on the people and eco-life. The Environment Impact Association is entirely responsible and directly administered for preventing and mitigation of effects of disasters both at local provincial level and national level.
- The main weakness lies in present disaster management system ineffective communicating information as central communication and broadcasting of early warning system not having proper intradepartmental communication system to take appropriate action to avoid disaster.
- The local authorities in areas that are vulnerable took special steps for regularization of building infrastructure by taking more risk reduction measures and approaches for the development of new building projects and housing societies.

Conclusions:

The new legislation should eliminate misperception. Must provide clear structure to be allowed the laws of the province (old verdicts), the regulations, instructions and directives, if necessary, by-lawspelleverypretender contemplateresponsible. Suchpredominantly are compulsoryfor the roles of nationwide, regional and indigenous governments are redirected according to this paper is to be accomplished. There are two basic kinds of legislation: a comprehensive lawful mechanism that empowers government policy elements and disaster management plans and legislation providing for an emergency governments in emergencies.

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