

# REPUBLIC OF YEMEN

The Yemen Country Note is based on vigorous consultations undertaken with various governmental agencies, the UN agencies, and the World Bank country office staff to understand the current organizational structure for managing disasters in Yemen and identify possible areas of support for strengthening Disaster Risk Management (DRM). Major governmental agencies consulted include the ministries of Planning and International Cooperation, Oil and Minerals, Communications and Information Technology, Transport, Public Works and Highways, Civil Defense, Water and Environment, Agriculture and Irrigation, Health, and Local Administration. The findings of the consultations were presented to a cabinet level meeting, held on April 23rd 2009, chaired by the Deputy Prime Minister, Ministry of Planning and International Cooperation. During the meeting, the Government of Yemen provided guidance and identified priority areas of interventions for DRM.

## 1. DISASTER RISK PROFILE

The Republic of Yemen, covering an area of nearly 528,000 km<sup>2</sup> on the Arabian Peninsula near the Horn of Africa, is home to a population of about 22 million that is growing at over 3 percent per annum. Yemen's urban population, currently about 27 percent of the total, has a much faster growth rate than the overall population growth rate, and is growing at about 5 percent per annum. The country's topography of rugged mountains, highlands, deserts, and coastal plains, coupled with arid weather conditions, render Yemen highly susceptible to desertification and floods, and make it a disaster prone country that has experienced at least one disaster per year over the last two decades.

Floods are the most recurrent natural disaster in Yemen, followed by landslides and earthquakes. The most recent major floods occurred in 1996, 2000, and 2008. While regular flooding has traditionally been beneficial for agricultural practices in Yemen, when flooding occurs in areas that are densely populated, there are significant economic damages that occur due to loss of lives, damage to livelihoods, property and infrastructure. With an estimated per capita GDP of US \$870 and therefore limited financial resources, Yemen can ill afford the losses it currently sustains from recurrent disasters. Table 1 provides an overview of the natural disasters reported in Yemen over the last 28 years, while Table 2 provides estimates of loss from the ten most major disasters over the last twenty years.

**Table 1.** Natural disasters reported from 1980-2008<sup>1</sup>

No of events	27
No of people killed	908
No of people affected	1,064,592
Economic Damage (US\$ X 1,000)	2,849,500
Economic Damage per year (US\$ X 1,000)	101,767

**Table 2.** Top 10 natural disasters reported (1988-2008)<sup>2</sup>

Disaster	Date	Affected	Killed	Cost (US\$ X 1000)
Flood	2008	700,000	73	1,638,000
Earthquake	1991	40,039	70	10,000
Flood	1991	30,000	65	1,500
Flood	1993	21,500	50	NA
Flood	1999	19,750	36	NA
Flood	1996	5,000	33	NA
Flood	1998	3,000	32	NA
Flood	2006	2,000	31	NA
Flood	2007	2,000	28	NA
Drought	1988	NA	NA	NA

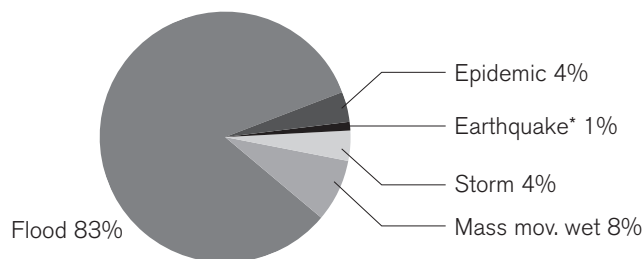
<sup>1</sup> Provention Web and WB DLNA: October 2008 Tropical Storms and Floods, Republic of Yemen 2009.

<sup>2</sup> Ibid.

## Floods are the major natural disaster in Yemen

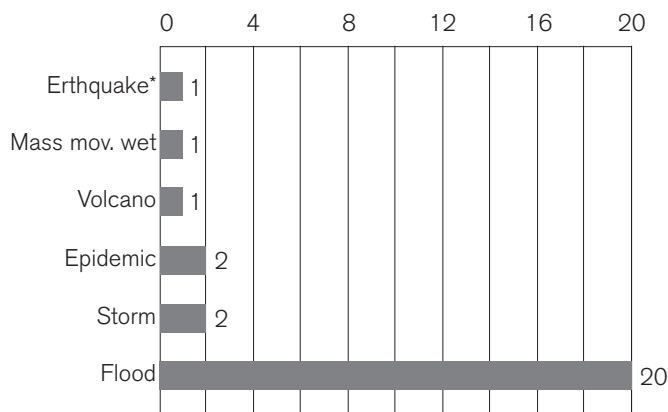
Loss of human life has been the greatest from floods and the economic damage from the 2008 flood was very severe (Figures 1 and 2). Floods occur almost every year in Yemen with major floods reported in 1991, 1993, 1996, 1999, 2000, 2006, and 2008. The 2008 flood affected two governorates in Yemen, which received 90 mm of rainfall in 30 hours, almost eighteen times greater than the normal rainfall of 5mm to 6mm. The rain fell over a catchment area of 2 million hectares, and the nearly 2 billion cubic meters of water caused severe flash floods in the valley, with water surges exceeding 10 meters in some areas.

**Figure 1.** Percentage of reported people killed by disaster type



Source: WB DLNA: October 2008 Tropical Storms and Floods, Hadramout and Al Mahra, Republic of Yemen

**Figure 2.** Natural disaster occurrences reported



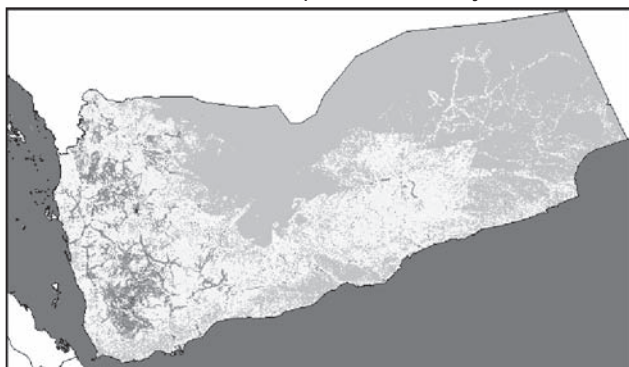
The last flood was caused by a level-three tropical storm that affected the two eastern Governorates of Al-Mahara and Hadramout<sup>3</sup>. 73 people were killed, over 25,000 people were displaced, and about half the population in these

Governorates lost their livelihood. Consequently, the poverty rate in these two Governorates is expected to increase from 28 to 51 percent, and the national poverty rate is expected to go up by 1.1 percent. The overall damage and loss assessment from this flood was estimated to be about US\$1,638 million, or about 2.8% of Yemen's GDP<sup>4</sup>.

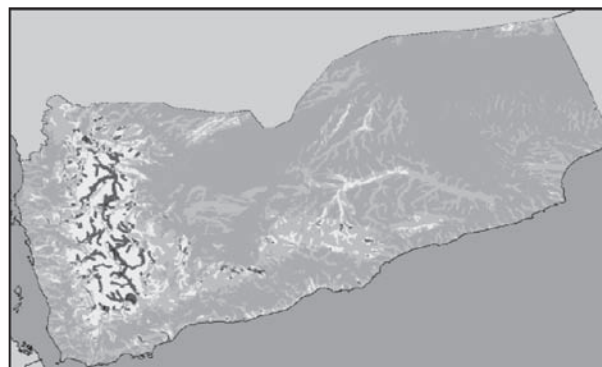
## Spatial distribution of floods, earthquakes, and landslides in Yemen

**Floods:** The areas that are at risk from flooding are largely the densely populated areas of western Yemen, that include governorates of Sada'a, Sana'a, Dhamar, Ibb, Taiz, Lahz, Mareb, and Abyan (Figures 3 and 4)<sup>5</sup>. In central and eastern

**Figure 3.** Population Density



**Figure 4.** Flood Hazard



<sup>3</sup> Yemen is divided into 19 governorates

<sup>4</sup> Source: WB DLNA: October 2008 Tropical Storms and Floods, Hadramout and Al Mahra, Republic of Yemen

<sup>5</sup> Preliminary risk maps from WHO e-atlas of disaster risk for Eastern Mediterranean Region, 2008; population density map from LandScan™ Global Population Database (2006). Oak Ridge National Laboratory. Available at <http://www.ornl.gov/landscan/>.

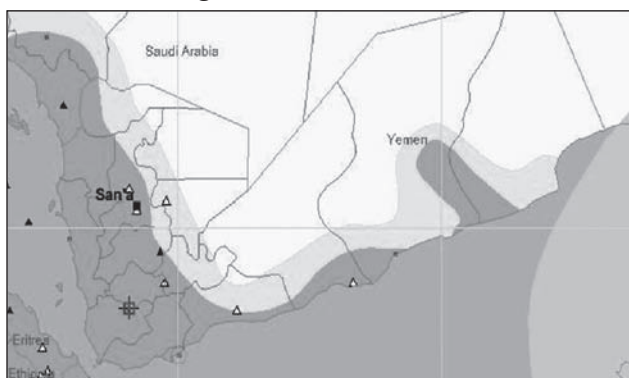
Yemen, the Hadramout Valley and the southern coastline of Yemen are also at risk from flooding. Floods in Yemen mostly result from high-intensity rainfall, and sometimes from coastal storm surges and tsunamis.

*Earthquakes:* Yemen is located in the seismically active zone between the Arabian and African tectonic plates. The western and southern portions of Yemen (Figure 5)<sup>6</sup> around the rifts of the Red Sea and Gulf of Aden, are at risk from earthquakes. This is where the Arabian and African plates are pulling apart.

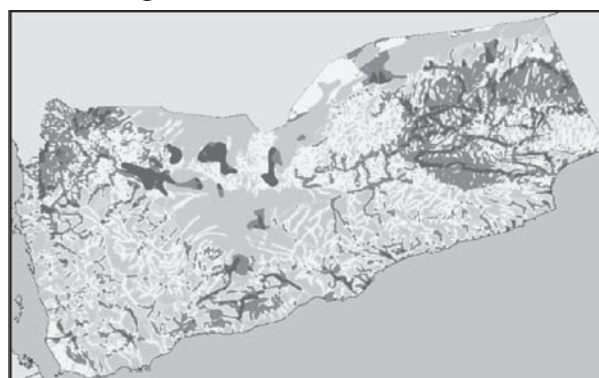
*Landslides:* Unstable geological conditions, including the development of extensive cracks due to natural aging and extreme weather conditions, exist in several mountainous regions of Yemen such as Al-Dhafaer Al Gayah and Al-Semah. In such regions, heavy rains, storms, earthquakes, or volcanic eruptions, as well as mining and inappropriately sited

infrastructure, can combine to trigger landslides. Since the terrain of Yemen is mostly mountainous, the entire country is at risk of landslides (Figure 6)<sup>7</sup>.

**Figure 5. Seismic Hazard**



**Figure 6. Landslide Hazard**



### Three main factors that exacerbate Yemen's vulnerability to natural disasters

*Climate change is expected to increase exposure to drought and flash floods, leading to a trend:* While there is no international consensus on the impact of climate change on precipitation levels in Yemen, Global Climate Models (GCM) predict a three to four degree centigrade increase in mean temperatures<sup>8</sup> by the 21<sup>st</sup> century. Climate change induced impacts may include a rise in sea levels, and increased exposure to droughts and flash floods in the country.

*Depletion of water resources:* The availability of water in Yemen stands at 150 cubic meters per capita, and is well below the threshold of 1000 cubic meters per capita established by the United Nations for classifying countries as water scarce countries. In fact, the availability of water in Yemen is much lower than the average figure for the Middle East and North Africa Region, which is about 1250 cubic meter per capita. This limited availability of water is further exacerbated by three factors: (i) seasonal and temporal changes in the pattern of rainfall that Yemen receives; (ii) both expansion of the area under cultivation as well as water intensive agricultural production; and (iii) higher ground water extraction and reduced ground aquifer recharge as a result of increased urbanization which in turn has resulted in an expansion in built-up areas. The depletion of water resources is increasing aridity, which could lead to reduced economic prospects in the future, thereby making Yemen more vulnerable to natural disasters.

6 Source: <http://mrnathan.munichre.com>.

7 Preliminary risk maps WHO e-atlas of disaster risk for Eastern Mediterranean Region, 2008

8 Values are for changes in mean temperature between 20th century (1961-1990) to 21st century (2070-2099) as projected by nine climate-change models and reviewed by IPCC Third Assessment Report (2001).

*Ineffective urban planning and development in hazard prone areas:* Ineffective and weak land-use planning coupled with a lack of building codes not specific to withstanding the impacts of natural disasters, has exposed both urban and rural households in Yemen to greater risk of losses. Much of the expansion of built-up areas in Yemen's cities is taking place in unplanned settlements, located predominantly in environmentally sensitive zones where land values tend to be low, e.g. low lying flood prone areas, steep hillsides, etc. Development in such zones often blocks existing natural drainage channels, rendering them much more prone to damage when these areas get flooded due to inadequate drainage. In rural areas too, as observed in the Hadramout valley, traditional mud structures *on the edge* of river beds are starting to give way to concrete structures often built *inside* river beds, which impede the natural flow of water. Such man-made obstructions obstruct to the natural flow of rain water, which can lead to floods and increase Yemen's vulnerability to disasters.

## **Moving from a reactive to a preventive approach to disaster management in Yemen**

*Yemen's approach to managing disasters is currently reactive, focused on post disaster relief and recovery activities.* Post disaster relief activities consist of emergency relief, and recovery & reconstruction programs. Such programs involve the army, international relief agencies, various branches of technical ministries, and utility agencies at Governorate level. Recovery and reconstruction activities are currently financed through specialized Recovery and Reconstruction Funds (e.g. the recently established Fund for Recovery and Reconstruction in Hadramout and Al Mahara). The branches of line ministries, other specialized agencies such as the Public Works Program, the Social Fund, and the Social Welfare Fund contribute to recovery and reconstruction activities in keeping with their specific institutional mandates and implementation capabilities.

*The concept of disaster risk management (DRM) is new to the country.* As a result of a current focus on post-disaster relief, Yemen has relied largely on central government agencies to mobilize for relief activities. Going forward, however, as Yemen's commitment to proactive risk management is translated into re-mapping of administrative responsibilities of

central agencies and the forging of essential partnerships horizontally between and amongst central agencies, there will be a need to establish effective vertical linkages between central and sub-national levels of government that penetrate effectively down to the level of communities.

Donors have begun supporting the rationalization and clarification of roles and responsibilities for various central agencies that are either already contributing to, or have the capability to contribute to the design and development of a cohesive, coordinated, and efficient program for proactive risk management. While efforts to improve and enhance the horizontal linkages between central level agencies is an excellent start, there is a long way to go before there is an established disaster risk management program with a specific focus on (i) the prevention of disaster, (ii) the mitigation of the impacts of a disaster, and (iii) and the preparedness needed to deal with disasters when they occur. The planning and execution of such a program will require functional linkages, both horizontally and vertically, between national and sub-national government agencies, local communities, international development agencies, as well as non-governmental organizations.

## 2. PROGRESS TOWARDS HYOGO FRAMEWORK FOR ACTION

Yemen is a signatory to the Hyogo Framework for Action<sup>9</sup> and in keeping with the five priority areas for action, Yemen has committed to:

1. Ensuring that the reduction of risks from disasters is a national and a local priority with a strong institutional basis for implementation;
2. Identification, assessment, and monitoring of risks from disasters, and enhancing its early warning system;
3. Use of knowledge, innovation, and education to build a culture of safety and resilience at all levels.
4. Reduction in the factors that make Yemen more vulnerable to disasters; and
5. Strengthening disaster preparedness for effective responses at all levels.

The next section describes the state of progress that Yemen has made in the above mentioned five Hyogo Framework priority action areas, along with the gaps and possible next steps.

### **HFA Priority # 1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation**

**Yemen has accorded high priority to disaster risk reduction**, and has established two focal agencies to take the lead in this area. These are:

- (i) The *National Disaster Management Unit* (NDMU), housed within the Civil Defense General Directorate (CDGD) under the Ministry of Interior (MoI); and
- (ii) The *Directorate of Environmental Emergencies and Disasters* (DEE) under the Ministry of Water and Environment (MWE), established in 2004 through a ministerial decree.

The Unit in the Civil Defense Directorate has the mandate to focus on disaster management and response in Yemen, while the Department of Environmental Emergencies under the Ministry of Water is responsible for reporting on progress in Yemen on the five priority areas of action outlined in the Hyogo Framework for Action, to the UN International Strategy for Disaster Risk Reduction (UNISDR) – UNISDR being the agency that is responsible for monitoring progress on the Hyogo Framework. Although the DEE has represented Yemen at several international forums, it has limited resources. The Unit in the Civil Defense Directorate, on the other hand, is better resourced as it has been responsible for providing emergency relief after disasters.

**Yemen has established an institutional basis for implementation of actions related to disaster risk reduction.** There is a legal foundation for the creation of an organizational structure for managing the risks from disasters, and Yemen has designated its Ministry of Interior to lead the structure. The 1997 Civil Defense Law defines the responsibilities of the Civil Defense General Directorate with respect to for disaster management<sup>10</sup>. Subsequently, the Executive Bylaw and the Republican Decree (N°386) became the basis for the Supreme Council of Civil Defense. The Council is responsible for providing policy direction, approving plans for disaster preparedness and response, and defining the tasks and responsibilities of each ministry/agency, actors and stakeholders before and during any

9 The Hyogo Framework for Action (HFA) 2005-2015: *Building the Resilience of Nations and Communities to Disasters* was developed during 2005 World Conference on Disaster reduction in Kobe, Japan. The HFA aims to substantially reduce disaster losses, in lives and in the social, economic and environmental assets of communities and countries by effectively integrating, in a coherent manner, disaster risk considerations into sustainable development policies, planning, programming, and financing at all levels of government.

10 Protecting the population from natural and general disasters and securing methods of safety and communication during peace and war (source Law N° (24) of 1997 on Civil Defense).

emergency. It is chaired by the Minister of Interior, and includes key ministries as members<sup>11</sup>. However, when the floods occurred in 2008, the Supreme Council was chaired by the Prime Minister himself on two occasions.

***There is progress on the identification, assessment, and monitoring of risks from disasters, and the establishment of an early warning system is in its infancy.*** The UN agencies and the Government of Norway have provided support to initiate disaster risk management related activities in Yemen. They supported the Disaster Preparedness, Management and Recovery project in 2003, which established under the Civil Defense General Directorate the National Disaster Management Unit. However, the Unit needs technical, and financial strengthening, in addition to an improved internal re-organization that enables it to develop the necessary vertical mechanisms for coordination with sub-national entities and communities (which will also need strengthening). In order to develop an effective, comprehensive and integrated disaster risk management system, the Civil Defense General Directorate was accorded the status of an authority, with greater managerial and financial autonomy. However, it still functions as a ministerial department, and its budget is approved by the Ministry of Interior. The National Disaster Management Unit has a National Disaster Management Team that consists of focal staff from various ministries. It developed a National Disaster Management Plan in 2006. This Plan, in addition to proposed initiatives for capacity building, GIS mapping, and rescue operations, includes

a checklist of activities to be undertaken in the event of a disaster, as well as a list of key contacts. This Plan is awaiting approval by Yemen's Cabinet.

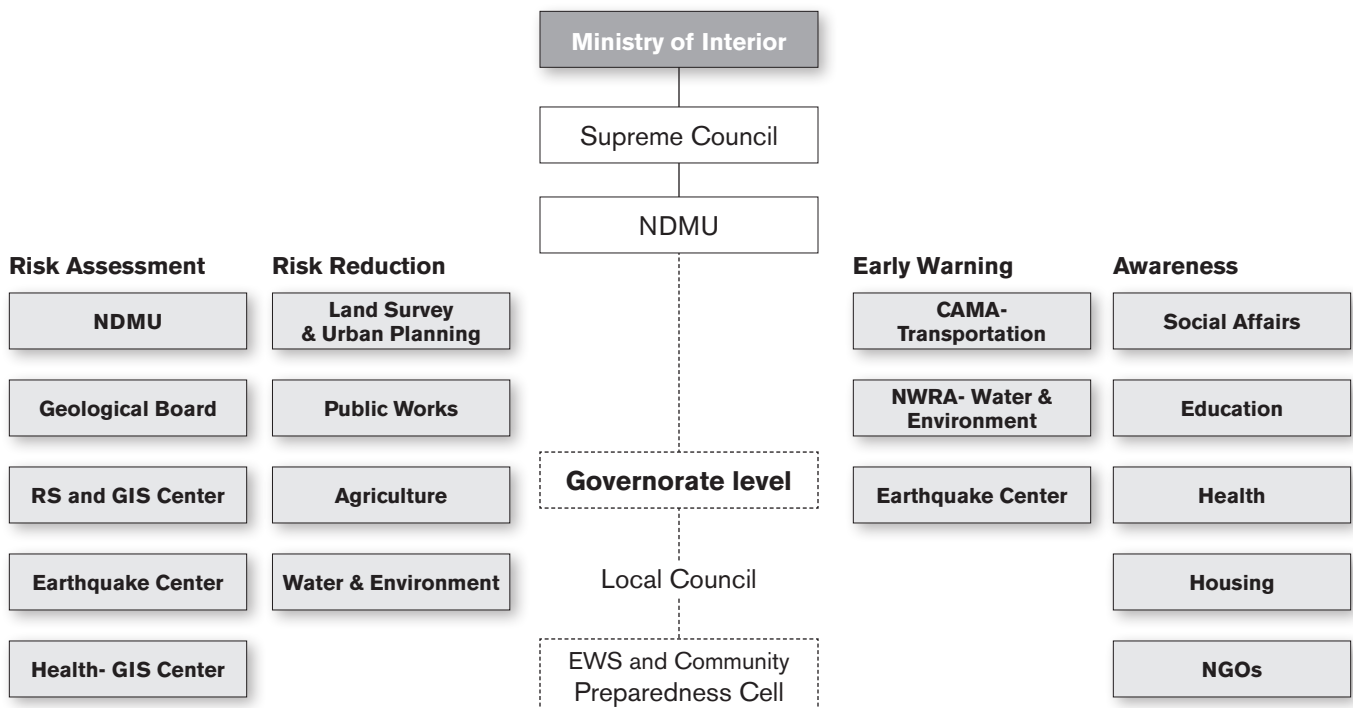
*There is a need to further strengthen the organizational structure for managing the risks from disasters, streamline agency functions, and improve functional coordination and information sharing for an early warning system.* Other prominent agencies that play an important role in disaster risk management are the Public Works Program, the Geological Survey and Mineral Resources Board, the National Water Resources Agency, and the Vulnerability Assessment Mapping Unit under Ministry of Health. These agencies are active in risk assessment, early warning, and post disaster reconstruction & recovery according to their specific institutional mandate and implementation capabilities. Figure 7 provides an institutional map of agencies that are active within the different categories of activities that together constitute a comprehensive disaster risk management program, and their relationship with the National Disaster Management Unit.

***Yemen has to make rapid progress towards making disaster risk management a priority at the local level.*** Sub national governments, their agencies, and local communities need to be integral to the planning and execution of disaster risk management activities, so that there is more ownership which can lead to more effective implementation. There is already progress towards decentralization in Yemen, and Yemen's decentralization policy<sup>12</sup> has mandated local governments with disaster risk management and reduction. The legal foundation for developing and implementing disaster risk management programs at the local level already exists.

11 The ministries currently and proposed to be represented are: Public Health and Population, Electricity and Energy, Commerce and Industry, Communications and Information Technology, Transport, Finance, Oil and Minerals, Education, Justice, Public Works and Highways, Deputy General Staff for Training Affairs and the Chairman of Civil Defense Authority, Planning and International Cooperation, High Education and Scientific Research, Foreign Affairs, Local Administration, Information, Youth and Sport as well as the Chairman of the NGO Yemeni Red Crescent and Chairman of Federation of Commerce and Industry

12 The Local Authorities Law No. 4 of 2000

**Figure 7.** Organizational Map of Government agencies for disaster risk management in Yemen



**HFA Priority # 2: Identify, assess, and monitor disaster risks, and enhance early warning systems**

**Implementation of initiatives that identify disaster risks is well underway, although a formal early warning system does not so far exist.** A National Probabilistic Risk Assessment of Yemen, as well as detailed risk assessment for the Governorate/s of Hadramout & Al-Mahara governorate, and Sana'a are underway<sup>13</sup>. These studies will provide a risk atlas for various kinds of hazards in early 2010, and be the basis for planning and execution of various initiatives for disaster risk management in the country. The atlas will enable informed political debate on difficult choices that Yemen may have to make for both planning and retrofitting sectoral infrastructure in various spatial locations, and help the country develop a strategy that can be supported by donors, including possibly through additional IDA operations.

**The identification of risks and their mapping is underway in Yemen.** Several agencies are preparing digital risk maps of Yemen (Table 3). There is, however, no mechanism to either ensure compatibility between the data formats being developed by the agencies, or to avoid duplication of functions for optimizing the use of resources. There is also no institutionalized mechanism that links these agencies which are the critical suppliers of critical data, with the sub-national agencies and communities that are the users of this data. Unless such coordination and integrative mechanisms are in place, the design and implementation of disaster risk management activities will be ineffective and yield sub-optimal results.

13 \$700,000 study under TF #091825 and TF#091190

**Table 3: Agencies active in risk mapping**

<b>Agencies</b>	<b>Relation to Risk Assessment</b>	<b>Comments</b>
<i>Geological Survey Board Ministry of Oil and Minerals</i>	Landslide and earthquake risk mapping	Good infrastructure, over 15 years experience. Need consistent budget and capacity building
Remote Sensing and GIS Center Min. Telecommunications	National depository of base maps for Yemen and satellite imagery	Good infrastructure, 4 years experience
GIS cell in NDMU Ministry of Interior	Preparing maps of hospitals and emergency shelters	Location within NDMU, just started working with UNDP staff
Health Sector Mapping, Ministry of Health	Health vulnerability assessment maps	Good infrastructure, developing health facility maps with WHO guidance and support

***Establishing a formalized early warning system in Yemen will require functional linkages between agencies as well as substantial support to procure modern technology.*** A number of agencies are involved in collecting weather, seismic, and hydrological data useful for early warning system. These include the National Seismological Observatory Center, the Civil Aviation and Meteorology Authority, the Maritime Affairs Authority, the Desert Locust Monitoring and Control Center, the General Directorate of Animal Resources, Yemen Red Crescent, UN agencies, and local/international organizations. The National Water Resources Agency is developing a proposal for early warning system at river basin levels both for warning communities about hazards, as well as for optimal management of flood control structures.

***The Government of Yemen has allocated funds for the development of a formal early warning system.*** Although there is no formal early warning system at the national or local level, the Government has allocated US\$7.5 million to the Civil Defense General Directorate for the development of emergency control rooms in fifteen governorates. An emergency room, possibly for an early warning system and rescue operations, has become partially operational in Aden. A control room established in Sana'a is not yet operational due to financial and technical constraints. There are plans to establish emergency rooms in Mukalla, Taiz, and Hodeida.

***An initiative to strengthen the capacity of the National Disaster Management Unit to enable it to deliver early warnings to coastal communities and enhance their preparedness is underway.*** This initiative, known as the Disaster Preparedness, Management, and Recovery Project is being supported by the UNDP. An initial assessment report from this project highlights a list of priority actions and priority intervention locations which are Al-Mahara, Hadramout, Aden, Shabwa, Abyan, Lahz, Taiz, Hodeidah, and Hajja. It also lists the key players that need to be involved in these areas. The project has supported community awareness programs in two pilot areas - Al Mahara and Socotra Island. The National Disaster Management Unit may partner with Oman to share early warnings about tsunamis with coastal communities.

### **HFA Priority # 3: Use knowledge, innovation, and education to build a culture of safety and resilience at all levels**

***The Government of Yemen is extremely receptive to integrating knowledge and innovation into its disaster management program.*** The recently completed 2008 Damage and Loss Needs Assessment was well received by the Cabinet of Yemen and is being widely disseminated within the country. Similarly, the Government of Yemen is seeking to collaborate actively with Gulf Cooperation Countries in developing a regional mechanism in areas related to disaster mitigation like early warning systems and post-disaster response.

**Initial educational efforts to start building a culture of resilience is underway in Yemen.** A national strategy for awareness, targeting school children specifically and the public more generally, is being developed by the National Disaster Management Unit. The literature that is being developed for the awareness campaign includes advice on 'what to do during emergency'. Also included are interactive games for children.

**Much progress remains to be made on building a culture of resilience at all levels.** So far there exist no formal institutions or programs that can deliver training on adapting to climate change at a scale that is needed to build resilience at all levels. The National Disaster Management Unit is trying to include the concept of disaster risk management as well as the importance of environmental protection in reducing risks from disasters, in the curriculum of schools. The Ministry of Water and Environment, the Ministry of Health, and the Ministry of Social Welfare are also developing communication material that can effectively reach out to the larger public and inform on the appropriate response needed during a disaster or an emergency. With multiple agencies developing communication strategies and tools, efforts are needed to ensure adequate coordination and avoid duplication so that there is optimum impact on building a culture of resilience at all levels.

#### **HFA Priority # 4: Reduce the underlying risk factors**

**Sectoral ministries are working towards reducing the risks posed by the three main factors that exacerbate Yemen's vulnerability to natural disasters: (i) climate change, (ii) depletion of water resources, and (iii) ineffective land use planning that are contributing to development in hazard prone areas.** Table 4 maps the various national and sub-national entities that have a crucial role in limiting risks from the three underlying factors. There is a need to develop clear guidelines for mainstreaming disaster risk reduction into the sectoral planning and investment cycles of these ministries. Discussions amongst policy makers are underway to include in the institutional mandates of these agencies, an explicit focus on reducing the risks from disasters, so that appropriate initiatives can be mainstreamed and supported. These agencies have already embarked on some steps to reduce the risks from disasters, for example, the incorporation of flood plain protection in strategic land use planning, the development of appropriate building codes, and environmental impact assessment procedures.

**Table 4.** Agencies active in risk reduction

<b>Agency</b>	<b>Relation to Risk Reduction</b>	<b>Comments</b>
Governorates/Director of Districts	Implementation and Enforcement	With decentralization, the role of these agencies is crucial for the development of strategic land-use planning and their enforcement.
General Authority on Land Survey and Urban Planning	Master Plans in accordance with flood plain location	Has advisory role, need actual implementation at local level
Ministry of Public Works	Building codes, permits, design and construction	Needs greater implementation at local level
Ministry of Agriculture and Irrigation	Flood protection works, Dikes/Dams	Ministry would like to focus in the areas of desertification and locust storms
Ministry of Water and Environment	Environmental Impact Assessment (EIA)	By law all infrastructure projects should follow EIA to ensure no alteration in hazard prone areas

**Implementation of specific measures that impact the underlying risk factors will not be possible without significant ownership of necessary actions at the community level.** At present disaster risk reduction efforts in Yemen are far from being coherently organized vertically. Without decentralization, there will be little empowerment of sub national levels of government and their communities to develop an effective and balanced program to reduce

risks. Effective disaster risk management strategies will be difficult to develop, and the implementation of policies and programs developed centrally will be difficult and inefficient.

### **HFA Priority # 5: Strengthen disaster preparedness for effective response at all levels**

***Disaster preparedness for effective response at all levels has not as yet received attention in Yemen, as the planning focus has been on disaster relief and recovery operations.*** Although there is no institutional mechanism to ensure adequate preparedness levels for natural disasters and an emergency response to them, as stated earlier, the National Disaster Management Unit in the Ministry of Interior has developed a National Disaster Management Plan. This plan spells out in detail, the role of key line ministries before, during, and in the post disaster emergency phase. It provides checklists for essential activities to be executed in the different phases of a disaster, as well as a list of essential contacts. This plan, however, is yet to be approved by Yemen's cabinet.

***In the absence of attention to the pre-disaster planning, the only central government practice that exists is for an area to be declared a "Disaster Affected Area" before resources can be mobilized.*** In the event of a disaster, the President of Yemen declares the affected areas as "Disaster Affected Areas". Only after this declaration can relief funds be allocated, with relief efforts coordinated through a high level inter-ministerial committee. Such a committee was organized under the Prime Minister's Office after 2008 floods to coordinate national and international relief efforts. This committee coordinates the efforts of the army, international relief agencies, the branches of technical ministries, and utility agencies at governorate level, which are the main actors during the disaster relief phase of disaster operations.

Immediate recovery and reconstruction activities, i.e. post emergency relief, are coordinated at the governorate level by branches of line ministries (chief being Ministry of Public Works) and local NGOs. Long-term recovery and reconstruction activities are mostly coordinated by specialized Recovery and Reconstruction Funds (e.g. recently established Fund for Recovery and Reconstruction in Hadramout and Al Mahara). There is a need to develop and adopt early warning protocols and preparedness plans at regional and local levels.

### **3. KEY DONOR ENGAGEMENTS**

Since 1990s the World Bank (WB) has supported more than seven operations (approx. US\$ 200m), largely focused on post-disaster reconstruction, in addition to flood reducing activities under other operations. The most significant projects are the Taiz and Sailah (Sana'a) flood management projects that have dramatically transformed the cities and reduced the risks associated with floods. In 2008, in response to floods in Hadramout and Al-Mahara Governorates in Yemen, the Bank completed a Damage, Losses and Needs Assessment (DLNA), established the Yemen Recovery and Reconstruction Fund (YRRF), and got approval of the Yemen Flood Protection and Emergency Reconstruction project (US\$ 41 million). To enable a shift from an existing reactive approach towards a preventive approach for the management of disasters, the Bank is supporting three activities focused on mapping disaster risks at the national level as well as for Al-Mahara & Hadramout, and Sana'a. GFDRR has provided about US\$ 1.2 million in support for various activities in Yemen since 2007. Almost two decades of sustained Bank support for post-disaster reconstruction has resulted in the emergence of a strong and trusting partnership between the Government of Yemen and the Bank, and there exists today a high level of awareness on the importance of pre-disaster planning amongst policy-makers.

Yemen's Third Socio-Economic Development Plan (2006-2010) explicitly recognizes the need to reduce risks from natural disasters and focuses on mainstreaming risk reduction from natural disasters in development. The current Country Assistance Strategy (CAS) for the period 2009-2013 therefore includes the "management of natural resource scarcity

and natural disaster risk” as an explicit CAS goal. IDA has provided substantial support over the last three decades, for post-disaster and pre-disaster investments in drainage and flood protection or flood reduction, building resilience for climate change particularly in rural areas, water resource protection to tackle one of the three underlying risk factors<sup>14</sup>.

The World Bank has been involved in lending operations in the area of flood protection in Yemen through the Taiz Municipal Development and Flood Protection Project (TMDFFP) since 2002. More recently, in March 2009 the World Bank approved an IDA Grant for \$35 million for the reconstruction and rehabilitation of selected key infrastructure damaged by October 2008 floods. On the request of the Government of Yemen, the World Bank under TMDFFP is also preparing packages for financing priority infrastructure works in the governorate of IBB.

**Table 5.** Donor Support for disaster related activities in Yemen: on-going and closed

Projects	Implementing Agency	Budget and Timeline (US\$)	HFA Activity Area(s)
1. UNDP: Disaster Preparedness, Management and Recovery Project	Civil Defense General Directorate/ UNDP/ Government of Norway	1,469,372 (GOY - 700,000 & GO Norway - 28,812) 2003 - extended to 2008	1,3,5
2. WB/GFDRR – Strengthening Yemen National System for Disaster Risk Reduction and Recovery (Disaster Risk Reduction Institutional Mainstreaming Strategy and Priority Intervention Areas in Sana’a, National Probabilistic Risk Assessment Study including Al Mahara and Hadramout)	Ministry of Planning and International Cooperation	1,200,000 2007- ongoing (\$700,000 currently committed)	1,2,4
3. WB/GFDRR – Comprehensive Damage and Loss Needs Assessment	Ministry of Planning and International Cooperation	199,000 2008-2009	5

#### 4. GLOBAL FACILITY FOR DISASTER REDUCTION AND RECOVERY (GFDRR): ACTION PLAN

The World Bank participated in a cabinet level meeting to discuss the way forward for Yemen to move from a reactive approach to disasters to a more pro-active approach that enables the reduction of risks posed by natural disasters. This proposal is based on guidance provided by the cabinet level meeting chaired by the Deputy Prime Minister, Ministry of Planning and International Cooperation. The Government of Yemen has established the following principles to guide the development of a comprehensive program for reducing the risks from disaster:

- No new institution will be created. Rather, to embed mainstreaming into regular government work, the focus of donor support will be to support existing institutions to improve their organizational structures and operations.
- Donor support should focus on strengthening coordination mechanisms both before and during disaster
- The existing National Disaster Management Unit should remain small and efficient, so that it is able to attract and retain highly qualified staff within its budget.
- Donor support for developing local level initiatives to help communities better plan, prepare and respond to disasters before, during and after a major event, is welcome.

14 (Annex on this should be developed and attached with inputs provided by all Country Team members to bring sectoral colleagues into the picture and start to build ownership)

- Sequencing of activities, as well as their spatial location, will be determined by targeting those governorates as priority, that are at severe risk of experiencing floods and landslides, which appear to be the following based on the analysis available to date: Abyan Aden, Al Mahara, Hadramout, Hajja, Hodeidah, Ibb, Lahz, Shabwa, and Taiz.

Based on the above, Yemen's profile of risk from natural disasters, as well as a rapid assessment of the existing institutional organization of government agencies active in the area of disaster risk reduction, this proposal for support over five years (2009-2014), has two strategic objectives:

- strengthen Yemen's institutional capacity for planning, coordinating, implementing, and monitoring disaster risk assessment and risk reduction activities from the national to the community level, and
- jump-start the implementation of a national civil works program for reducing the risks from floods.

Table 6 provides an overview of the *proposed activities* that are expected to be supported by this proposal, the focal agency that will be responsible for their execution, estimated costs, and finally the which of the five priority action areas of the Hyogo Framework for Action, the proposed activities can be mapped to.

**Table 6.** Proposed GFDRR DRM Program

<b>Proposed activities</b>	<b>Focal Agency</b>	<b>Budget US\$ m</b>
<b>I). Strengthening institutional capacity for planning, coordination, monitoring, and reporting at both central and local levels (Hyogo Framework for Action Priority Areas 1, 3, 4 and 5)</b>		
1. Development of legal framework 2. Technical capacity assessments of key central agencies 3. Technical capacity assessments of key sub-national agencies in five Governorates 4. Analysis, consensus building and implementation of an action plan for any re-mapping of inter-agency functional links, inter-ministerial coordination, monitoring and reporting. The action plan will include actions that enhance horizontal and vertical organizational links to improve the preparedness and response to disasters. 5. Development of focused training and communication tools, dissemination, as well as the design and delivery of courses targeting government and non-government audiences. 6. Development of an inter agency, data portal that integrates data both horizontally and vertically, and enables real time information sharing by multiple users.	NDMU	0.8m
<b>II). Design and execution of a National Awareness Campaign (Hyogo Framework for Action Priority Areas 1 and 3)</b>		
7. Design and execution of a national communications program and implementation of a communications and public participation program at the community level in five Governorates. 8. Design and execution of the delivery of key messages to school going children, stratified by region. 9. Program targeting political leaders & civil society 10. Design and Execution of an internal inter-agency communications strategy for disaster risk and preparedness (with eventual links to enabling strategic electronic communications linked to the data portal) amongst them, as well as the delivery of cohesive messages to an external audience. 11. Design and delivery of a communications program targeted to political leaders and civil society stakeholders.	NDMU/ MoE/ MWE	0.3m
<b>III). Development of a risk assessment forum (Hyogo Framework for Action Priority Areas 1, 2 and 3)</b>		
12. Institutionalization of a structured forums at central and governorate levels (e.g. annual national disaster risk awareness events) 13. Technical national and international forums/ exchange programs for knowledge sharing 14. Development, management and mainstreaming of the use of risk maps linked to the data portal 15. Satellite/ aerial imagery of hazard prone areas Scaling up of current risk assessment studies	NDMU/ GSMRB	0.8m

(Cont.)

**Table 6. Proposed GFDRR DRM Program**

<b>Proposed activities</b>	<b>Focal Agency</b>	<b>Budget US\$ m</b>
<b>IV). Design and establishment of a National Early Warning System</b> (Hyogo Framework for Action Priority Area 2)		
16. Review and analysis of existing elements of the system (human as well as technical resource needs).	NDMU	1.0m
17. Procurement of goods and training for central and sub-national agencies.		
<b>V). EWS and community preparedness</b> (Hyogo Framework for Action Priority Areas 1, 3, 4 and 5)		
18. Targeted action plans designed specifically for the communities at risk, as identified by the risk assessments underway, will be executed for at risk communities in Hadramout, Al Mahara, Ibb, and Taiz Governorates.	Min. of Loc Admin. with local partners	1.2m
19. A specific action plan will be developed and executed for the at-risk communities in Sana'a		
<b>VI). Jumpstarting national civil works program</b> (Hyogo Framework for Action Priority Areas 4 and 5)		
20. Financing of priority investments to protect at-risk areas from floods in Ibb.	Min. of Public Works / NDMU	5.5m
<b>TOTAL</b>		<b>10.56m</b>

(Note: NDMU- National Disaster Management Unit, MoE- Ministry of Education, MWE- Ministry of Water and Environment, GSMRB- Geological Survey and Mineral Resources Board)

### **Preconditions essential for results from this program for disaster risk management**

For a successful implementation and maintenance of the proposed program, the following preconditions are required:

- Adequate yearly budget allocations should be made for salaries and operating costs of agencies involved in disaster risk assessment, prevention and preparedness activities.
- Staff of the involved government agencies should meet proper qualification criteria and be motivated by proper compensation, a stimulating work environment and a career growth plan.
- Institutions and people responsible for disaster risk prevention and preparedness should be held accountable for any possible failure, as failure in DRM can have catastrophic consequences.