



Climate Change and Risk Reduction

Impacts and Adaptation In The Republic of Yemen

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Summary of the main vulnerable Sector

- **Water**
- **Agriculture & Food Security**
- **Biological Diversity**
- **Coastal areas**
- **Tourism**
- **Health**

Major Impacts of Climate Changes:

- Increase of Water scarcity;**

Reduced water quality'

Increase drought frequency;

**High temperature changes of
precipitation patterns;**

Major Impacts of Climate Changes

Land degradation and Expansion of desertification;
Degradation of Habitats and biodiversity;
Sea level rise;
Increased climatic variability.

NAPA Summary of Priority Adoption options

- **Rain wáter harvesting.**
- **Disaster Prepáresenos and Recovera Programe.**
- **Awareness Raising Programe.**
- **Modern and efficient irrigation technoligies.**
- **Watershed management and terraces rehabilitation.**

Most Important Priorities for Risk Reduction

Early Warning System in order to:

- Enhance early warning system.
- Hazardous assesment and monitor disaster risk .
- Develop national reports with consistent approach.
- Monitor transboundary disaster risks and enhance regional cooperación.

Most Important Priorities for Risk Reduction(3)

- **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.

Tropical Storm 3-B and Flood Disaster 2008

- Tropical storm hit Hadramout & Al-Mahara Governorates on Oct 23-25, 2008, causing heavy rainfall & devastating floods
- The storm resulted in a total rainfall of 91mm over a total catchment area of 2 million hectares collecting 2 billion cubic meters of water
- The flash floods and surging water resulted in one of the largest natural disasters to hit Yemen in the last decade. Relief efforts took up to a week to reach disaster affected areas



Impact of the Disaster

- **The disaster resulted in:**
 - **Dead: 73 (68 Hadramout, 5 Al-Mahara)**
 - **Missing: 17 (12 Hadramout, 5, Al-Mahara)**
 - **Displaced persons: ~25,000**
 - **Affected houses: 2,826 destroyed and 3,679 partially damaged**
 - **Severe damage to infrastructure & public facilities**
 - **Significant damage to the agricultural sector**
 - **Major losses to livelihoods**

Agriculture—Impact 1)

- **Soil erosion in 74,357 Feddans (acres)**
 - 22,902 Feddans of planted soil
 - 51,455 Feddans of unplanted soil
- **Destruction/damage to public irrigation infrastructure**
 - 359 diversion dams and works
 - 13,962 canal intakes
 - 65 reservoirs
 - 732,136M protection works
- **Destruction of private-land irrigation systems**
 - 117,875 meters of pipelines
 - 769,453 meters of open channels
 - 4,571 Feddans of irrigated land works

Agriculture—Damage (2)

- **Destruction/damage to**
 - 1,241 shallow dug wells
 - 446 deep tubewells
 - 1,229 pumps and engines
 - 226 agricultural machinery
 - 1,930 buildings
- **Destruction of permanent plantations**
 - 547,185 date palm trees
 - 16,587 citrus trees
 - 161,449 other fruit trees

Agriculture Impact

- **Production loss of seasonal crops**
 - 9,025 hectares of cereals
 - 5,007 hectares of vegetables
 - 12,855 hectares of forage crops
- **Production loss of permanent plantations**
 - 547,185 date palm trees
 - 16,587 citrus trees
 - 161,449 other fruit trees

Damage to agricultural land



Damage to shelter

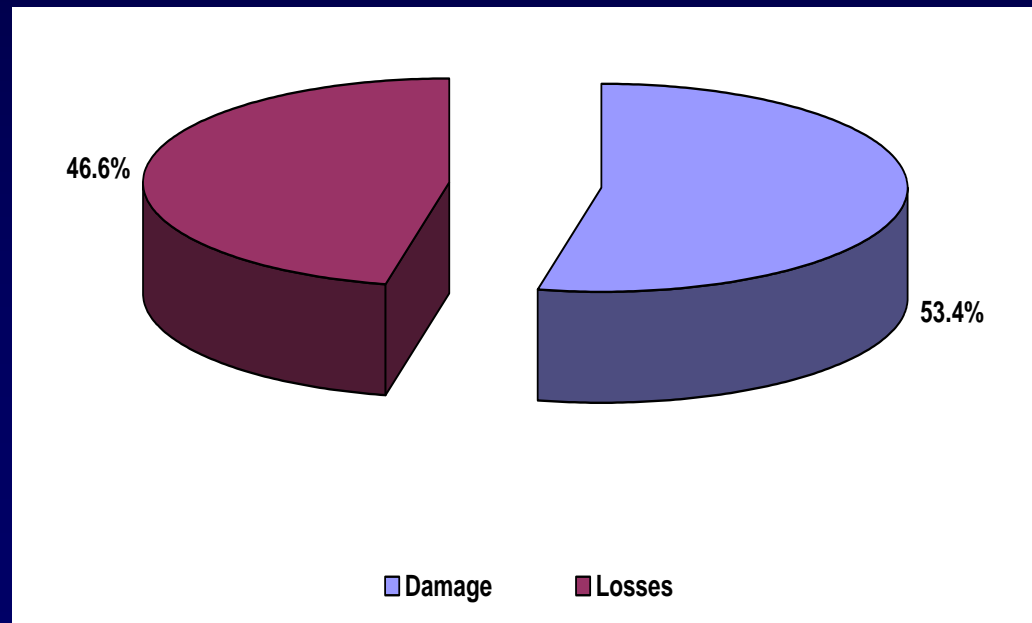


Damage to shelter



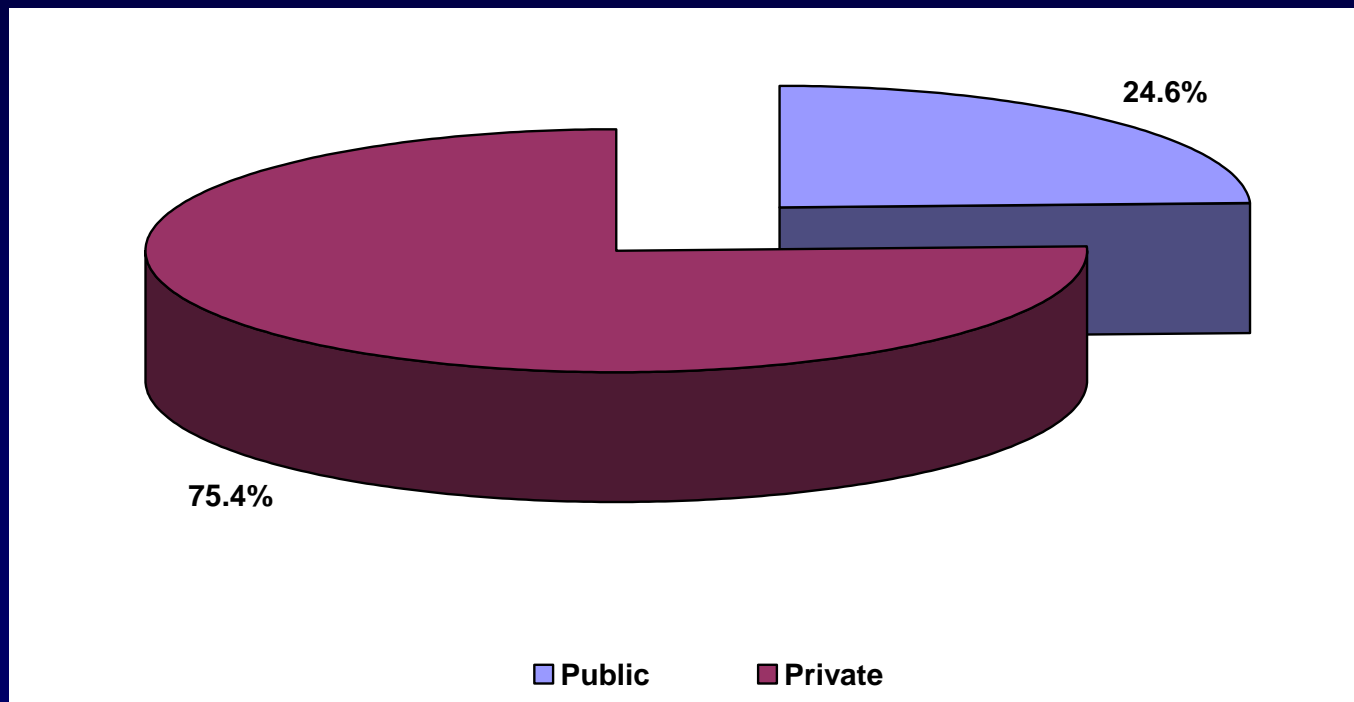
Total Disaster Effects—Damage and Losses

- **Total Disaster Effects**
 - Damages 174,962 million YR (US\$875 million)
 - Losses 152,590 million YR (US\$763 million)
 - Total effects 327,551 million YR (US\$1,638 million)
- **Equivalent to 6% of Yemen's GDP**



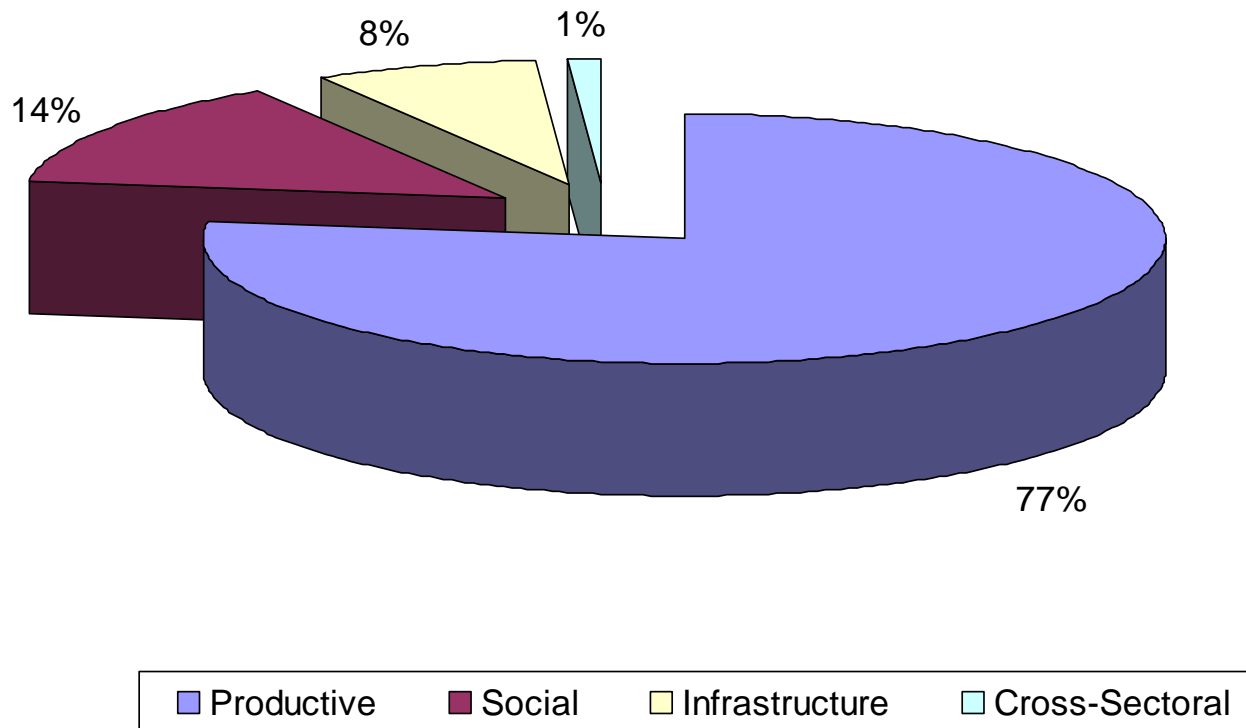
Share of the Public and Private Sector of Total Disaster Effects

- **Damages and losses to the public sector 80,474 million YR (US\$402 million)**
- **Damages and losses to the private sector 247,077 million YR (US\$1,235 million)**



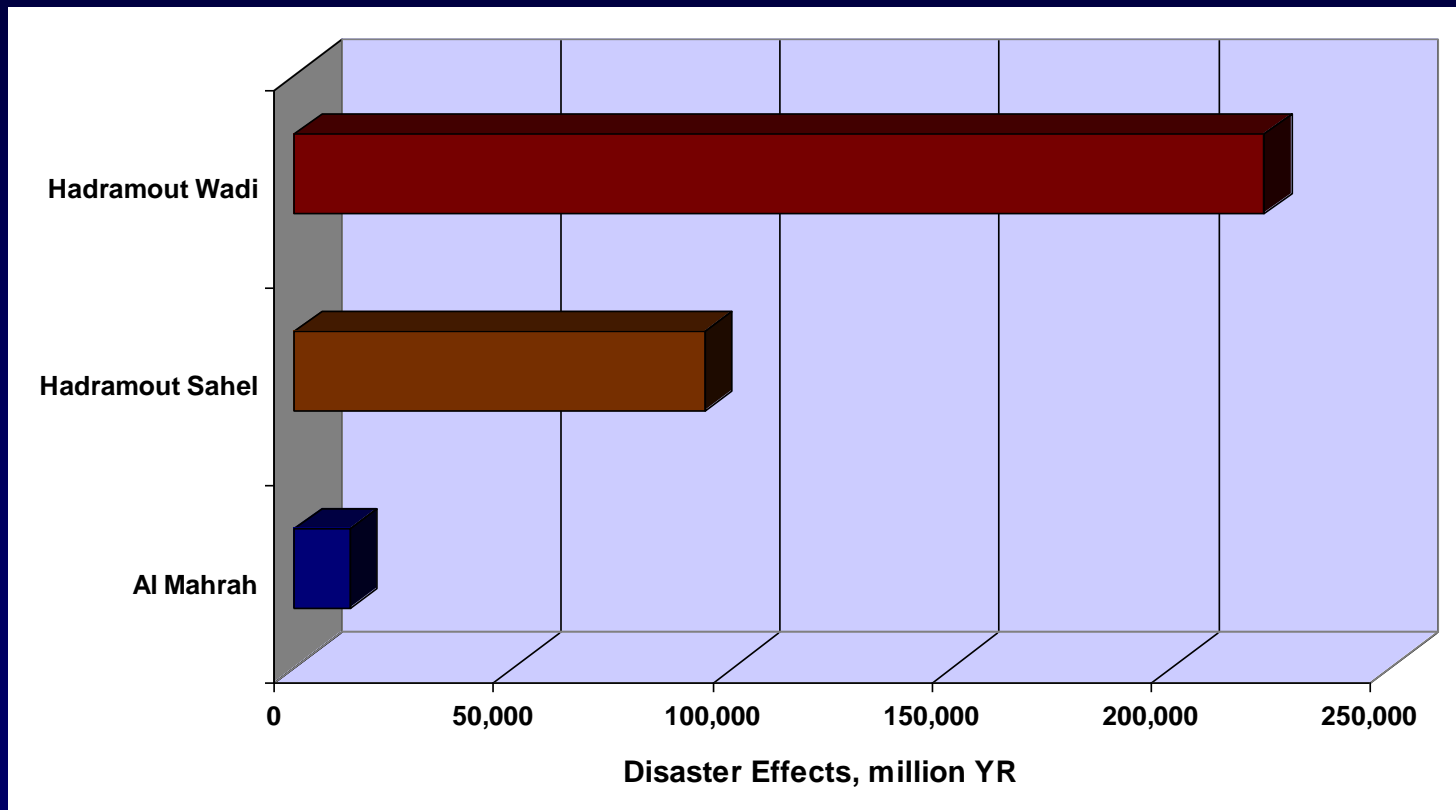
Distribution of Disaster Effects Among Main Sectors of the Economy

Predominantly a Productive and Social Disaster



Geographic Distribution of Damage and Losses

Hadramout Wadi most affected area (63% of damage, 72% of losses and 67% of total effects) followed by Hadramout Sahel (31% of damage, 26% of losses and 29% of total effects) & Al-Mahara (6% of damage, 2% of losses and 4% of total effects)



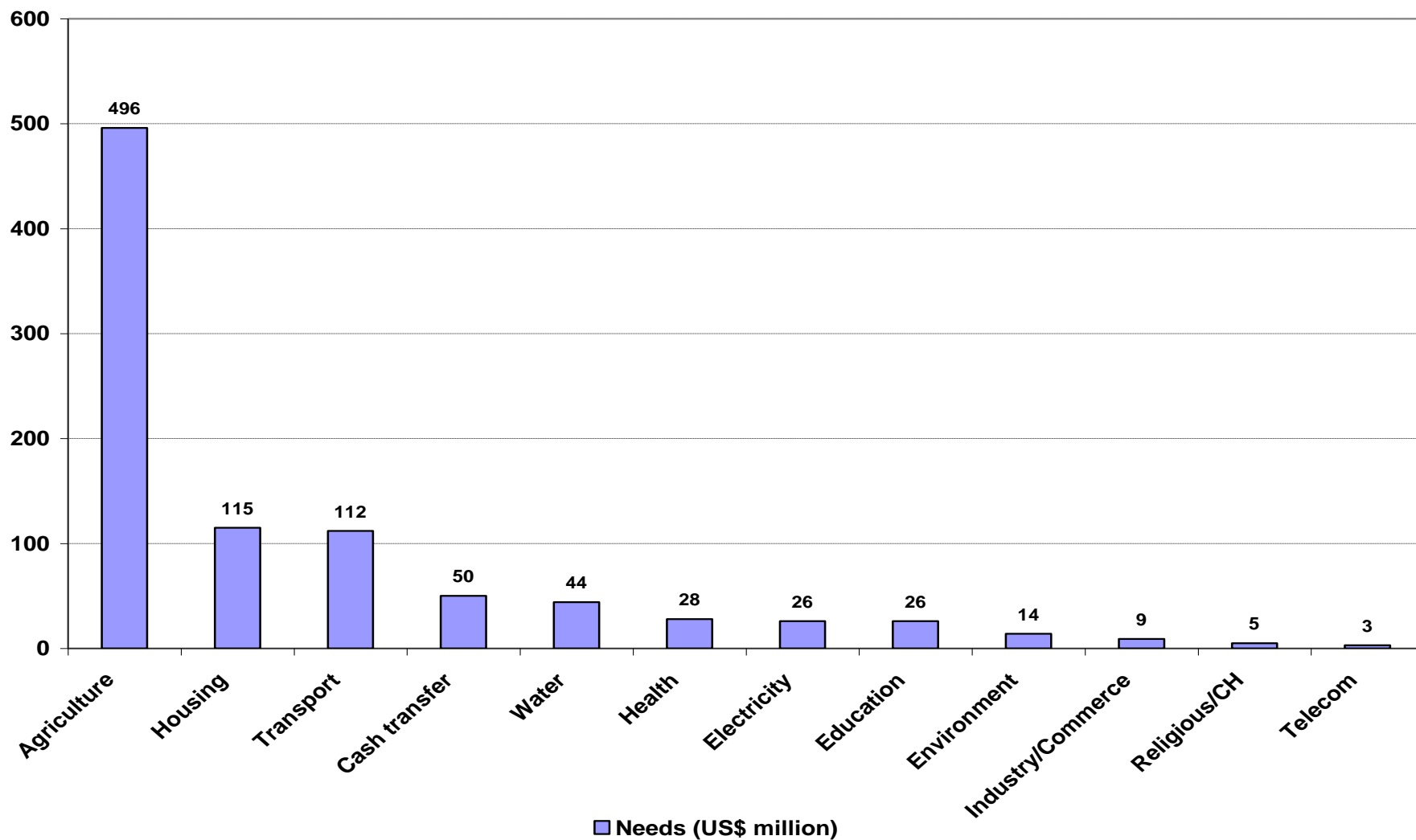
Summary of Post-Disaster Needs

Needs by Post-Disaster Stage	Needs (US\$ million)
Immediate Intervention Program (6 Months)	27
Reconstruction & Recovery Program (4 years)	929
Disaster Risk Reduction Program (10 years)	109
Total Needs	1,065

Needs for Reconstruction and Recovery Program (4 years)

- **US\$ 929 million in reconstruction and recovery needs over a 4-year period for: Water supply and sanitation, electricity, education), health, environmental recovery, industry and commerce, religious facilities & cultural heritage**
- **S\$512 million compensation for labor-intensive public works** for .

Reconstruction and Recovery Needs by Sector



GFDRR Intervention:

1

- ✓ Joint assessment of damage with the Gov.WB, Red cross and other stakeholders.
- ✓ Conduct a training workshop for the senior officials.
- ✓ Coordination with donors for shelter and humanitarian assistances.
- ✓ Commitment to continue support for reconstruction
- ✓ and recovery implementation.

Thank you for Your Attention

