SUDAN'S NATIONAL HEALTH-SECTOR POLICY FOR DISASTER MITIGATION, PREPAREDNESS AND RESPONSE

CHAPTER 1

1. BACKGROUND

2. DEFINITIONS AND CONCEPTS

According to WHO a **disaster** is *"any occurrence that causes damage, ecological disruption, loss of human life, or deterioration of health and human services on a scale sufficient to warrant an extraordinary response from outside the affected community or area"*.

It may be argued that this definition is ambiguous in respect to what should be regarded or not as disaster. It is, indeed, true that there is no universal and quantifiable threshold of what constitutes a disaster. A major disaster in a small low income country will be merely a routine emergency in a major developed state. The absence of rigid standard is an asset not a liability.

For many, the term "disaster" is associated only with major international catastrophes. However, in the context of sustainable development, small disasters, involving mass casualties or not, are far more frequent and may represent a much greater health burden than those few occurrences making the headlines of the mass media and calling for massive international solidarity.

Disasters and medical emergencies: emergency physicians and layman occasionally tend to focus narrowly on one aspect of the health burden of disasters: the mass casualties. Although the most visible aspect of some disasters, the production of large number of traumas is not occurring in many instances. Displaced population, water and food problems, disruption of normal services and programs, although less impressive, are

often causing a more subtle but pronounced impact. Emergency medicine and disaster health care are not synonymous.

Disaster risk reduction is an encompassing approach aiming to avoid (prevention) or to limit (mitigation and preparedness) adverse impact of hazards, within the broad context of sustainable development. The following definitions are proposed by the secretariat of the international strategy for disaster reduction (ISDR) 4, a UN body established to continue the efforts of the International Decade for Natural Disaster Reduction (IDNDR) (1990-2000).

A *hazard* is a potentially damaging physical event (a storm, a flood or an explosion), which may cause the loss of life, injury or property damage. Each hazard is characterized by its location, intensity, frequency and probability.

The *vulnerability* is a set of conditions resulting from physical, social, economical, and environmental factors, which increase the susceptibility of a community to the impact of hazards.

The *coping capacity* is a combination of all strengths and resources available within a community that can reduce the level of risk, or the effects of a disaster. For practical purpose, the coping capacity is equivalent to readiness or preparedness, terms more often used within the health sector.

A *risk* is the probability of an adverse outcome, health impact or economic losses resulting from interactions between hazards and vulnerable/ capable conditions. Conventionally, risk is expressed by the function:

$$\boxed{\textit{Risk = hazards X vulnerability/capacity}}$$

Mitigation is the set of structural and non- structural measures undertaken to limit the adverse impact of natural hazards. A typical example of mitigation in the health sector is the improvement of the resilience of hospitals to earthquakes or windstorms through applications of more stringent building norms.

The above definitions call for some practical considerations:
- In practical terms: a volcanic eruption, a tropical storm, a fire or an explosion does not constitute in itself a disaster. It is the occurrence of

these hazards in a particularly vulnerable population that cause a disaster. As a result, the health effort should aim to reduce the risk, not the hazard.

- The capacity of health sector to reduce the hazards is limited at best. Earthquakes, cyclones and other natural disasters cannot be prevented yet. Avoiding the release of hazardous substances or the occurrence of conflicts or terrorism acts is beyond the purview of the health authorities.

- Reducing the risk therefore will be achieved through decreasing the vulnerability (awareness, early warning and mitigation) or increasing the coping capacity (preparedness and response).

Disasters are described, classified and approached from two different perspectives: from a health angle (e.g. based on the number of deaths, injured, homeless, hungry or merely 'affected' persons) or from the economic point of view. The health sector is obviously concerned with the health consequences; the human dimension, while financial institutions and political authorities in countries tend to focus their attention and resources on the economic consequences! For the "health sector" economic losses are also important, as the health and welfare programs directed to the poorest segments of the population are generally the first to suffer in cases of budgetary restrictions. Damage caused by disasters will therefore be measured quantitatively in terms of disability attributable to the risk factor or in monetary value (US$) whereby lives lost are attributed an economic cost varying from country to country. The latter indicator, favored by financial institutions, is particularly inappropriate for countries with low income as the attributed monetary value of a life (lost productivity) is very low leading to a disproportionate and unethical insignificance of massive human losses compared to infrastructure damage.

A public health approach to disaster management will aim to decrease the risk by reducing the vulnerability (prevention and mitigation measures) or building the coping capacity of the health systems to address the health needs (preparedness), in addition to the traditional provision of prompt and efficient emergency care (response) once the disaster has occurred.

3.   RATIONALE FOR A HEALTH-SECTOR DISASTER PREPAREDNESS STRATEGY

With both disaster and the number of people affected such events on the increase, the importance of disaster as public health problem is now widely recognized (Noji & Toole, 1997). In the early 1970s, major natural disasters in Peru, Nicaragua and Bangladesh (at that time, East Pakistan) heightened awareness of disasters as a major public health

problem. At that time, and for the first time, it was observed that the effects of disaster on the health of populations were amenable to study by epidemiological methods and that certain common pattern of morbidity and mortality following certain disasters could be identified (Western, 1972). Studies and researches conducted at that time revealed the importance of valid and timely data collection and analysis as the basis of rapid and effective problem solving during natural disaster. It also become clear that in the absent of an adequate field assessment, disaster scenes are often cluttered by unnecessary/useless/outdated/unlabelled drugs and vaccines that are not needed or effectively used, medical and surgical teams without proper support and relief programmes that do not address the immediate local needs.

However, disasters can be considered a problem for the public, from the perspective of health, for several reasons (ECLAC, 2003):

- They can cause an unexpected number of deaths, injuries or illnesses in the affected community, thereby exceeding the therapeutic capacity of the local health-care services and forcing authorities to reorganize the sector or to solicit outside help;

- They can destroy local health infrastructure such as hospitals, health-care centers, laboratories and the like, which will thus be unable to respond to the emergency. Disasters can also alter the provision of routine health-care services and preventative activities, with subsequent long-term consequences in terms of increased morbidity and mortality;

- Some disasters can have adverse effects on the environment and the population by increasing the potential risk of transmissible diseases and environmental dangers that increase morbidity and premature deaths and could lower the quality of life in the future;

- They can affect the mental health and the psychological and social behaviour of the affected communities. Generalized panic, paralyzing trauma and antisocial behavior rarely occur after big disasters, and the survivors quickly recover from the initial shock. However, anxiety, neurosis and depression can arise following both sudden and slowly forming emergencies;

- Some disasters can cause food shortages, with severe nutritional consequences such as a specific deficit of micronutrients (vitamin deficiencies); and

- They can cause broad movements of the population –whether spontaneous or organized– often to areas where the health-care services cannot meet the new situation, with a consequent increase in morbidity and mortality. The displacement of large population groups can also

increase the risk of outbreaks of transmissible diseases in the displaced and host communities, where the large groups of displaced persons may be housed in and share unhealthy conditions or contaminated water.

A common conclusion that can be drawn is that although all natural disasters are unique, there are some similarities in their health effects which, if recognised, can ensure that health emergency medical relief and limited resources are well managed.

1. CONDITIONS IN THE SUDAN

Sudan is vulnerable to acute human suffering and loss of development assets brought about by disasters with both human and natural causes, and frequently by a combination of both. The civil strife which continues for about half a century has left the country with an eroded infrastructure, weak economy and disrupted social network. With nearly large numbers of the country's population chronically food insecure, disasters threaten food security through disruption of normal cropping, pastoralist and marketing activities. In recent years, episodes of drought-induced food shortage and famine associated with conflict have resulted in thousands of casualties, internally displaced persons and refugees, posing dilemmas for long-term solutions. Such conflict-related or 'complex' emergencies can create a need for massive and prolonged relief operations (i.e., Operation Lifeline Sudan – OLS), and require the heavy use of social and economic assets in mitigation.

Aside from the foremost natural hazard of drought, other 'slow-onset' hazards include environmental degradation, the consequences of which can be equally disastrous to the food supply. Major 'sudden-onset' natural hazards such as floods, epidemics, pest infestations and livestock diseases, as well as earthquakes, and severe storms also threaten the country.

However, the country possesses many assets with which to fend off disaster effects, such as the resilience and capabilities of communities, local coping and recovery mechanisms, lessons learned and infrastructure from past disasters, and in particular opportunities for pre- and post-disaster planning and development.

2. MAJOR HAZARDS

The main hazards which cause disasters in Sudan are the following (for more information see table 1):

Drought is considered the foremost threat to the country. Regions which do usually experience drought in the past like the western and southern part of the country have experienced past disastrous episodes. Climatic changes appear to be responsible for an increase in the frequency of drought in some parts of the country. Where water resources are underdeveloped or limited as in many of the drought-prone areas, people and livestock are very vulnerable. Widespread agricultural failure as a result of drought has combined with effects of conflict in recent complex emergencies in the country.

Conflict has inflicted heavy economic and social losses in Sudan and it has become the most serious cause of food insecurity in the country. Effects include widespread human casualties and suffering, large numbers of refugees and internally displaced persons, a need for relief and for demobilization and reintegration programmes, and an extensive problem of landmines.

Floods are a major threat to the country and damaging floods are becoming more numerous due to increasing occupation of flood plains, deforestation, lack of preparedness, and weak monitoring. Recent flood emergencies have occurred in most of south, west, east central and northern states of Sudan. **Epidemics and outbreaks of disease** have had major impacts. Malaria affects 40% of the country's population and has a serious social and economic impact. Other threatening diseases include Meningococcal Meningitis, Yellow Fever, Cholera, and HIV/AIDS.

Environmental degradation includes desertification, deforestation, ecosystem degradation and environmental pollution, which are all considered to be worsening in the country and rendering the population more vulnerable to other hazards.

Earthquakes have occurred in Sudan several years ago.

Date	Type of Disaster	Remarks
27/2/1965	Accident	Train (Near Port Sudan)
1/4/1965	Epidemic	Meningitis Khartoum (April 1965)
1/3/1966	Epidemic	Cholera (All over the Country)
9/10/1966	Earthquake	All over the Country
1/1/1974	Drought	All over the Country
1/10/1974	Floods	All over the Country
1/9/1975	Floods	El Gash Flood
1/9/1976	Epidemic	Maraidi Fever
1/7/1978	Floods	El Gazira

1/1/1980	Drought	East Africa (Five Countries)
1/1/1983	Drought	Northern Region
1/1/1983	Civil War	South Sudan
1/4/1983	Drought	Maban
15/8/1983	Floods	Kassala – Heavy Rains
1/10.1983	Floods	Soon Floods – Mandiri
1/5/1984	Starvation	Red Sea – Kordufan , Darfur
6/1/1984	Displacement	
1/6/1985	Epidemic	Cholera
6/1/1986	Locust infestation	Desert Locust
1/1/1987	Locust infestation	Locust
1/1/1987	Rates infestation	
1/10/1987	Drought	Kordufan – Darfur
1/1/1988	Epidemic	Meningitis – Khartoum / Central
4/8/1988	Floods	Khartoum/Elshamalia / Central
1/11/1988	Epidemic	Malaria
19/5/1990	Earth quake	Juba /Tirkaka
26/5/1990	Earth quake	Tirkaka
28/5/1990	Refugees	50 Thousand Ethiopian Soldier – El Lafa Kassla
22/8/1992	Floods	Kassala – El Gash
18/4/1993	Floods	Port Sudan , 26 death , Losses 150 Million Sudanese Pound
1/8/1993	Earth quakes	Earthquake in wide parts of country, one Woman and her child passed way in Khartoum.
1999	Gastro-enteritis	In different Parts of Country
1998	Floods	Northern State
1999	Meningitis	Large Parts of Country
2001 – 2002	Sunstroke	Red Sea

Table 1 Types and dates of disasters in Sudan since 1967.

Source:

الصادق محجوب ود. هاشم علي الزين المساعد. (2002). الإعداد المبكر للطوارئ الصحية ومجابهتها. إدارة الوبائيـات – الإدارة العامـة للطـب لوقـائي – وزارة الـصحة الاتحاديـة بالتعـاون مـع منظمـة الـصحة العالميـة. الخرطوم – السودان.

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Pest infestations are a major threat and the country is plagued by a large numbers of pests, including weeds and crop diseases. While the predictability of Desert Locust outbreaks is improving, significant constraints are encountered in control, including weak control services necessitating a crisis management approach, and insecurity in breeding areas affected by conflict.

Livestock diseases pose an important threat because of the vast populations of livestock in the country. The country possesses over 130 million heads of cattle, sheep goats and camels raised under nomadic systems. The main threats to this huge animal wealth are endemic diseases e.g. rinder pest, anthrax, haemorrohagic septicemia, black quarters and contagious bovine pleuropneumonia. However, and due to stringent preventive measures adopted in the county via vaccination, quarantines and controlled movement of livestock, the veterinary authorities were able to reduce the incidences of disease outbreaks.

Other animal diseases of importance are foot and mouth disease and diseases transmitted by insects as trypanosomiasis, thiteria and babesia.

So control of insects as ticks and *tse tse* flies by spraying with insecticides is of great importance because no vaccine is available now in the Sudan for the foot and mouth disease which is caused by many strains of viruses.

Other hazards include tropical cyclones, fire, accidents, severe storms and effects of storms such as wind and lightening.

CROSS CUTTING FACTORS AFFECTING VULNERABILITY TO DISASTERS

Other, cross-cutting factors contributing to country vulnerability to disasters include extreme poverty, a high rate of population growth, and high rates of urbanization. Rural populations are dispersed and their development is constrained by lack of access to roads and communications. Population pressures have resulted in migration and widespread degradation, and mitigation efforts have been insufficient to stop the cycle. Policy development has not been sufficient to promote agricultural and economic development in a way which effectively addresses environmental degradation and land tenure issues. Public infrastructure is limited in the country and road, railroad, and port require upgrading. Institutional development has progressed at most central levels but coordination and implementation capacities are often weak. Community-based institutional development is even less advanced. The country has limited technically trained staff. Educational development is constrained by limited institutions and illiteracy rates are among the highest in Africa.

Widespread food insecurity predisposes the country to food shortages and emergencies. The causes of food shortages and famine in these situations are interrelated with political factors and physical insecurity. The main food-insecure groups are resource-poor farmers, urban poor, poor pastoralists, internally displaced population and refugees. The major causes of food insecurity are poor agricultural performance, prevailing conflicts and insecurities, major droughts and long term environmental degradation.

TYPES OF DISASTER TO WHICH THE COUNTRY IS PRONE

The hazards and cross-cutting factors outlined above render the country prone to disasters which involve widespread, catastrophic occurrence of one or more of the following:
- loss of access to staple foods (for example through failure or destruction of food crops, loss of income, relative increases in food prices, or loss of access to food markets);
- loss of income and productive assets including livestock, land and physical infrastructure;
- loss of shelter and homesteads;
- loss of access to adequate, safe water and sanitation;
- health crises;
- loss of personal security or mobility, or abuse of human rights;
- loss of institutions, services and 'social capital' – i.e. mutual trust, norms of reciprocity and networks of civic engagement injury and loss of life.

THE RESPONSIBILITIES OF THE HEALTH SECTOR

What is the health sector? The sector may revolve around a national health institution or, in the case of federal states, around the provincial health authorities. The health sector, in any case, is not merely the national or provincial Ministry of Health. The health sector encompasses all actors, public or private, central or local, civilian or military, dedicated to the improvement of public health (including sanitation and water) or the provision of medical services. In this context, the term 'health sector' does not refer to a central office or headquarters in the capital, but the entire system from the most sophisticated university hospital to the smallest health center at the community level.

The health sector is lead by the Ministry of Health. The Ministry of Health has the responsibility to guide, regulate and, under the best circumstances to coordinate all public health or medical activities. In

terms of delivery of services, the Ministry of Health is often far from being the only provider. A primary role of the Ministry of Health as lead agency will be to identify needs, establish policies and norms, formulate priorities and facilitate the contribution of other actors, reducing the health risk caused by disasters calls for the involvement of many actors (state, locality and community level) and, in particular, cooperation between the capital but should be extended at state and local level. It is worth nothing that local health clinics, be from the state or private non-profit organizations, not only are the first responders in case of large disasters but will also be the first to detect unusual occurrence or patterns of health problems or to report on otherwise unnoticed and underreported silent emergencies. Local health workers are the backbone of any early warning or surveillance system.

Unfortunately, recent decentralization of authority and responsibilities to the sanitary at the level of the locality has not been preceded by the building of local management capacity nor has it been accompanied by the building of local management capacity nor has it been accompanied by the corresponding transfer of national resources. The departmental or local levels remain often overlooked or neglected.

The responsibilities of the Ministry of health in response to the emergencies are clear: ensure that victims receive the medical attention they require and that the public health impact and secondary risks are minimized. This assistance may be provided directly by the health services or by other sectoral actors – public or private, under the authority and coordination of the Ministry of Health. This response cannot be improvised, making a permanent investment in preparedness (contingency planning and human resources development) imperative within the sector and the Ministry itself.

The concept "prevention is better than cure" was invented by the medical profession with the introduction of the smallpox vaccine over two centuries ago (1798)! The *raison d'etre* of the health sector is to contribute to the prevention of the Health consequences of any chronic or acute situations: disasters being one among many situations affecting health. The health sector should be concerned and interested in influencing all hazardous behaviors that could adversely affect public health. Factors influencing the vulnerability to disasters are multiple: from political to economics ones, areas for which the Ministry of Health is not particularly competent or influential. In the case of disaster risk reduction, the challenge for the Ministry of Heath is to narrow its focus to the interventions within its area of expertise and competence. Most of the

Ministries of Health, in addition to their role of advocacy before other sectors, are correctly concentrating their resources and attention on structurally protecting the health sector's own infrastructure (damage mitigation in hospitals, water systems, etc.) and ensuring that medical services and safe water will remain or become available when disasters strike (preparedness).

In brief, the Ministry of Health is not only responsible for identifying emergency health needs and guaranteeing that they are properly met, either by its own services or by other actors, it has also the duty to influence, prior to disasters, the development practices and behaviors of the public and the state in general to reduce the potential impact of disasters on public health starting with improving the disaster resilience of the facilities and services under its own supervision.

Emergency preparedness and building local capacity to respond to disasters cannot be dissociated from day to day management of the health problems: the level of development of the health services prior to the disaster will determine the quality of the emergency response. It is utopia to expect that a disaster plan or a training program will permit a health system operating below standards in normal conditions to perform flawlessly under stress and duress in a disaster. How far and how fast a program of disaster preparedness can go in sustainable manner will be determined by the quality of the health system, the water services and in fact the entire economic and political governance structure of the country. Conversely, improving the readiness of the responders often does contribute to better daily management.

Interdependency of development and disasters should strengthen rather than weaken the resolve to focus specific attention and resources to crisis management and risk reduction.

CHAPTER 3

COMPONENTS OF THE STRATEGY

1.INSTITUTIONAL ASPECTS (GOVERNANCE)

Governance is increasingly becoming a key area for the success of sustained disaster risk reduction. Defined in term of political commitment and strong institutions, good governance is expected to elevate disaster risk reduction as a policy priority, allocate the necessary resources for it, enforce its implementation and assign accountability for failures, as well

as facilitate participation form civil society and private sector. The institutional aspects encompass the following components:

i. **POLICY AND PLANNING**

Disasters are increasingly regarded as one of many risks that people face from epidemics to economics downturns, lack of food, clean water and safe environment to unemployment and insecurity. Where many of these risks are compounded, impact of disaster often exacerbated. Inclusion of disaster risk in this broader perception of risk that people have to face in their daily lives required a much integrated and comprehensive approach to disaster mitigation and risk reduction. In this sense, good management of disaster and risk reduction is part and parcel of good government practices. Lack of wider political commitment to disaster reduction is often stated as a main barrier to progress in implementation.

For policy purposes the following point should be taken into consideration:

- Risk reduction to be put as a policy priority.
- Risk reduction incorporated into post-disaster reconstruction.
- Integration of risk reduction in development planning and sectoral policies (poverty reduction, social protection, sustainable development, education, etc). Health sector can play leading role in development of linkages with different sectors.
- The great need for harmonized and standardized multi-sector approach for disaster mitigation, prevention and response.

The health sector is responsible for ensuring the continuity of health care services during disaster. Most often resource problems following disasters is a result of poor planning in the use and distribution of assets rather than the deficiency of those assets. Federal Ministry of Health works with state ministry and health sector agencies in the community to coordinate planning of the continued delivery of services both during and after the disaster. This interagency coordination includes the development of an action plan to address community health needs. Components of the plan include:

- Ensuring continuity of health care services (acute emergency care, continuity of primary care, secondary care, and preventive care).
- Monitoring environmental infrastructure (water, sanitation, and vector control).
- Assessing the needs of the elderly and other special populations.
- Initiating injury programme and surveillance.
- Ensuring that essential public health sector facilities will be able to function post-impact.

- Allocating resources to ensure that the above responsibilities can be accomplished.

For planning purposes Perry and Lindell (2003) indicated ten principles as main guidelines to be used for disaster planning. These principles are generic and comprehensive enough to be used, for the purpose of this policy, as guidelines for disaster planning in Sudan. The principles are as follows:

- It should be based upon accurate knowledge of the threat and of likely human responses;
- The planning process should encourage appropriate actions by emergency managers;
- The planning process should emphasize response flexibility so that those involved in operations can adjust to changing disaster demands, both agent-generated and response-generated;
- Emergency planning should address inter-organizational coordination;
- Emergency planning process should integrate plans for each individual community hazard managed into a comprehensive approach for multi-hazard management;
- Emergency planning should provide for testing proposed response operations;
- Plans should have a training component;
- Emergency planning is a continuing process;
- It is almost always conducted in the face of conflict and resistance; and
- The emergency plan should recognize that planning and management are different functions and that the true test of a plan rests with its implementation during an emergency.

Accordingly, the policy suggests development of strategic plan for disaster mitigation, preparedness and response and to be added into the health sector's 25 years strategic plan.

ii. LEGAL AND REGULATORY FRAMEWORK

To exercise a disaster preparedness strategy, agencies must be supported by an adequate framework of policies, legislation, and agreements. These should include policies with regard to the acceptance and importation of international assistance, the authority delegated to institutions, the allocation of national resources for disasters, the objectives and standards for relief distribution, and specific procedures for implementation of preparedness and response activities with assigned responsibilities.

According to the Public Health Act (FMOH, 1975) (amended in 1977) the protection of the health of the public during emergencies is assigned to the federal ministry of health. The authority of declaring health disaster is only given to The Public Health Council which is under the jurisdiction of the undersecretary federal ministry of health. State can ask help from the federal level when the health situation in the state is out of their control, but only the federal ministry of health has the right to declare the disaster.

Globalization has its effects on health and on the international relation between countries that will also shape the way the globe is responding to countries' needs during disaster. This, in turn, will necessitate making changes on the way countries prepare and response to disasters. Current legislations related to disaster mitigation preparedness and response need to be revised and improved accordingly. Relation between different sectors and within the different levels of the health sectors needs to be clarified. Recent development in the federal system and the evolution of the political system in response to the recent peace agreements will also affect these relations and the way each sector or level will respond to disasters. More specific issues related to disaster and not included in the current legislations (i.e., building code for health facilities) need to be addressed in the future proposed laws.

iii. RESOURCES

- Preparedness requires that the materials, inputs and methods of delivery of assistance for responding to disasters, and especially those required on an emergency or short-term basis, are available or can be acquired quickly enough to be effective. Federal Ministry of Health should have buffer stock of needed drugs, bed nets, insecticides and relevant types of equipments. These supplies and equipments should be kept both at the federal level, to facilitate its movement to where it is needed, and near to areas at risk (e.g. at head quarter of the states at greater risk) to ensure timeliness availability of the stock. Feedback system should be established for proper replenishment of the stocks. UN agencies working in health and national and international NGOs should be asked to have the same system for the emergency buffer stocks.
- National, regional and international agencies need to act immediately to ensure that resources can be found and made available to meet the needs in an emergency, and the actions of these agencies should be as coordinated as possible.
- Mechanisms should be in place to allow some funds to be made available immediately to allow response efforts to be timely and to

cover unanticipated needs. Mechanisms for rapid release of funds from the Federal Ministry of Finance should be found (emergency fund is usually allocated in each annual budget). Depending on the magnitude of the disaster, arrangement should be made to ensure that all available local government funds to be devoted for the first and immediate response. Reasonable amount of fund should be allocated to disaster response in the joint plans with UN agencies working in health (WHO, UNICEF, UNFPA, UNAIDS), arrangement with headquarter and regional offices for follow of additional funds in disasters to be made.

- The results of impact and needs assessments should be quickly disseminated to mobilize national and international resources, including the release of pre-positioned funds, food and non-food items.
- Appeals for assistance should be rationalized and harmonized and a coordinated appeal is often a requirement of donors. This has to be well coordinated between Federal Ministry of Health, Ministry of Humanitarian Affairs and UN Agencies.
- Resources should also be requested and allocated for rehabilitation. Logistical and communications infrastructure, including internal transport, storage and handling facilities, must be adequate to ensure that relief and rehabilitation supplies are available when and where they are needed.
- Criteria and guidelines for donation should be developed and well disseminated among the potential donors, and system to make these guidelines and criteria in place is to be ensured.

iv. ORGANIZATIONAL STRUCTURES

While establishing the organizational structures for disaster mitigation, preparedness and response the following principles should be considered:

- National focal institutions for disaster management provide mechanisms for coordination of preparedness and response activities at the national, state as well as at local levels. Focal unit for emergency and humanitarian action for health within the Federal Ministry of Health, which is currently present within Directorate General of International Health should be strengthen to respond to its envisaged role. The roles of the EHA unit in the FMOH are: strategic and contingency planning; establishing standards of assistance and services; resource mobilization; and identification of capacity building and training needs (see annex 1).
- The roles of focal national institution (civil defense) is the overall all policy development, overall strategic planning, coordination between different sectors, development of general guidelines and protocols for

emergencies and identification of affected populations and assessment of local capacity and needs.

- Disaster risk management needs to be motivated and based within governmental responsibilities, but its success cannot be accomplished without the benefits of widespread decision-making and the participation of many others.
- Leading policy direction is crucial and legal foundations assure a continuing legitimacy, but it is the professional and human resources delivered on the ground that are a measure of success. For this to happen there must be a systematic approach to relate local decision-making processes with larger administrative and resource capabilities such as those devised in locality or state and national disaster plans and risk reduction strategies.
- Where external assistance is required, international and national agencies need to form partnerships to support sustainable institutional arrangements for disaster management both at national and at regional levels.

The policy suggests establishment of permanent technical committees at different levels to have the responsibility of disaster mitigation, preparedness and response in the field of health as follows:

- At the federal level:
  - To establish a high technical committee under the supervision of the Federal Minister of Health (FMOH), chaired by the Undersecretary FMOH and to include the director generals of the directorates of FMOH to be responsible of the overall mitigation, preparedness and response in the field of health. Federal Ministry of Health is to be considered as a sole agency responsible to other related high committees for any health interventions related to disasters.
  - To establish coordination committee (Health emergency coordination Committee) chaired by the Undersecretary FMOH and has the membership of UN Agencies working in health, national and international NGOs and other related sectors.
  - Emergency and Humanitarian Action (EHA) unit within the Directorate General of International Health to take over the responsibility of the daily work related to the issue of emergency and disaster which was previously scattered between different programmes in FMOH. In addition, and as indicated above, the unit shall take the lead in planning and strategic direction of the health work in emergency and disaster.
- At the state level:

o   The same committees (as at the federal level) are to be established under the supervision of the State Minister of Health and chaired by the Director General State Ministry of Health. Units for emergency and humanitarian assistance is to be established within the state ministries of health and to have the same mandate of the federal unit but at the state level. For practical reasons, establishment of these units can begin in the state which are more vulnerable to disasters, the tasks related to disasters and coordination of the voluntary work can be dealt with by the same unit.

- At the locality level:

o   The same committees (as at the state level) are to be established under the supervision of the Commissioner and chaired by the Director of Health in the locality.

2. RISK IDENTIFICATION

This includes risk assessment, impact assessment and early warning system.

i.   RISK ASSESSMENT

Two elements are essential in the formulation of risk: the probability of occurrence for a given threat – hazard; and the degree of susceptibility of the element exposed to that source – vulnerability (ISDR, 2002). The negative impact, or the disaster, will depend on the characteristics, probability and intensity of the hazard, as well as the susceptibility of the exposed elements based on physical, social, economic and environmental conditions.

The recognition of vulnerability as a key element in the risk equation has also been accompanied by a growing interest in linking the positive capacities of people to cope, withstand and recover from the impact of hazards. It conveys a sense of the potential for managerial and operational capabilities to reduce the extent of hazards and the degree of vulnerability. This is clearly illustrated by the risk formula that mentioned earlier:

$$\text{Risk} = \text{hazards X vulnerability/capacity}$$

Therefore assessing the risk is only feasible through conducting assessment of potential hazards that a community is prone to, the vulnerability of that community and the capacity which the community posses.

- Hazard assessment:
  o The essential first step in hazard assessment strategy is to list the potential hazards and their order of importance in different areas. Existing studies, historical records (civil defense records) and mapping may help to identify the most significant hazards in any one area.
  o To understand the nature of the hazards, which may be faced. Understanding each hazard requires comprehension of the followings (Coburn, Spence, & Pomonis, 1994):
    o − its causes (see annex 2 for hazard classification);
    o − its geographical distribution, magnitude or severity, and probable
    o frequency of occurrence;
    o − the physical mechanisms of destruction;
    o − the elements and activities most vulnerable to destruction; and
    o the possible economic and social consequences of the disaster.
    o In the health field, the major objectives of hazard assessment include:
    − Determining a community's risk of adverse health effects due to a specified disaster (i.e., traumatic deaths and injuries following an earthquake).
    − Identifying the major hazards facing the community and their sources (i.e., earthquake, floods …etc).
    − Identifying those sections of the community most likely to be affected by a particular hazard (i.e., individuals living in or near flood plain).
    − Determining existing measures and resources that reduce the impact of a given hazard (i.e., building codes and regulations for earthquake mitigation.
    − Determining areas that require strengthening to prevent or mitigate the effects of hazards (i.e., construction levees to protect the community from flood waters).

- Vulnerability and capacity assessment:
  Vulnerability analysis is used to obtain information about susceptibility of individuals, property, and the environment to the adverse effect of a given hazard to develop appropriate prevention strategies. The analysis of this information helps determine who is most likely to be affected, what is most likely to be destroyed or damage, and what capacities exist to cope with the effects of the disaster. A separate vulnerability analysis should be conducted for each identified hazard. Vulnerability is usually

analyzed according to five categories of vulnerability; namely proximity and exposure, physical, social, economic, and capacity (see annex 3).

A community's to withstand disaster condition is determined by collecting data on several variables. Information on the size, density, location, and socio-economic status of at risk community should be obtained. Location and structural integrity of lifeline structures (i.e., electricity, water, sewer), buildings with high occupancy as well as information on location and structural integrity of private dwelling are also important. Additional community capacity element to be assessed include the presence of early warning systems, the number of available emergency responders and medical personnel, the number of technical expertise among emergency responders, the availability of supplies, and the status of emergency transportation and communication systems.

ii.   IMPACT ASSESSMENT

- Disaster assessment is the gathering and analysis of information pertinent to disasters and disaster response. The scope of the information required covers factual details of the hazard event causing the disaster, the needs of those affected, and the available resources for responding to those needs.

- The assessment process extends from preparedness activities and the pre-disaster warning phase through the emergency phase and even into the rehabilitation and recovery of the community (Stephenson, 1994). As the needs of the community change through these phases, the objectives of the ongoing assessment change as well.

- The information gathered should be broken down not only by geographical area, in particular at the level of the localities or administrative units (the same units used for all the sectors), but also by public and private sector and by the amount of direct and indirect damage (see annex 4, which presents a model of the kind of information to obtain).

- The information is usually gathered by a team headed by a health specialist (usually health disaster epidemiologist). Macroeconomist specialist is also needed for economic analysis of the collected data. The health specialist should provide the macroeconomics specialist with any pieces of information that facilitate an estimation of the health sector's effects on the main macroeconomic variables, especially public finances.

- It is also important to work in close coordination with the specialists in the other sectors to assess the repercussions of the disaster, particularly on the employment sector.

- The assessment process should follow certain stages to guarantee the accuracy of the results of the assessment. Required information and the source of the information should be determined early in the process of the impact assessment (see annex 5 for the stages of the assessment process, information required, and the sources of the information).

iii. EARLY WARNING SYSTEM

- Early warning and information systems provide vital support for disaster management interventions.
- The system shall be linked by virtue of the same or overlapping information collection mechanisms and purposes. One of its major purposes is targeting the vulnerable populations for development and relief assistance.
- Early warning and information systems need to be multidisciplinary in nature, linking inputs from such areas as agricultural statistics, agro-meteorology, remote sensing, veterinary science, medicine, market information, nutritional surveillance and analysis of livelihoods and political developments, with the purpose of establishing and analysis diverse indicators to:

o   monitor hazards and the likelihood that they will result in disasters;

o   provide timely warnings to decision-makers when a disaster seems likely;

o   monitor and provide timely information on the emergence of disasters;

o   assess the impacts of disasters - who is affected, where and how - and provide information on the scale and nature of resulting emergencies; and

o   assess the likely needs of disaster-affected populations for relief and short-term rehabilitation assistance and elicit an appropriate response from assistance-providing agencies.

The policy suggests establishment of early warning system for disasters within the EHA unit in the FMOH that will make use of the available structures in the FMOH (i.e., surveillance system) and in the other related sectors.

3.   KNOWLEDGE MANAEMENT: DATA, INFORMATION AND RESEARCH
i. INFORMATION MANAGEMENT AND COMMUNICATION
Effective disaster risk management depends upon a series of related actions and the means to engage the informed participation of all

stakeholders. Exchange of information and communication practices play key roles in the realization of these activities. Data availability is crucial for ongoing research, to monitor hazards and for assessing risks. Information describes working conditions, provides reference material and allows access to resources. It shapes many productive relationships. Rapid and widespread developments in modern communications record and disseminate the value of experience, convey professional knowledge, and contribute to decision-making processes. Integrating new developments in information management with established and more traditional methods can help to create a much better understanding about hazards and risk at all levels of responsibility through public awareness programmes. They inform are instrumental in achieving more comprehensive early warning systems and effective mitigation efforts.

For realization of an effective system for information management and communication this policy calls of establishing a center for disaster information to be based in the federal ministry of health. The main role of this center is to develop system for information collection, synthesis and dissemination in relation to disaster. The policy realizes that the function of information and management in relation to disaster should be multi-disciplinary. Other sectors (i.e. ministry of interior and civil defense, ministry of humanitarian aid, ministry of agriculture, ..etc) should be involved from the start in establishing this center. The center is meant to be a start for shifting attention to an overlooked- although important and sensitive- issue in disaster management, and to mobilize the status quo which is characterized by fragmented or non-existence of formal system for disaster information management and communication. The proposed center can play the following important roles:

- Gathering, processing and disseminating of high- quality information related to risk, hazard, response capacity and disaster occurrence;
- Publication and distribution of information products such as bulletins, bibliographies, and other materials related to health and disaster for both public and technical use;
- Acting as a focal point for increasing capacity of the health sector and related institutions for disaster management through designing, production and distribution of training materials in health and disaster. The center can also serve as a basis for expanded opportunities of distanced and electronic training;
- Collaboration with other institutions interested in disaster information management locally, in the region and globally;

- Assisting institutions and individual users to search and find disaster and health-related information available through physical or electronic media;
- Providing electronic access to an extensive collection of documents and other source materials related to health and disaster;

ii. EDUCATION AND TRAINING

The highest priority has to be given to present the various dimensions of disaster risk within a community through structured educational programs and professional training. As people's understanding and the exercise of their professional skills are essential components of any risk reduction strategy, an investment in human resources and capacity building across generations will have more lasting value than any specific investment made in technological systems to reduce risks. Education and training about disaster management can no longer be considered as an area of specialist scientific study. Disaster mitigation, preparedness and response should be incorporated into the basic training curricula of all health and medical education.

Group that will be targeted with training, apart from health personnel, should be firstly identified. The following groups are identified as the most priority groups (PAHO, 1989):
- Special non-health responders play a decisive role in emergencies. No component of this group holds more power than the mass media. Exposing the media to the most commonly-held myths prior to disasters will prevent the dissemination of misinformation regarding health problems after disasters. It will also reduce pressure on decision makers to commit resources to ineffective but highly-visible campaigns. Other key groups include fire and police departments and the armed forces;
- Ministries of Foreign Affairs, Humanitarian Affairs, and International Cooperation represent a vital link with the outside world. Too often, requests for medical or other health relief are made by or accepted at the diplomatic level without giving due consideration to technical or scientific criteria. A better understanding of health issues in diplomatic missions and at the level of the senior staff of these ministries can only facilitate the effectiveness of international health relief;
- Local communities have the first and last word in the response to emergencies - the first word because outside assistance, especially at the international level, always arrives too late; the last word because most often the affected community is quickly left on its own once the acute emergency phase has passed. Training communities is essential but challenging; and

- School children and their teachers are extremely receptive to simple health preparedness education and training. Working together with Ministries of Education, this strategy has proven to be an effective, durable means of influencing public opinion concerning emergency health matters.

Several strategies are recommended for education and training in the field of disaster mitigation, preparedness and response. This policy recommends the following strategies to be adopted:

- Courses, workshops, simulation exercises, and drills, all help to create a critical mass of disaster-literate and influential health professionals, but there comes a time when this effort cannot be completely sustained by the international community and disaster preparedness must be institutionalized nationally for long-term survival. One way in which this can accomplish is to promote the inclusion of disaster preparedness in the curriculum of schools of medicine, nursing, and engineering.
- Training of trainer is a non-disposal strategy which ensures the multiplier effect of training and is the only mean for reaching the grassroots by training programmes.
- Another recommended strategy is that once a mechanism has been established to broadly transmit general skills, efforts can be concentrated on developing new areas of technical expertise. Because the field of disaster preparedness is ever expanding, training programs and materials must also be dynamic and up-to-date.
- Developing training and educational material and making it available at no cost to qualified institutions and individuals is indispensable if the multiplier effect of training is to be successful. These materials support teaching institutions, Ministries of Health, and NGOs in their role as trainers.

iii. **PUBLIC AWARENESS**

Disaster preparedness and reduction is a matter of behavior and attitude rather than capital investment. Effort should be directed towards promotion of public awareness for disaster prevention, mitigation, and preparedness. Information sharing is essential tool for preparing the community and the local health personnel for emergency situation. Special attention should be given to the type of information selected for dissemination to attain the desired degree of preparedness. Five essential features can be envisaged to which it possible to relate the main type of information that will be useful locally if a disaster occurs (WHO, 1989):

- Knowledge of the envisaged danger by supplying, in the simplest and clearest manner possible, information on the causes and dynamics of the type of disaster that may occur in the area;
- Where possible, indications must be given of the means of forecasting the moment at which disaster may strike and of the warning system used;
- The means by which the risks to survival and health in the envisaged disaster can be prevented or alleviated;
- The acts and behavior that are essential for saving lives and reducing risks when the envisaged disaster strikes must be indicated; and
- Indications must be given of the types of behavior best adapted to the situation that will arise after the envisaged disaster take place and the point of reference that must be used in organizing relief, survival and management of various problems.

iv. RESEARCH

Increasing attention has been paid in recent years to the study of disasters, emergency management and the effects of disasters on the health and behavior of communities. Researchers have worked to develop a systematic literature by compiling and analyzing the heterogeneous assortment of previous records and accounts. As a result, broad preparedness and operational guidelines are now available.

To determine the most efficient and cost effective deployment of manpower and supplies in specific settings, however, additional research is needed. In order to promote the exchange disaster-specific technical information, and to facilitate the development of a rigorous scientific literature in the field, the following areas are recommended as a priority research areas:

- Epidemiological Research
  - Study of disease and injury patterns following sudden impact disasters (earthquakes, hurricanes): The study should provide data on the type of lesions or diseases, the cause and time of death, and the age/sex distribution. Identification of special risk factors (housing, cultural patterns, geographical features) will also facilitate predisaster planning and emergency preparedness.
  - Short and long-term effects of natural disasters on communicable diseases: A study should permit the development of a methodology for a disease surveillance system in emergencies (e.g. diarrheal diseases, typhoid fever, leptospirosis, etc.). The data collected will permit appropriate priority to be assigned to disease control activities in emergencies (e.g. mass immunization, vector density, etc.).

o Mental health: The mental health problems potentially caused by disasters should be investigated in order to adequately meet the immediate and long-term needs of victims.

• Nutritional surveillance in times of food shortage: Indicators and techniques must be developed and implemented to monitor nutritional conditions in areas vulnerable to widespread acute malnutrition. These studies will assist the authorities in making decisions on the relative needs for food distribution. Operational Research

o Recording-reporting system on mass casualties: A system, including preparation of guidelines, forms and reporting channels, should be designed to ensure that national authorities are kept informed of the need for medical attention or emergency care after different types of natural disaster.

o Relief supplies: A list of supplies most commonly needed following each type of disaster should be developed and the cost/benefit of local or regional stockpiling before a disaster and inventory/ sorting/ distribution problems during disasters should be investigated.

o Search and rescue: The factors directing search and rescue following earthquakes, and the effectiveness of such operations in saving lives need to be identified.

o Management of mass casualties: A study should be conducted of aspects of the emergency provision of health care including triage techniques, the role of field medical emergency units, etc., using analysis of past disasters and direct observation during the acute initial phase of future disasters.

o Cost-effectiveness of field disaster hospitals: A project is suggested to examine the need for field hospitals in disasters and compare their cost-effectiveness with that of alternate solutions, e.g. the strengthening of national emergency services, the establishment and maintenance of small and simple field hospitals at country level, etc.

o Relief teams and medical volunteers: The study should identify the characteristics of medical volunteer personnel, suggest the minimum qualification and training required and develop national guidelines and training material.

o Sanitation and water supply: Studies are required to assess the vulnerability of existing environmental health services and to estimate the actual risk of contamination of water supplies following various types of disasters. The usefulness of post-disaster spraying campaigns should be assessed.

o Two-way field radio-communication network: The cost-efficiency and feasibility (technical and legal) of the use of a portable radio network by the health services in emergency situations should be assessed.

4. DISASTER MITIGATION:

It is virtually impossible to prevent the occurrence of most natural hazards, but it is possible to minimize or mitigate their damaging effects. In most cases, mitigation measures aim to reduce the vulnerability of the system (for example, by improving and enforcing building codes). In some cases, however, mitigation measures attempt to reduce the magnitude of the hazard (e.g., by diverting the flow of a river). Disaster prevention implies that it is possible to completely eliminate the damage from a hazard, but that is still not realistic for most hazards. An example would be that of relocating a population from a floodplain to an area where flooding has not occurred or is unlikely to occur. In such a case, the vulnerability will be brought to zero, since from a public health or social point of view there is no vulnerability where there is no population.

Because of the variety and cost of mitigation activities, priorities for implementing these measures must be established. In the health sector, this is the function of the EHA unit at the FMOH, working with experts in such areas as health and public policy, public health, hospital administration, water systems, engineering, architecture, planning, education, etc. The EHA unit should coordinate the work of these professionals. Mitigation complements the disaster preparedness and disaster response activities of the program.

The mitigation program will direct the following activities:

- Identify areas exposed to natural hazards with the support of specialized institutions (meteorology, seismology, etc.) and determine the vulnerability of key health facilities and water systems;

- Coordinate the work of multidisciplinary teams in developing design and building codes that will protect the health infrastructure and water distribution from damage in the event of disaster. Hospital design and building standards are more stringent than those for other buildings, since hospitals not only protect the well-being of their occupants, but must remain operational to attend to disaster victims;

- Include disaster mitigation measures in health sector policy and in the planning and development of new facilities. Disaster reduction measures should be included when choosing the site, construction materials, equipment, and type of administration and maintenance at the facility;

- Identify the priority hospitals and critical health facilities that will undergo progressive surveys and retrofitting to bring them into compliance with the developed building standards and codes. The function of a facility is an important factor in establishing its priority. For example, in earthquake zones, a hospital with emergency medical capacity will have higher priority in the post-disaster phase than a facility that treats outpatients or those who could be quickly evacuated. Create

mitigation committees at the local level to identify key facilities and ensure that mitigation measures are implemented in all projects;

- Ensure that disaster mitigation measures are taken into account in a facility's maintenance plans, structural modifications, and functional aspects. In some cases, the facility may be well designed but successive adaptations and lack of maintenance increase its vulnerability;

- Inform, sensitize, and train those personnel who are involved in planning, administration, operation, maintenance, and use of facilities about disaster mitigation, so that these practices can be integrated into their activities; and

- Promote the inclusion of disaster mitigation in the curricula of professional training institutions related to the construction, maintenance, administration, financing, and planning of health facilities and water distribution systems.

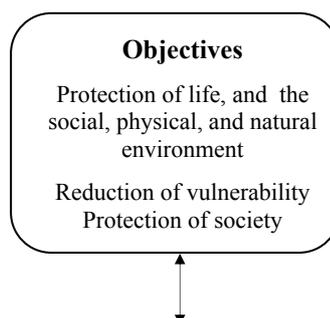## 5.PREPARATION AND EMERGENCY MANAGEMENT
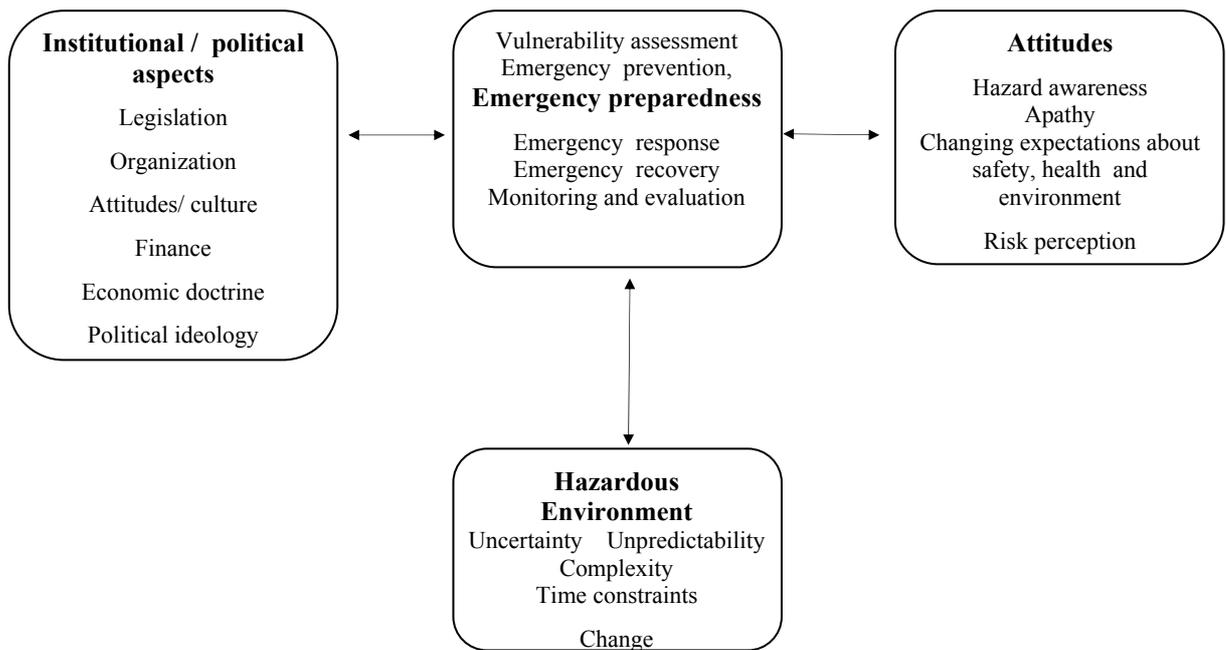EMERGENCY PREPARATION
  Definition:
Emergency preparedness is defined as:
"a programme of long-term development activities whose goals are to strengthen the overall capacity and capability of a country to manage efficiently all types of emergency and bring about an orderly transition from relief through recovery, and back to sustained development (WHO, 1995)."

From the definition it is clear that the process of disaster preparedness is complex and can not be separated from its context. This context varies from country to country and from community to another inside the same country, and for that the plans develop for emergency preparedness should be context specific. The elements of this context aspect can be summarized as follows (for more details see diagram ?):

o   The objectives from the emergency preparedness;
o   Institutional and political aspects;
o   Attitudes; and
o   Environmental aspects.

Objectives

Protection of life, and the social, physical, and natural environment

Reduction of vulnerability
Protection of society

Institutional / political aspects		Vulnerability assessment Emergency prevention, **Emergency preparedness** Emergency response Emergency recovery Monitoring and evaluation		**Attitudes** Hazard awareness Apathy Changing expectations about safety, health and environment Risk perception
Legislation Organization Attitudes/ culture Finance Economic doctrine Political ideology	↔		↔	

Hazardous Environment
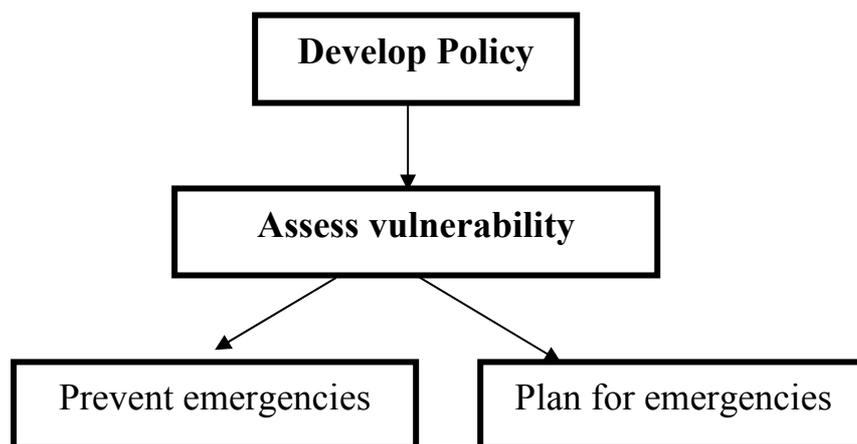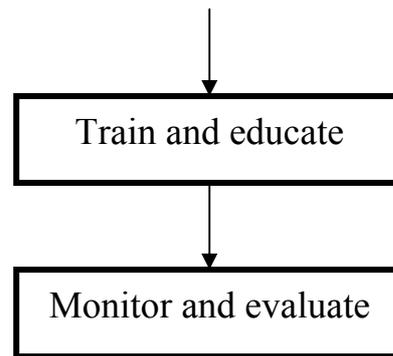Uncertainty   Unpredictability
Complexity
Time constraints

Change

The context of emergency preparedness (Parker, 1992)

Process of emergency preparedness:
This policy opt the process adopted by WHO for preparation for emergency (WHO, 1999). The process of preparing for an emergency is a series of related methods for preparing a community, an organization, or an activity for emergencies. The process includes the following components (illustrated in diagram ?):

o   Policy development;
o   Vulnerability assessment;
o   Emergency prevention,
o   Planning for emergency
o   Training and education; and
o   Monitoring and evaluation.

Develop Policy

↓

Assess vulnerability

Prevent emergencies   Plan for emergencies

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                                    │
                                    ▼
                    ┌───────────────────────────┐
                    │     Train and educate      │
                    └───────────────────────────┘
                                    │
                                    ▼
                    ┌───────────────────────────┐
                    │     Monitor and evaluate   │
                    └───────────────────────────┘
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An emergency preparedness process (WHO, 1999)

As some of these components were previously discussed we will only further detail the issue of planning for emergency and monitoring and evaluation in this section.

- Planning for emergency:

An emergency plan is an agreed set of arrangements for responding to and recovering from emergencies; it describes responsibilities, management structures, strategies, and resources. Planning for disaster is a continuous process that cost resources as well as time. Before starting this process some factors need to be present as prerequisites for disaster planning, which includes the followings:

- - Recognition that hazards and vulnerability exist and that emergencies can occur;
- - Awareness among the community, government, and decision-makers of the need to plan and of the benefits of planning;
- - Appropriate legislation to guarantee implementation of the plan; and
- - A designated organization responsible for coordinating both planning and response and recovery in the event of an emergency.

The planning process for emergency is going through certain logical and rational steps for producing emergency plan. Each of these steps involves standard management methods. This process can be applied to any community, organization, or activity, e.g. the health sector in general, hospitals, and search and rescue organizations. It is intended primarily for preparedness, but can be used equally well for planning during response and recovery operations.

The following are the steps commonly used for disaster preparedness planning:

- *Project definition* determines the aim, objectives, scope, and context of an emergency plan, describes the tasks required and the resources needed to perform these tasks. Recommendations based on the vulnerability assessment should be used in the planning process.
- A representative *planning group* is essential for emergency planning. Without such a group it will be difficult to gather the required information and gain the commitment of key people and organizations. There may be a need to review any existing planning group to assess its appropriateness. The composition of the planning group may change during the planning process.
- *Analysis of potential problems* examines in more detail the hazards and vulnerabilities, their causes, possible preventive strategies, response and recovery strategies, and trigger events for these strategies. It will provide information for later steps of the process.
- The *resource analysis* asks what resources are required, what is available, what is the variation between requirement and availability, and who is responsible.
- A description of *roles and responsibilities* outlines who does what.
- The *management structure* involves the command of individual organizations and control across organizations.
- Development of *strategies and systems* is concerned with response and recovery strategies and the systems that will support them.

   Monitoring and evaluation

Monitoring and evaluation determine how well a disaster preparedness is being developed and implemented and what needs to be done to improve it. The means of monitoring and evaluating during the implementation phase include: measuring the progress toward objectives; performing an analysis to find the cause of deviations; and determining corrective actions.

Logical framework is suggested to used for planning for emergency preparedness as monitoring and evaluation tools are embedded in its structural framework. Logical framework analysis is conducted by using the measurable indicators identified in the logical framework produced at the planning stage. Each indicator can be used to test whether the programme has achieved the planned outputs, and this is recorded in the final column of the logical framework matrix (Harvey, Baghri & Reed, 2002).

 EMERGENCY MANAGEMENT
The purpose of emergency health and nutrition interventions after a disaster is to avert epidemics and deteriorating health conditions among

the population affected by a disaster or a crisis resulting from protracted political, civil, and/or economic turmoil, as is the case in complex emergencies. The nature of the disaster or crisis will determine the appropriateness of specific health interventions. For example, in a complex emergency where civilian injuries are high, surgical and other curative services may be the highest priority. Where there are large numbers of displaced persons in camp situations, infectious disease control is often most critical.

Whatever the nature of the emergency, health interventions should address the highest priority causes of what is often referred to as excess mortality and morbidity. Excess mortality is measured as the rate of death in the population that can be directly attributed to the disaster or crisis, as opposed to the deaths that would be expected in non-emergency times. Along the same lines, excess morbidity is the amount of illness, caused by selected major diseases that can be attributed to the disaster or the crisis.

Emergency response is the phase of the disaster-management cycle that often attracts the most attention and resources. During this phase, health services may have a great impact on the health and well-being of affected communities. However, the impact achieved in the early days of the response is largely a test of previously-planned local and national preparedness and mitigation measures. Moreover, the way the emergency response has been planned and the way the emergency is managed will have a significant influence on post-disaster recovery and future development possibilities. The emergency response phase should therefore be seen as a critical part of the disaster-management cycle.

Emergency response includes the following components (PAHO, 1981):
- Coordination of national relief activities
  The supreme body for coordination of emergency situation is the "*High Emergency committee*" which is head by the Minister of Interior and the federal ministers from the related sectors, including the federal minister of health, as members. The civil defense acts as an executive arm for the committee. In the health sector the unit for emergency and humanitarian action (EHA) within the Directorate General of International Health – Federal Ministry of Health has the responsibility of coordinating the health action for emergency response after a disaster.

  The policy suggests formulation of a *"Health Emergency Coordination Committee"* to respond to the health issue after a disaster under the leadership of the Federal Ministry of Health. The committee will include

members from the related governmental sectors, namely: Ministry of Humanitarian Affairs, Ministry of Foreign Affairs and Ministry of Interior; related United Nations Agencies, namely: WHO, UNICF, UNFPA and UNAIDS; and national and international NGOs. The committee will be given the main role of coordinating health activities related to disasters, and for that it will meet on regular and frequent basis, but also will look into more long term issues like disaster mitigation and preparedness which can be tackled with less frequent meetings.

The mandates of the emergency coordination committee will be as follow:
o Development/Endorsement of policies, protocols and guidelines related to health interventions in emergencies;
o Generation of relevant information that fed into decision-making through conduction of joint assessment and studies and analyzing reports;
o Development of integrated plans for emergency response with clear division of tasks between all players in the health field;
o Soliciting funds for the needed health interventions;
o Monitoring implementation of the integrated response plans; and
o Sharing of information and experiences in relation to disasters and emergencies.

- Assessment of health needs
  Emergency response is sometimes a cyclical process, involving repeated assessment, planning, action and review, to respond appropriately to needs and capacities as they evolve. It starts with an initial assessment and may be triggered spontaneously by the disaster event, or officials may authorize the mobilization of people and resources. Rapid and effective mobilization is facilitated by proper disaster preparedness. Following a disaster, rapid and effective action is needed to save lives, protect health and stabilize the situation, to avoid making the emergency worse. But even in an acute emergency, an assessment, however brief, is needed to ensure that any action undertaken is effective. There is primarily two types of assessment: rapid initial assessments to establish the nature and scale of the emergency and the likely need for external assistance; and detailed sector assessments to plan, implement and coordinate a response. Other types of assessment are required at various stages of the response, such as continual assessment (i.e. monitoring or surveillance) and assessments for post-emergency rehabilitation.

  In acute emergencies, initial assessments should be rapid and produce the information required to start an appropriate response. In less acute emergencies, or once an acute situation has stabilized somewhat, a more

detailed assessment is needed to design longer-term measures with adequate provision for monitoring and management. More thorough assessments are needed for recovery and resettlement programmes. Whatever form the assessment takes, it is essential that information is collected and rapidly transmitted in a way that makes it clear what actions should be taken and why.

Protocols and guidelines for different types of assessments (i.e., general assessment, nutritional assessment, assessment of morbidity and mortality, …etc.) should be developed and endorsed by the Health Emergency coordination Committee, and mechanisms to grantee adherence to these protocols and guidelines should be in place.

- Management of mass casualties
  The management of mass casualties is greatly needed after certain type of disasters. Complex emergencies, which is a chronic feature of modern Sudan, usually entails presence of large numbers of traumatic cases that need surgical interventions. As the current health system in Sudan does not include specific structure that deals with mass casualties, this policy suggests creation of a new system to deal with disasters that lead to large numbers of injuries as follows:
  - Creation of *Disaster Medical Teams (DMT)*: This will be a new licensed professional and paraprofessional medical cadre that provide medical care during and after emergencies. These teams will include a cadre of logistical and administrative staff and all the equipment needed to setup ambulatory clinics and remain self-sustaining for at least 72 hours. DMTs will be a federal body that augment and work with the local institutions and not to replace them[*]. In mass casualty incidents, their responsibilities will include triaging patients, providing austere medical care, and preparing patients for evacuation. In other situations, they will provide primary health care or assist overloaded medical staffs. Additionally, they will be prepared to provide patient care during evacuation to definitive care sites.
  - Establishing system for Emergency Medical Services: a system for Emergency Medical services that includes both pre-hospital and in-hospital components should be established. The pre-hospital component will include public access system for notification that medical emergency exists, health cadre that can provide basic life support and advance life

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[*] Federal unit to cater for the DMTs can be placed in the Directorate General of Curative Medicine – Federal Ministry of Health, possibly as part of the proposed Emergency Medical Services. The unit will be part of the Emergency Coordination Committee.

support[*], and means of transportation of patients to hospitals or other source of definitive care (vehicle, helicopters, or boats).

The in-hospital component will include definitive care, usually delivered in the emergency department of a hospital. The policy suggests that in-hospital medical care for these emergency cases to be delivered by emergency physicians (as a new health cadre) and nurses who are specialized in emergency medical care (a master programme for emergency medical care for nurses to be launched). All teaching hospitals and at least one hospital in each locality should provide this type of specialized medical care and the presence of this specialized service should be part of their accreditation[•].

- Epidemiologic surveillance and disease control

  The principles in preventing and controlling communicable diseases following a disaster are to take all reasonable public health and administrative measures to reduce the risk of disease transmission if it is increased; investigate unconfirmed reports of disease outbreaks rapidly to prevent unnecessary dispersion of scarce resources and disruption of normal programs; and organize or use a more reliable disease reporting system to identify disease outbreaks promptly, initiate control measures, and evaluate ongoing sanitary or public health programs.

  In this regards three main issues need to be discussed, namely: disease surveillance, mortality and morbidity data, and disease control.

  > Disease surveillance: should be part of the overall surveillance system after a disaster that collect information during the impact phase, the response phase, and the early stages of recovery. Post-disaster information collection systems fall into three categories: existing standard surveillance, unofficial community sources, and relief worker reports. From an administrative viewpoint, data from all these systems must be routed directly to the health authority so that appropriate actions can be taken in the most expeditious manner. For the most part, data will be qualitative rather than quantitative.

  Under normal conditions, surveillance systems include diseases which are endemic to the area, amenable to control, of public health importance, or are internationally notifiable. If such an effort has normally existed, it should continue through the disaster whenever possible. Where surveillance did not exist or has broken down as a direct consequence of

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[*] The policy suggests creation of new licensed professional and paraprofessional medical cadre to provide medical emergency support. The medical paraprofessional will be trained to provide care at the basic life support system (i.e., noninvasive first aid, stabilization for a broad variety of emergency conditions, and defibrillation for cardiac arrest victims). The medical professional will provide more sophisticated diagnosis through advanced life support , with treatment following medical protocols both in the field and while being transferred to hospital.

[•] System for hospital accreditation will start very soon in Sudan.

33

disaster, a more focused, symptom-based surveillance system should be instituted (i.e., EWARN system). It should concentrate on diseases that are likely to be produced by the disaster or are particularly amenable to control.

In order to collect, collate, and interpret the data, the national epidemiology department should has adequate epidemiologic and clerical staff who can run the routine work in addition to the added tasks due to a disaster. The department should also has transportation to the field and priority access to public or private laboratory facilities. In addition to the national epidemiologic staff, university departments, research centers, and bilateral or international agencies may provide trained epidemiologists and laboratory support nationally or regionally. The national epidemiology department should be the secretary of a disease surveillance and control subcommittee of the *"Health Emergency Coordination Committee"* including senior representatives of the health ministry, sanitation and water services, major accredited voluntary agencies, and other ministries involved in health relief programs. Summary reports of the surveillance system's technical findings can be made through this subcommittee and appropriate action taken to introduce the necessary control measures if beyond the immediate competence of the subcommittee (large sanitation programs, for example), and to disseminate to the general public and abroad reports on the risks, occurrence, and nonoccurrence of disease by radio and other media through the *"Health Emergency Coordination Committee"* and the *High Emergency committee"*. The subcommittee can provide direct feedback to hospitals and other health facilities where surveillance data are being collected.

Mortality and morbidity data: are essential tool to evaluate the effect of the disaster and the effectiveness of health interventions aiming to mitigate the disaster effects. Both mortality and morbidity data are usually estimated through conduction of surveys.

Estimating mortality: During a rapid initial assessment phase, and before any surveillance system can be put in place, any mortality data will of necessity be retrospective. The choice of the retrospective time period used to calculate mortality rates will depend on which critical event(s) influencing mortality have to be included in the survey estimate. It will also depend on cultural events that stand out in the memories of those interviewed. A balance must be struck between expectations of greater precision (requiring longer recall periods) and avoidance of recall bias.

The survey questionnaire should in any case capture, in a culturally sensitive way, the following:

o   Total deaths for given period (e.g. one week);
o   Deaths among those under 5 years of age for the same period; and

o   Major causes of death.

Approximate daily death rates should be calculated daily or weekly, depending on the severity of the emergency. In the acute phase of an emergency, daily deaths rates should be calculated as follows:

o   crude mortality rate: number of deaths per 10,000 people daily or weekly;

o   age-specific mortality rates: number of deaths per 10,000 people in the under-5 and 5-and-over age groups daily or weekly; and

o   cause-specific mortality rates: number of deaths from a given cause per 10,000 people daily or weekly.

The following methods can be used to collect mortality data:

o   Count the number of graves: designate a single burial site for the camp or settlement monitored by grave-watchers 24 hours a day, and develop a verbal autopsy procedure for expected causes of death using standard forms;

o   Check hospital/health facility records and records of organizations responsible for burial;

o   Interview community leaders; and

o   For the collection of prospective mortality data, other methods can be used, such as mandatory registration of deaths, issuing of shrouds to families of the deceased to help ensure compliance, or employing volunteer community informants to report deaths for a defined section of the population (e.g. 50 families).

Estimating morbidity: The number of cases of disease should include:

o   Diseases that cause substantial morbidity (i.e. diarrhoea, respiratory infections and malaria where prevalent); and

o   Diseases that have the potential to cause epidemics (i.e. measles, cholera, meningitis and haemorrhagic fevers).

Classical sources of morbidity data are:

o   Patient registers and records in camp or settlement clinics, hospitals or feeding centres;

o   Interviews with health workers, midwives within the displaced population; and

o   Records of local hospitals or clinics.

After the acute phase is over, a properly designed emergency surveillance system should provide more accurate morbidity data.

▪ Disease control: should be one of the highest priorities after a disaster. Often disease outbreak following the disaster is a major cause of mortality and morbidity. In Sudan disease like cholera and other diarrhoeal diseases, typhoid fever, acute respiratory tract infections, whooping cough, diphtheria, measles, malaria, and cerebrospinal meningitis are the common diseases that follow disasters and worth

special attention (for more information on case management and preventive and control measures see الزين علي هاشم .ود محجوب الصادق .د (المساعد 2002).

- Environmental health management
  Environmental health is of primary importance in emergency health management after a disaster as it is often the major risk factor for communicable diseases outbreak. Activities should be developed to establish/maintain or repair the nonavailable/damaged environmental health facilities or services. Two kinds of priorities can be established, one depending on population density and one depending on the kind of services disrupted or unavailable. The higher the population density in an area the higher priority these areas should get more so when high population density is compounded by an element of temporary settlement, such as is the case with refugee camps.
  As to kind of services first priority should be given to:
  - adequate quantities of safe water;
  - basic sanitation facilities;
  - disposal of excrete; and
  - disposal of liquid and solid wastes.
  On a second level are:
  - food protection measures;
  - vector control measures; and
  - personal hygiene.
  These measures should of course get more attention when they are identified through surveys or epidemiologic surveillance as the most important risk factors for actual disease outbreaks or potential disease problems (for more information and specific guides for these activities see PAHO (1982) and The Sphere Project (1998).

- Food and nutrition
  Food shortages and malnutrition are common features of emergency situations. Ensuring that the food and nutritional needs of an emergency-affected population are met is often the principal component of the humanitarian response to an emergency. When the nutritional needs of a population are not met, this may result in protein-energy malnutrition and micronutrient deficiencies such as iron-deficiency anaemia, pellagra, scurvy and vitamin A deficiency. There is also a marked increase in the incidence of communicable diseases, especially among vulnerable groups such as infants and young children, and these contribute further to the deterioration of their nutritional status.
  Estimating nutritional requirements: The nutritional requirements of a population must be assessed to:

- Identify the nutritional needs of individuals, families, vulnerable groups and populations as a whole;
- Monitor the adequacy of nutritional intake in these groups; and
    - Ensure that adequate quantities of safe food and appropriate food commodities are procured for general rations and selective feeding programmes.

Estimating malnutrition rate: National guidelines developed by the nutrition directorate in the Federal Ministry of Health, which explain the indications for conducting nutritional surveys, procedures and methods for conduction the surveys and disclosing the results of the surveys, should be followed while conducting any nutritional survey in emergency (see annex).

Nutritional services: Supplementary nutritional services and therapeutic feeding services should be provided to the affected population as an integral part of the primary health care (PHC) services. While supplementary services should be part of any PHC unit or health center in the affected area, launching of therapeutic feeding services should be base on the results of a nutritional assessment as indicated in the national guidelines for treatment of malnutrition cases (REF.). Mechanisms to ensure adherence of all partners to the directives from the federal nutrition directorate, as indicated in annex ?? should be put in place (for more information on nutritional services see Shoham (1995).

- Mental health

  Disasters are very stressful, disruptive experience that can be life-changing. However, human behavior in emergency situations generally adapt to meet immediate needs, with people behaving within their usual patterns pre- and post-disaster (Landesman, 2001).

  In terms of terms of morbidity, the social and psychological effects of disasters can last months, years, or an entire life-time. People who are involved in disaster, as either victim or responder, may experience a wide variety of stress symptoms. These symptoms can have the broadest range of emotional, physical, cognitive, and interpersonal effects. In others, victims and responders suffer major mental health problems both immediately and for years after the events. Mild to moderate stress reactions during the emergency and in the early post-impact phases of disaster are highly prevalent among victims and responders. A portion of the population will suffer more serious, persistent symptoms which may develop into behavioral changes or physical or psychiatric illness that includes depression, alcohol abuse, anxiety, somatization, domestic violence, difficulty in daily functioning, and post-traumatic stress

disorder (PTSD)*. While less serious, insomnia and anxiety may also be experience by victims and workers.

Mental health services after disaster include initiation of counseling as a preventive measure and encouraging open communication. Some of the very important ways of helping may be in simply listening, providing a ready ear, and indicating interest or concern. Health workers can also help in rebuilding of support networks as quickly as possible. Other sort of services like facilitation of self-help, support groups, public education through media, information sessions for community groups, grief support services, and advocacy services are proved to be of beneficial value.

The policy suggests integration of mental health services into the PHC services offered to population after disaster. Disaster medical teams (DMTs) (both professional and paraprofessional medical cadre) can play major role in provision of this type of service. Other health personnel offering services to the affected communities can also be of help in this regard. Protocols for case management and for referral of cases need to be set. Training modules for different types of health care providers need to be developed and training to be conducted as required.

- **Management of health relief supplies**

In emergency relief operations, logistics are required to support the organization and implementation of response operations in order to ensure their timeliness and efficiency. Mobilizing the staff, equipment and goods of government and humanitarian assistance organizations, the evacuation of the injured or the resettlement of those directly affected by the disaster, requires a logistics system to maximize effectiveness.

Planning: for logistical activities is mandatory, since adequate preparations are essential to a smooth operation. Planning is both necessary and practical, since it is generally possible to foresee the types of disasters that may affect a given location and the needs that such disasters will be likely to engender. In fact, logistics should be an active component of any national emergency response plan, as well as of the individual plans of disaster response organizations and key institutions such as schools and health establishments. Logistics must be closely linked to all other operational activities in the context of responding to a given emergency.

Planning and anticipation are vital to an effective logistical system. The plan must be based, first of all, on a good working knowledge of the geographical, social, political and physical characteristics of the area where the operations are to take place. Such a plan must not only be well

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* for more information on diagnostic criteria of post-traumatic stress disorder (PTSD) refer to American Psychiatric Association (1994).

thought out in advance, so that it can run smoothly; it must, above all, be clearly understood and accepted by all stakeholders in any future relief operation.

Preparedness: must based on the vulnerability and resource assessments normally carried out to develop a national or regional emergency response plan. Preparatory activities must include the following:

- Assessing the vulnerability of key infrastructure: The goal is to identify the strengths and weaknesses of public works and strategic structures of the country or region-highways, water supply systems, schools, hospitals-as well as alternative actions that may be required should the infrastructure collapse;

- Determining the availability of strategic resources for logistical support: These resources are constantly changing, so they must be reviewed frequently to keep the information as up-to-date as possible; and

- Disseminating government policies, plans, and preparations: It is very important for international agencies and nongovernmental organizations to know the government's emergency response policies and plans. Since international community and NGOs play vital role in disasters by providing kind support, it is important to make sure that government policies, plans, and preparedness are all disseminated and well known to all partners.

Supply chain logistics: in emergency situations has the purpose of "delivering the right supplies, in good condition and the quantities requested, in the right places and at the time they are needed". The links in this logistics chain are not necessarily sequential or linear; indeed, they are often carried out in parallel. However, they must not be considered as separate activities but integrally, due to their complex interrelationships.

Supply chain logistic includes the following components: procurement, transport, storage, and distribution (for more information refer to PAHO (2001).

- Planning, layout, and management of temporary settlements and refugee camps

Health authorities will not usually be directly responsible for setting up and managing camps and temporary settlements. Since many aspects of camp management affect the health of the occupants, however, the *"Health Emergency Coordination Committee"* should be involved in decision making as early as possible (for more information on this issue refer to UNHCR (1999).

- Telecommunications and transport

Effective management of health relief requires access to and control of adequate transport and communications. The health sector's resources are usually insufficient to meet those needs. The *"Health Emergency Coordination Committee"* will therefore require extensive support from the government, armed forces, and sometimes private sector to carry out essential relief tasks.

Telecommunications: are the foundation of an effective emergency response on any scale. If installed from the start, they will ensure that the information on the situation is adequately transmitted, facilitating rapid reaction and personnel security. In the health field telecommunications are the cornerstone for effective disease surveillance which, through timely reporting of cases, can safe a lot of lives.

Transportation: is needed for a range of health and environmental health operations during emergencies, including:

> Moving assessment and operational teams;
> Road clearance;
> Moving people affected by disaster;
> Moving equipment and supplies;
> Trucking water;
> Moving human bodies;
> Moving solid waste;
> Moving animal corpses (especially after floods and cyclones); and
> Repair and reconstruction.

For more information on telecommunications and transport refer to Wisner and Adams (2002).

- Management of international relief assistance
International assistance is usually needed after a disaster to provide locally unavailable resources or skills for relief and rehabilitation. When properly directed towards priority needs, international assistance alleviates suffering and contributes to rapid rehabilitation. But when misguided by unsubstantiated donor perceptions of what the health needs "ought to be", this assistance only exacerbates problems and contributes to chaos and to what so called "second disaster".

Principles adopted by this policy that can guide the international relief assistance in disaster are as follow:

> Health relief assistance should be planned and made by officials designated by the Ministry of Health to coordinate health-related humanitarian assistance (EHA unit in FMOH) and in consultation with the *"Health Emergency Coordination Committee"* and the *"High Emergency committee"*.

Needs assessments, to identify the needs from the international community, must be carried out promptly by the national health authorities or jointly with international agencies offering health assistance. Plans for international assistance should be based on these assessments of the needs;

Donors should not compete with each other to meet the most visible needs of an affected population. The quality and appropriateness of the assistance is more important that its size, monetary value or the speed with which it arrives;

Emergency assistance should complement, not duplicate, measures applied by the country, and the activities implemented by international agencies should be planned to avoid duplication of work;

Information must be circulated openly and subjected to review to ensure accountability in the management of humanitarian work. Donors work in health must provide Federal Ministry of Health with accurate reports on the status of shipments and deliveries, information about health workers working the relief programs, biomedical and health statistic data, and the implemented health interventions;

International agencies should adhere to the national standards, protocols and guidelines for health assessments and health interventions in disaster; and

On the other hand, government authority should take necessary measures to facilitate the work on international community during disaster. Fast track policy issued during Darfur crisis (Annex ??) will be a good model to be followed in the future.

o To ensure implementation of these principles, the recent agreement between the FMOH and the Ministry of Humanitarian Affairs that technical agreement to be signed by NGOs working in health with FMOH will further augment adherence of all stakeholders to these principles.

- Reestablishing normal programs

In the first weeks after disaster the pattern of health needs will change rapidly, from casualty treatment toward more normal primary health care. Services must be reorganized, often because many permanent facilities have been severely damaged and severe financial constraints on reconstruction exist. Priorities will also shift from health care toward environmental health measures and temporary shelters.

The Health authority will be faced with decisions in three main areas which must not be overlooked during the emergency operations: the long-term problems caused by the disaster, reestablishing normal health

services, and assessing and repairing or reconstructing damaged facilities and buildings.

Long-term problems caused by the disaster: is an important issue that should looked for from the start. The following points are important in relation to this issue:

- Extended need for medical care: If large numbers of casualties have resulted from the disaster, a small proportion (probably less than 1 per cent) will require long-term nursing at home, institutional care, or specialized rehabilitation for months or years. Examples are paraplegics, patients with severe brain damage, amputees, and patients with chronic sepsis. In countries, like Sudan, where specialized services for long-term care and rehabilitation are limited, this will put a strain on the health services.

Funding long-term programs from international resources may prove difficult since many organizations are reluctant to take on such expenditures. Preliminary statistics on the numbers of patients involved and estimates of cost should be obtained as soon as possible and made available to decision makers and interested agencies.

- Surveillance of communicable diseases: As the weeks pass after a disaster, the public is likely to become progressively less concerned about the risk of epidemic diseases, even though outbreaks may still occur, and its initial enthusiasm for providing emergency services to temporary settlements may wane. Disease surveillance remains important and should be continued until normal disease reporting systems can be restored.

- Care of orphans: A major disaster with high mortality leaves orphaned children whose care may become the responsibility of health agencies. Institutional care should be a last resort because of its recurring cost, administrative difficulties, and the social harm to the orphans which may result. Each case should be reviewed separately to see if there are surviving relations who can undertake the child's care, and in Sudan this is usually possible because of extended family networks. The Red Cross and Red Crescent has considerable experience in tracing displaced children and can be asked for assistance.

Re-establishing normal health services: Since disaster may affect the health facilities infrastructure, the health sector should keep in mind anticipated rehabilitation needs when formulating the original request for assistance. The acceptance of some forms of assistance such as field hospitals or volunteers should also be decided on in light of longer-term needs.

The rehabilitation period provides an opportunity for making major changes in health-care methods, for during it people are receptive to new ideas. For instance, programs such as laboratory services, epidemiologic

surveillance, oral rehydration of diarrhea patients, and expanded immunization may have been strengthened as an indirect result of disasters.

Assessment, repair, and reconstruction of damaged facilities and buildings:

When water supply and sewage systems, hospitals, and other health facilities (including stores and administrative buildings) have been damaged, there must be an arrangements for a thorough survey to supplement the preliminary assessment and provide detailed cost estimates.

If international assistance is required for reconstruction, the estimate can be used to draw up projects to obtain the necessary funding or loans. Project plans should be as accurate and detailed and be submitted as soon as possible after the disaster, since this will improve the likelihood of obtaining funds.

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Annex 1

FUNCTIONAL AREAS OF RESPONSIBILITY OF A DISASTER REDUCTION PROGRAMME/UNIT IN THE FEDERAL MINISTRY OF HEALTH

For the Ministry of Health to play its envisaged role concerning emergency it is planned to strengthen and improve the function of the newly established Emergency and Humanitarian Actions Unit within the Federal Ministry of Health by allocating more resources distinct from those allocated to other priorities such as, for instance, emergency medical services. The unit should have enough full-time staff dedicate to that programme only and with appropriate authority.

The disaster unit must as much as possible cooperate with the existing services of the Ministry of Health by strengthening them rather than creating parallel structure. The functions of the unit are as follows:

Promotion
- Promoting the adoption of legislation, policies and projects by other public or private sectors to reduce the risks to health and to facilitate the task of the Ministry of Health.
- Promoting the inclusion of disaster reduction measures/activities into development activities of other programs/divisions of the ministry of health and the health sector.
- Promoting the use of the latest scientific knowledge regarding disaster risk management.
- Public education through mass media (television, radio and newspapers) and health educators in collaboration with other sectors.

Development of norms
- Construction and maintenance norms and standards to mitigate the impact of conflicts or natural disasters on the health facilities in consultation with the relevant ministries.
- Norms for contingency planning, simulation exercises and other preparedness measures in the health sector in consultation with the relevant ministries.
- Standardization and validation of existing plans (for instance, hospital disaster plans).
- Monitoring and evaluating mitigation and preparedness activities in order to incorporate lessons learned into existing norms and standards.
- Providing lists of essential drugs and supplies for emergencies.
- Assisting in the development of protocols for telecommunication (internet, radio...).

Training
-        Assessment of current needs and offer in training for disaster preparedness, mitigation and response in the health sector.
-        In-service training of health personal (from prevention to response) with special focus on managerial issues.
-        Inclusion of disaster management in the curriculum of pre and post graduate schools in health related sciences.
-        Preparation of training material for presentation of health related topics in training of other sectors (planning, engineering, foreign affairs...).

Coordination - liaison with other agencies
-        Coordination within the health sector and with civil protection, civil defence or other agencies with multi-sectoral responsibility.
-        Coordination with disaster focal point, unit or commission in other sectors (Congress or Parliament, foreign affairs, public works, private sector...).
-        Coordination and collaboration with disaster programmes/ units in health sectors of the neighbouring countries, as permitted by circumstances.
-        Liaison with humanitarian organizations at national or international level (bilateral, UN agencies, Red Cross and Red Crescent societies and NGOs...).

Mobilization of the health response in case of disaster
The followings are the general goals which all workers in response to disaster try to achieve:
-        Alleviate or reduce the suffering of victims.
-        Containment of the disaster and prevention of its spread.
-        Expedition of rehabilitation.
This can be implemented through the following interventions:
-        Assisting in the mobilization, operational coordination and support to the health response in case of natural, technological or man-made disasters.
-        Assessment of needs and active dissemination of this information through holding meetings and developing web sites.
-        Mobilization of financial resources, formulation of projects and quality control for response and rehabilitation.

Annex 2

Hazard classification

HAZARD
Potentially damaging physical event, phenomenon and /or human activity, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

NATURAL HAZARDS
Natural processes or phenomena occurring in the biosphere that may constitute a damaging event. *Natural hazard can be classified by origin in geological, hydro meteorological or biological*.

ORIGIN	PHENOMENA / EXAMPLES
Geological hazards Natural earth processes or phenomena in the biosphere, which include geological, neotectonic, geophysical, geomorphologic, geotechnical and hydro geological nature.	Earthquakes, tsunamis; Volcanic activity and emissions; Mass movements i.e. landslide, rockslides; Subsidence, surface collapse, geological fault activity.
Hydrometeorological hazards Natural processes or phenomena of atmospheric, hydrological or oceanographic nature.	Floods, debris and mud flows; Tropical cyclones, storm surges, thunder/hailstorms, rain and wind storms, blizzards and other severe storms; Drought, desertification, wild land fires, heat waves, sand or dust storms; Permafrost, snow avalanches.
Biological hazards Processes of organic origin or those conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances	Outbreaks of epidemic diseases, plant or animal contagion, extensive infestation.

TECHNOLOGICAL HAZARDS
Danger originating from technological or industrial accidents, dangerous procedures, infrastructure failures or certain human activities, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Sometimes referred to as anthropogenic hazards. Some example: industrial pollution, nuclear activities and radioactivity, toxic wastes, dam failures; transport, industrial or technological accidents (explosions, fires, spills)

ENVIRONMENTAL DEGRADATION
Processes induced by human behaviour and activities (sometimes combined with natural hazards) that damage the natural resource base or adversely alter natural processes or ecosystems, Potential effects are varied and may contribute to an increase in vulnerability and the frequency and intensity of natural hazards. *Some examples: land degradation, deforestation, desertification, wildland fires, loss of biodiversity, land, water and air pollution, climate change, sea level rise, ozone depletion*.

NOTES:

1. Hazards can be single, sequential or combined in their origins and effects.

   Some hazards may have natural or human-induced origin, i.e., wildland frees and desertification, in such a case they may be classified as hydroeterological or referred to environmental degradation

Source: International Strategy for Disaster reduction (ISDR). (2002).

Categories of vulnerability

Category	Measures
Proximity and exposure	Identify population (s) vulnerable because they live or work near a given hazard.
Physical	Assess vulnerability of buildings, infrastructure, agriculture and other aspects of the physical environment due to factors such as site, materials used, construction technique, and maintenance. Evaluate transportation systems, communication systems, public utilities (water, sewage, power). And critical facilities (i.e., hospitals) for weaknesses. Estimate potential short-and long-term impact of hazard on crops, food, livestock, trees, and fisheries. Identify people who require special planning because of demographics or physical condition.
Social	Identify population most vulnerable to the effects of disaster (e.g. older adults, children, single-parent families, the economically disadvantaged, the disabled). Estimated the level of poverty, jobs that may provide social support.
Economic	Determine the community's potential for economic loss and recovery following a disaster.
Capacity	Evaluate the availability of human recourses, material resources, and the presence of mutual aid agreements with neighboring communities. Review the existence and enforcement of government regulations that mitigate the effects of the certain disasters (i.e., building codes).

Annex 4

THE IMPACT OF A DISASTER ON THE HEALTH SECTOR, BY AFFECTED REGION
(Thousands of dollars)

Component	Region			
	1	2	3	TOTAL
Health ministry[1] Infrastructure Equipment and furniture Medications				
Social security Infrastructure Equipment and furniture Medications				
Subtotal, public sector **Private** Infrastructure Equipment and furniture Medications				
Subtotal, private sector **Unforeseen expenses and income** Emergency treatment Income not received Treatment not given Increased costs Increased expenditures in medications Epidemiological surveillance Vector control Community education Psycho-social rehabilitation				
TOTAL				

Annex 5
The stages for the assessment process, information required and the sources of the information

The assessment process might develop through the following stages:

o Determination of the geographical area affected by the disaster, as well as the disaster's main immediate effects;

o Analysis of the sector's operation and policy before the disaster, based on existing documents;

o Analysis of the political and socio-economic implications of the disaster's effects on the sector;

o Field assessment of direct damage and effects to validate or modify the information provided by the sector's authorities;

o Quantification of the direct effects;

o Estimation and valuation of the indirect effects;

o Assessment of the macroeconomic effects;

o Estimation of the effects induced on other sectors, in particular on employment and women;

o Gathering of any available information concerning the strategy, plans and projects that may be under consideration, as well as the support and reconstruction resources that are, or may be, made available to the sector; and

o Cooperation in formulating the strategies, plans and projects for the reconstruction and revitalizing of the sector.

Information requirements

To assess the disaster's impact and effects on the sector, it is important to analyze the available administrative, economic, social and epidemiological information for the period before the disaster in the affected region and/or country.

This report of the impact assessment should, at the very least, contain the following information:

o The socio-demographic situation and the status of the main epidemiological indicators, including the morbidity rate and incidence of different diseases that are relevant to the type of disaster in question;

o A description of the characteristics and location of existing health-care facilities;

o The existing human resources, equipment and medical supplies in the health sector and its facilities;

oThe sector's management, the way in which it is financed and its financial resources;

oThe health service coverage provided by each of the different institutions; and

oThe cost of the services supplied, including the cost of a doctor's visit, daily hospital room charges and average wages, among others.

Sources of information:

oSources of information vary widely in type and origin. No source should be ruled out when it comes to obtaining information that might help measure the impacts and assess the direct and indirect effects on the sector.

oThe followings are the expected sources for the information:

-Existing information and reports, including available publications, pertinent historical materials and data on the situation prior to the emergency.

-Interview with appropriate, well informed individuals, including donors, personnel in NGOs and in national public administration, local specialists, community leaders, the elderly, health-care workers, teachers, businesspeople and so forth.

-Group discussions with the affected with member of affected population to provide information on practices and beliefs.

-Early warning systems and vulnerability assessment, and national and regional plan for preparing in case of disaster.

-Government agencies in charge –in this case, the ministry of health- as it can provide statistical and budgetary information on the sector's resources and activities.

-The pharmaceutical industry and the government agency in charge of its regulation (Directorate General of Pharmacy) can provide useful information on the medicinal drugs market.

-Information on the population and its main socio-demographic characteristics can be made available from national institutes or agencies in charge of producing official statistics (National Bureau of Statistics).

Information published by international agencies that provide specific support to the sector should generally be taken into consideration (publications and reports of WHO, UNICEF, UNFPA … etc).