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ASIAN DISASTER REDUCTION CENTER (ADRC)



Yemen country profile



By :

Hazar Fadhl Dammag
Ministry Water and Environmental

CONTENT

- General Information.
- Brief description of ministry of water and environment.
- Natural Hazard in the country.
- Three main factors that exacerbate Yemen's vulnerability to natural disasters.
- Supporting Disaster Risk Reduction at the National and Municipal Level in Yemen.
- Most Important Priorities for Risk Reduction.
- Barriers to Disaster Risk Reduction Management.
- Research Topic.



Location:

Yemen is located in the southern west of the Arabian peninsula.

AREA :

528,000 km², 21

Governorate

POPULATION:

24 million.

Topography

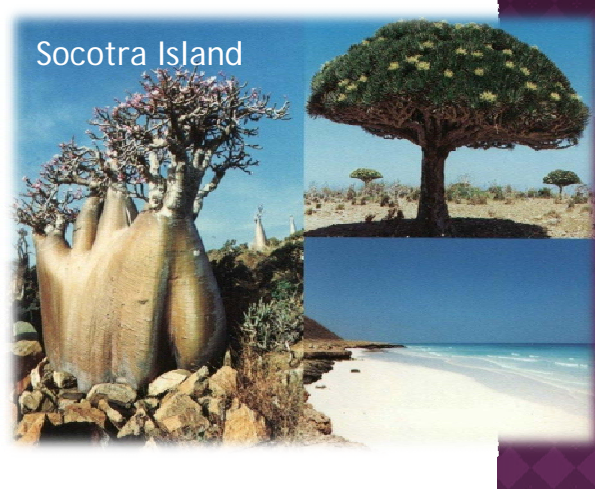
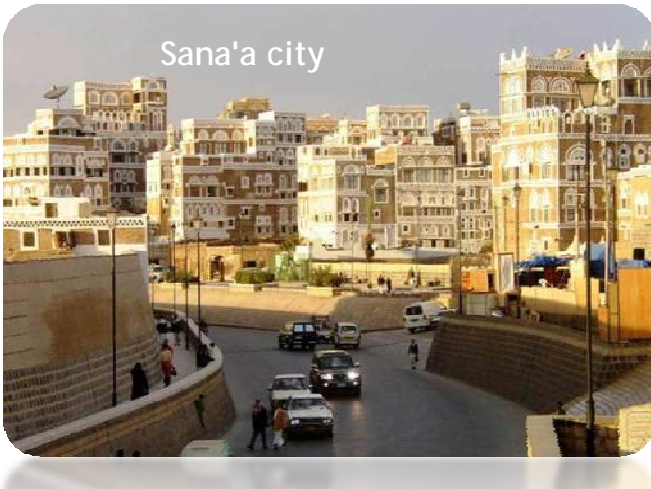
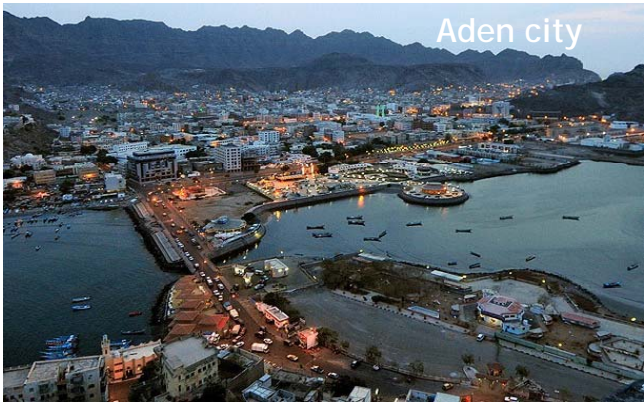
The country's topography of rugged Mountains , volcanic , Highlands, deserts and coastal plains

Climate:

Temperate in the mountainous regions in the western part of the country, extremely hot with minimal rainfall in the remainder of the country. Humid on the coast.

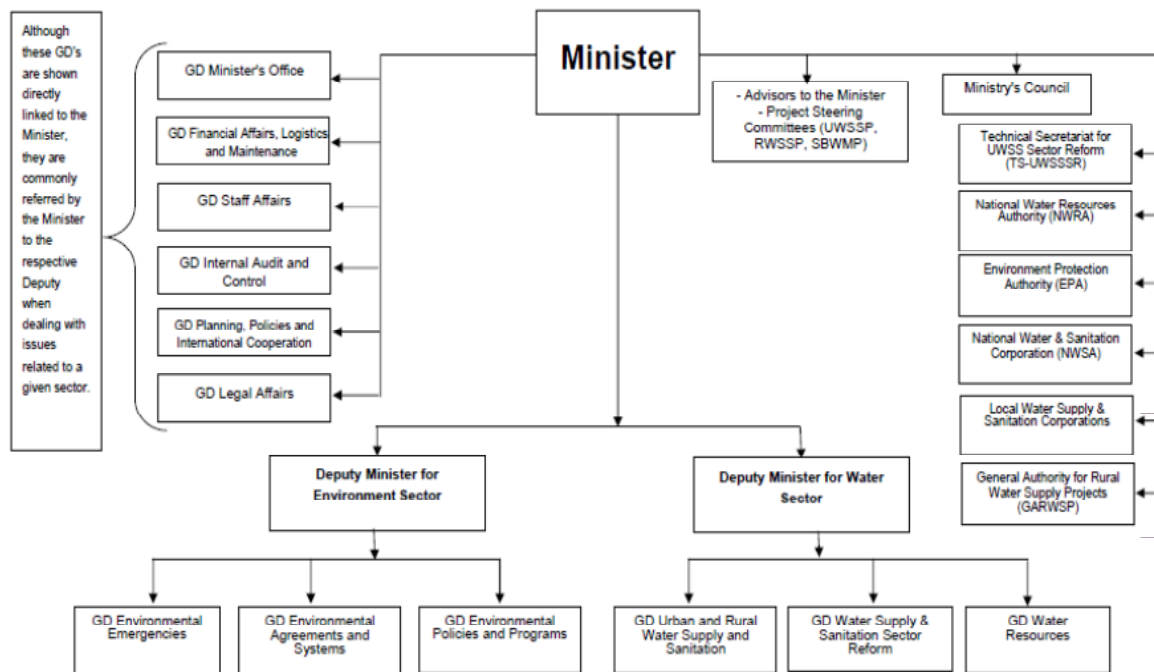


General Information



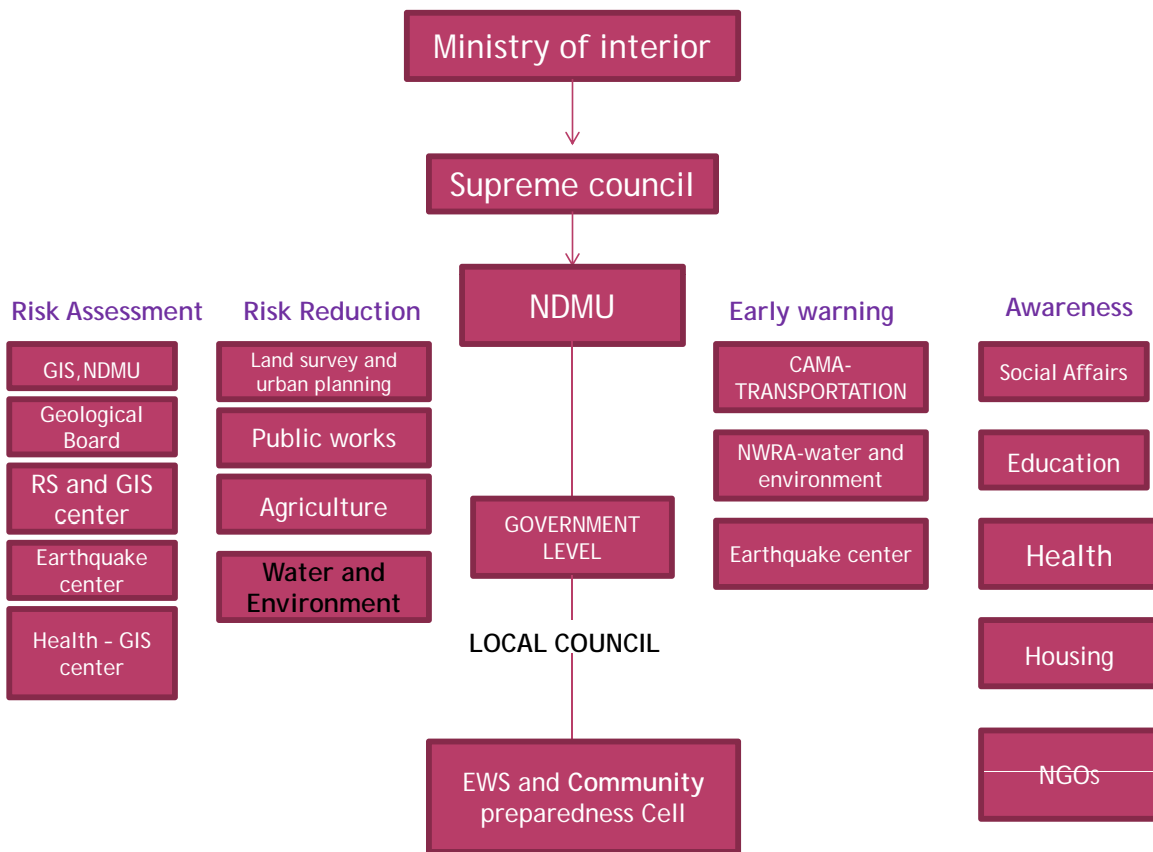
Organization structure

Figure 3.1: Organogram of the Ministry of Water and Environment (MWE)

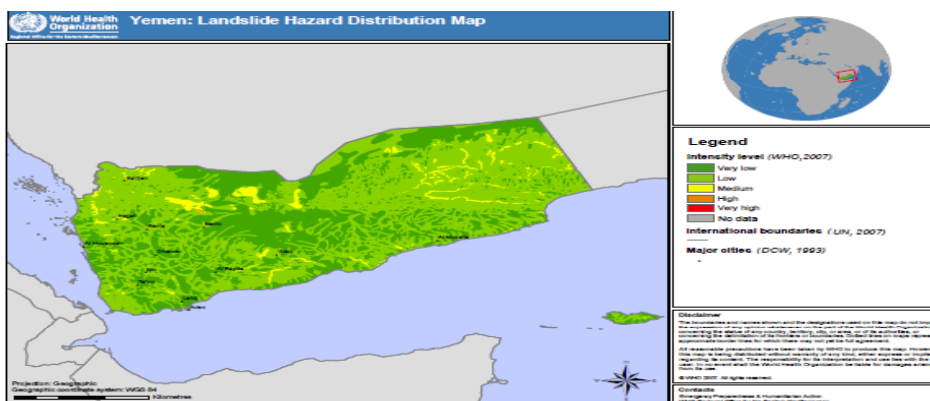
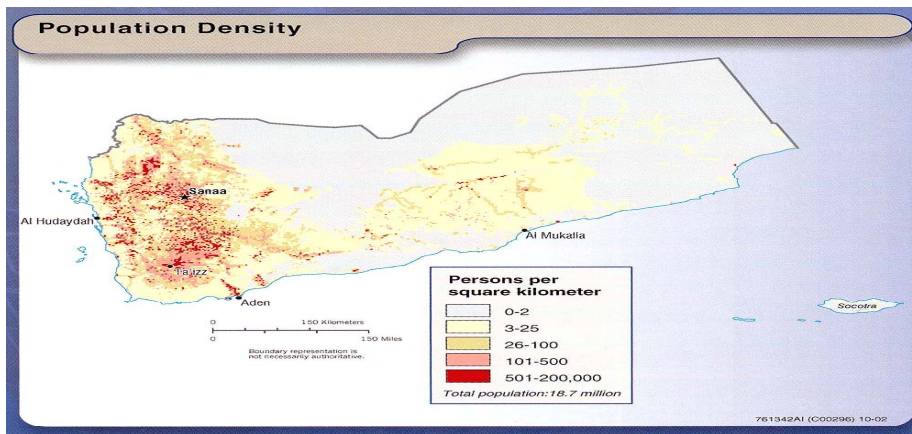


* UWSSP= Urban Water Supply and Sanitation Project, RWSSP= Water Supply and Sanitation Project for Rural Areas, SBWMP= Sana'a Basin Water Management Project

Organizational Map of Government agencies for disaster risk management in Yemen



SPATIAL DISTRIBUTION OF DISASTERS IN YEMEN



Natural Hazard in the country:

Floods:

The most recent major floods occurred in 1996, 2000, and 2008. 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. In central and eastern 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 such as tsunami resulted from Sumatra earthquake in 2005.

Earthquakes:

Yemen is located in the seismically active zone between the Arabian and African tectonic plates which are pulling apart. The western and southern portions of Yemen around the rifts of the Red Sea and Gulf of Aden represented by volcanic mountains over magma tic chambers. These portions are the most active zones and at risk from earthquakes. Although the magnitudes of events are small but it is felling by peoples living in that areas. The largest destructive earthquake was with magnitude Mw6. In Dhamar.

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-Dhafeer in 2006 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.

Volcanic eruptions:

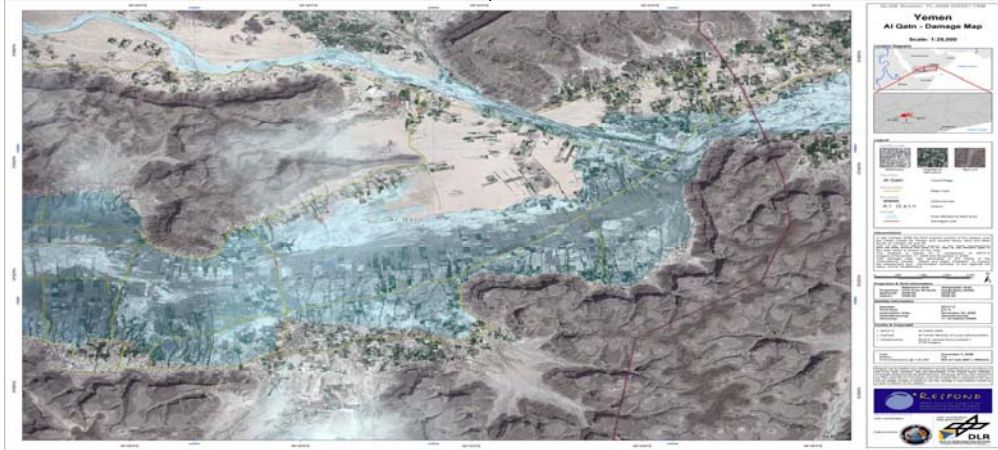
As mentioned above the central and western plateau of Yemen located in the volcanic fields which consists of quaternary volcanic cones. These volcanic cones have similar age with that located along the axial of Red Sea and characterized by it's active and gases case. The last new eruptions was in 2007 at Al- Tair island at Red Sea. killed about 8 people in this Volcanic eruption.

Drought:

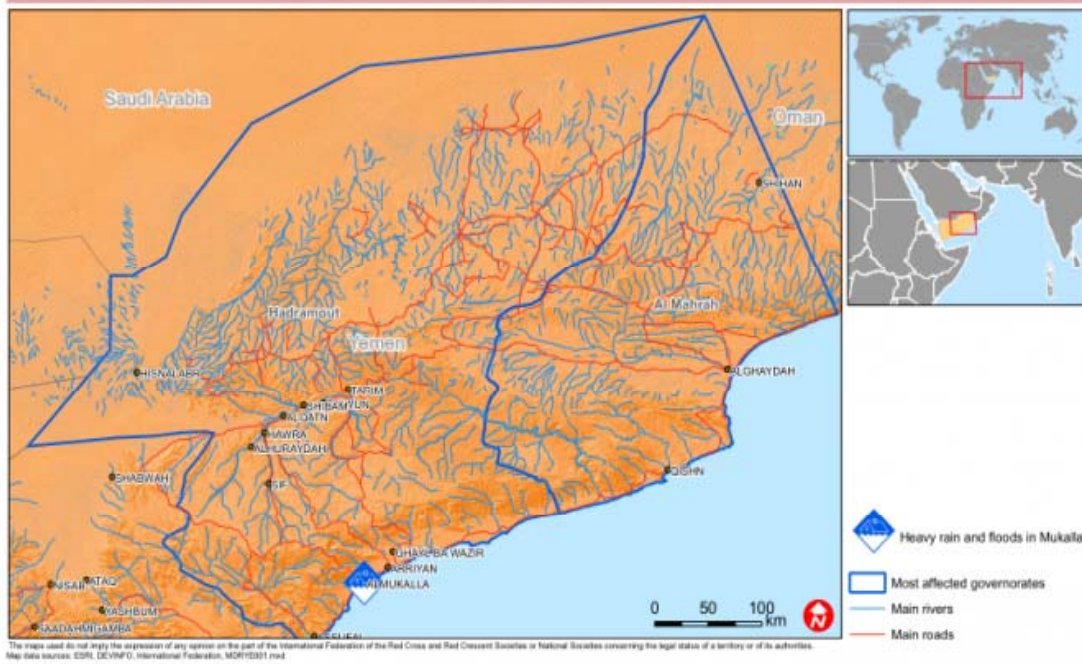
Yemen is set to be the first country in the world to run out of water, providing a taste of the conflict and mass movement of populations that may spread across the world if population growth outstrips natural resources. Government and experts agree that the capital, Sana'a, has about ten years at current rates before its wells run dry but the city of two million continues to grow as people are forced to leave other areas because of water shortages. Drought has caused the displacement of thousands of people s from mountainous villages in 2009, the first time in Yemen; the Investment Authority in Yemen has called on the private sector to compete for projects to desalinate seawater in order to face the current issue of water scarcity in Yemen as well as the future fear of drought.



Hadramut Flood ,2008 killed 73



Yemen: Flash floods



Dhamar Earthquake
 December 13, 1982

- Depth: 7km
- Economic losses: 2 \$ billion
- Homeless: 250,000



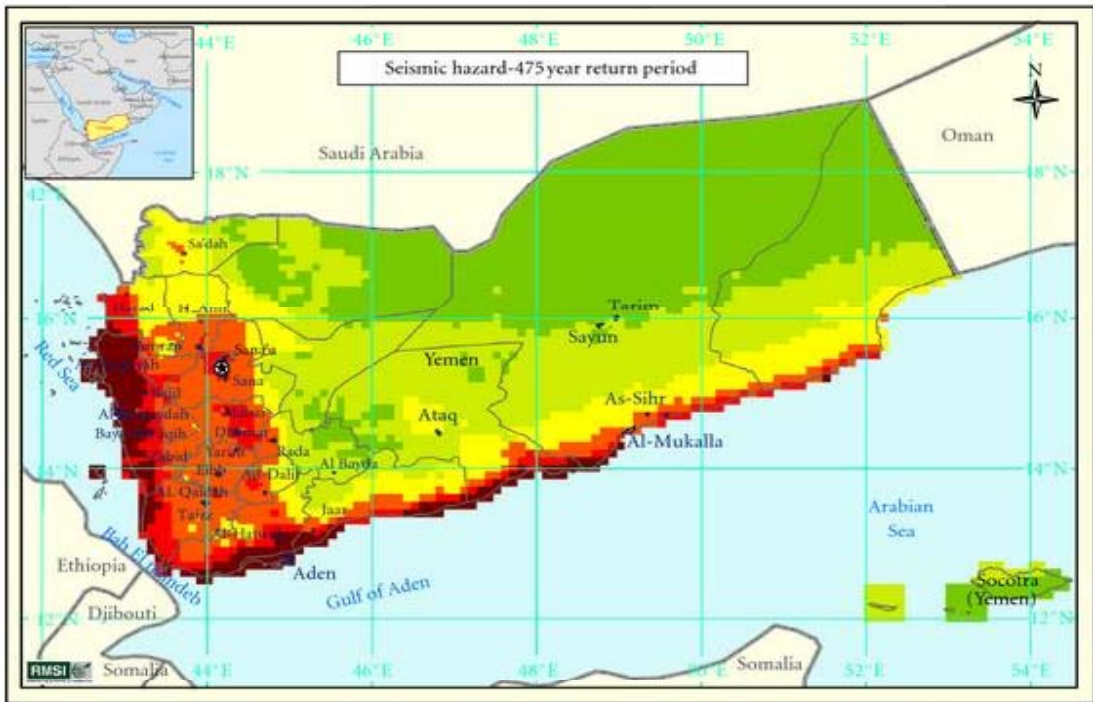
- Deaths: 2800
- Injured : 15000



Volcanic Eruption
 at Al-Tair Island, 2007
 (Killed 6 persons)



Landslides at Al-Dafir
2005 (killed 65
person)



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 by the 21st 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:

- (1) Seasonal and temporal changes in the pattern of rainfall that Yemen receives;
- (2) Both expansion of the area under cultivation as well as water intensive agricultural production;
- (3) **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.

Most Important Priorities for Risk Reduction

- 1- Early Warning System in order to
 - Enhance early warning system
 - Hazardous assessment and monitor disaster risk
 - Develop national reports with consistent approach
 - Monitor transboundary disaster risks and enhance regional cooperation

- 2- Strengthen Research Capabilities in order to:
 - Use Knowledge , innovation and education .
 - Raise awareness for safety and resilience.
 - Data collection on vulnerability and risks

Barriers to Disaster Risk Reduction Management

- Weak institutional structure and lack of legislations.
- Lack of national policies.
- Lack of early warning and monitoring system.
- Inadequate data collection and analysis of data.
- Inadequate institutional financial technical capacity.
- Uncertainties in regional, local climate change scenarios

Supporting Disaster Risk Reduction at the National and Municipal Level in Yemen

Yemen is a disaster prone country that faces a number of natural hazards every year, the most important ones being flash floods, earthquake, and land- or rockslides. According to the Emergency Events Database (EM-DAT) approximately 100,000 people are affected annually by disasters triggered by natural hazards in Yemen. The World Bank, through the GFDRR, as well as other international organizations like UNDP, IFRC etc. are assisting the Government of Yemen to strengthen its National System for disaster risk management, in order to secure better coordination between the public and private sector, as well as to foster the participation from civil society. GFDRR activities aim also to strengthen the understanding and integration of hazard risk management among line ministries and planning agencies.

Integrating Disaster Risk Reduction at the National and City Level

The overall strategy to support Yemen in developing a sound Disaster Risk Reduction and Recovery system using the funds made available by GFDRR (\$947,000) includes three main activities: (in) a country disaster risk assessment (ii) national DRR System, including necessary legal and strategic frameworks to ensure mainstreaming and inter-ministerial and inter-sectoral coordination, and (iii) a series of innovative pilot activities at the local level within specific sectors (e.g. through add-ons to ongoing or under preparation projects), and/or cross-cutting (e.g. national awareness campaign, climate change A probabilistic risk assessment is underway in order to develop an analysis of risk exposure and financial response capacity for Yemen. The consultant firm will employ advanced hazard analysis and catastrophic risk modeling techniques to identify and evaluate the main sources of losses from natural disaster. Awareness building and education on effects of disasters and disaster management techniques an ongoing effort by way of workshops and seminars. There is also an effort to integrate DRR knowledge in current execution of urban and public works projects in the country. An integral component of the City Development Strategy (CDS) in Sana'a (Capital of Yemen) is a risk assessment and a Human Resource Management (HRM) Plan which includes an Urban Upgrading Strategy; update of the land use/master; and a capital investment plan and time-bound prioritized action plan.

Strengthening Capacity for Disaster Risk Reduction

Following the floods in October 2008, caused by the storm 03B, which seriously affected the eastern governorates of Yemen - Hadramout and Al-Mahara, GFDRR has leveraged resources toward the following activities: (i) a Flood and Land Slide Hazard Risk Atlas for Hadramout and Al Mahra governorates, (ii) an analysis of the applications of catastrophic risk modeling for hazard risk management in Hadramout and Al Mahra governorates; and (iii) recommend methodology and hydraulic design considerations for the design (by others) of roads, housing in urban and rural areas, agricultural areas, and for the detailed design of flood training works to be designed by others for protection of

Research Topic

How to strengthen technical water resource management in Yemen including database creation and raising public awareness

Disaster water in Yemen :

Yemen is facing one of the most complex development problems and its most serious challenge, namely: the problem of water resources scarcity and over-exploited aquifers and facing a growing water scarcity . As a result, the water shortage is worsening one year after another, exasperated by the continued imbalance between annual recharge and the growing water demand. This has led to the alarming depletion of groundwater in a number of basins (Sana'a, Amran, Sa'adah, Rada'a, Rasyan, Tihama, Abyan), wiping out agricultural production and investments in some of these areas. This water reality imposes on the country the challenge of reducing the existing unsustainable use of water resources through improved management and better planning for its rational utilization and the challenge of providing safe drinking water and sanitation service to the great majority of urban and rural populations who still lack such services (it is estimated that 32% of the population have access to public drinking water systems and 21% have access to public sanitation networks). and also the arid climate and the recurrent droughts it is the one of the main causes of this emergency. But the picture is not complete without considering the governance aspects. In fact, the situation is made worse by the exorbitant price of water, the presence of autonomous water sellers, the poor water conveyance system, illegal drilling of boreholes and wells.



***Thank you for
your attention***

