



Workshop Completion Report

25

Participants from government entities and local and international organizations

19-20 May 2026 - Taiz Governorate

Funding Organization

Bena'a Charity Foundation for Human
Development



Partner Organization

Professional Scientific Microbiologists
Association



Workshop Information

Workshop Title	Strengthening Climate Resilience and Emergency Response in Taiz
Implementation Date	Tuesday and Wednesday, 19-20 May 2026
Workshop Duration	Two Training Days
Venue	Agriculture and Irrigation Office - Taiz Governorate
Number of Participants	25 Participants
Participant Categories	Representatives of government entities and local and international organizations
Funding Organization	Benaa Charity Foundation for Human Development
Partner Organization	Professional Scientific Microbiologists Association
Session Time	9:00 to 2:00

Summary

25 Participants	Two Days 19-20 May 2026	Taiz Agriculture and Irrigation Office	Two Themes Early Warning and Local Adaptation
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Executive Summary

The workshop “Strengthening Climate Resilience and Emergency Response in Taiz” was implemented over two days at the Agriculture and Irrigation Office in Taiz Governorate, with 25 participants representing government entities and local and international organizations. It was funded by the Bena Charity Foundation for Human Development and implemented in partnership with the Professional Scientific Microbiologists Association. The workshop responded to the need to strengthen institutional and community understanding of flood risks and climate emergencies and to connect risk analysis with preparedness, response, and practical local solutions.

Day One focused on the context of climate change and early warning in Taiz. It covered the distinction between a crisis and a disaster; the concept, types, and impacts of floods; the stages of flood disaster management; assessment of drainage-basin risk; the use of maps and geographic information systems; and the components of an early warning system. It also included a practical exercise to map recurrent-damage hotspots in Sabir Al-Mawadim, central Taiz City, and Shar'ab.

Day Two addressed the design of low-cost local adaptation solutions based on locally available resources, including rehabilitating agricultural terraces, using gabions to protect wadi banks, improving drainage networks, and strengthening water and sanitation resilience through well and tank protection and rainwater harvesting. The materials also presented the concept of climate and health resilience by linking climate hazards with geographic vulnerability, limited resources, and fragile health systems.

Delivery methods included presentations, discussion and dialogue, cooperative learning, brainstorming, case studies, and practical exercises. The materials and photographs show active participation and knowledge exchange among the **represented entities**. According to the attached report, the workshop contributed to raising awareness of climate resilience, developing knowledge of rapid response and risk management, and shaping recommendations focused on local emergency plans, disaster-resilient infrastructure, community awareness, improved coordination, drainage networks, and flood protection.

Key added value: The workshop brought flood-risk analysis, early warning, nature-based solutions, and water and health resilience together within one training framework, with applications linked to the realities of Taiz Governorate.

Introduction and Workshop Background

The training materials explain that extreme weather events and flash floods are direct causes of loss of life, damage to property, and infrastructure disruption. Risks are amplified in steep mountainous environments, where rainfall rapidly accumulates and flows toward low-lying neighborhoods. The materials present Taiz as a context where water scarcity and flood disasters intersect, requiring a shift from post-impact response toward understanding risks, preparing for them, and managing water pathways before they reach populated areas. Maps and applications from Day One show that risk levels vary across mountain slopes, the city center, and the Shar'ab districts. Day Two connects flood management with the protection of water resources and public health, emphasizing that weak drainage networks, construction within wadi channels, and contaminated water sources can turn a climatic event into a wider service and health crisis.

Workshop Objectives

Overall Objective

Strengthen knowledge and capacities related to climate resilience and emergency response in Taiz by understanding flood risks and early warning and by designing low-cost local adaptation solutions that use available resources.

Specific Objectives

- Understand the concepts of disaster and crisis and recognize the differences between them.
- Understand floods, their causes, types, risks, and the stages for managing them.
- Become familiar with early warning systems and the monitoring, analysis, alert, and response chain.
- Assess the flood situation in Taiz City and identify the causes of recurrent damage.
- Apply hotspot mapping in Sabir Al-Mawadim, the city center, and Shar'ab.
- Develop low-cost engineering and community solutions using local resources.
- Strengthen understanding of water and sanitation resilience and health resilience in the face of climate shocks.

Participants and Represented Entities

The workshop brought together 25 participants from government entities and local and international organizations. This institutional diversity enabled climate, flood, water, agriculture, sanitation, health, and emergency-response issues to be addressed from interconnected perspectives. Prominent represented entities included the National Water Resources Authority, the Cleaning and Improvement Fund, the Agriculture and Irrigation Office, the Local Water and Sanitation Corporation, the Environment Office, and the Social Fund for Development, in addition to other local and international organizations.

National Water Resources Authority	Cleaning and Improvement Fund
Agriculture and Irrigation Office	Local Water and Sanitation Corporation
Environment Office	Social Fund for Development
Other Local and International Organizations	

Workshop Delivery Methodology

The methodology combined knowledge-based presentation with practical application. At the outset, the training materials identify discussion and dialogue, cooperative learning, brainstorming, case studies, and self-directed learning as delivery methods. The photographs also show live presentations, general discussions, participant interaction around screens and maps, and group work. The Day One materials included a final course-evaluation form; however, completed responses and evaluation results were not included in the attachments.



Training presentation and discussion of concepts with participants.



Interactive discussion and exchange of experience during a workshop session.

Documented Workshop Program

Day	Date	Title	Documented Trainer	Key Topics
Day One	Tuesday, 19 May 2026	Climate Change Context and Early Warning in Taiz	Prof. Dr. Jamal Mohammed Al-Rasi	Crisis and disaster; floods; disaster management; risk assessment; geographic information systems; early warning; hotspot mapping exercise; discussion and evaluation.
Day Two	Wednesday, 20 May 2026	Designing Local Adaptation Solutions	Eng. Amer Abdulrahman Mohammed Dr. Fathi Hizam	Nature-based solutions; terraces and gabions; water and sanitation resilience; protection of wells and tanks; rainwater harvesting; solutions lab; climate and health resilience.

Theme One: Climate Change, Floods, and Early Warning

❖ Risk and Flood Concepts

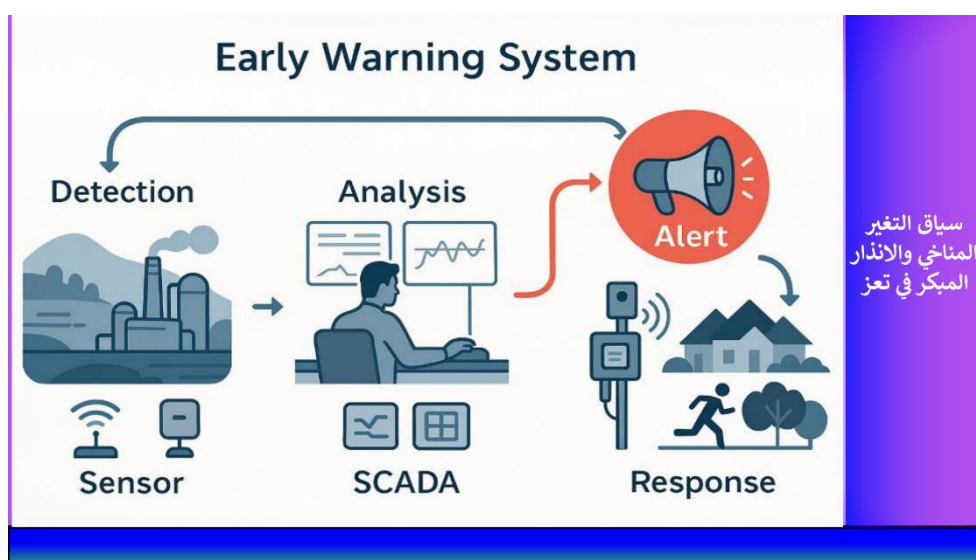
The theme began by distinguishing a crisis from a disaster in terms of suddenness, time pressure, the scale of the threat, and limited information and resources. It then described floods as temporary or semi-permanent watercourses formed when rainfall accumulates on sloping, low-absorption surfaces and gains speed and force as it moves toward lower areas. The material differentiated seasonal floods from flash floods and linked flood intensity to surface type, rainfall quantity and intensity, and the duration of rainfall.

❖ Stages of Flood Disaster Management

The material presented three interconnected stages: before, during, and after a disaster. The pre-disaster stage includes studies of drainage basins, climatic and hydrological data, slopes, and geology; the use of maps, aerial imagery, and geographic information systems; detection of warning signs; and preparation of response plans. During a disaster, priorities include warning, evacuation, rescue, damage assessment, and assistance. The post-disaster stage focuses on reconstruction, rehabilitation, and learning from the event.

❖ Early Warning

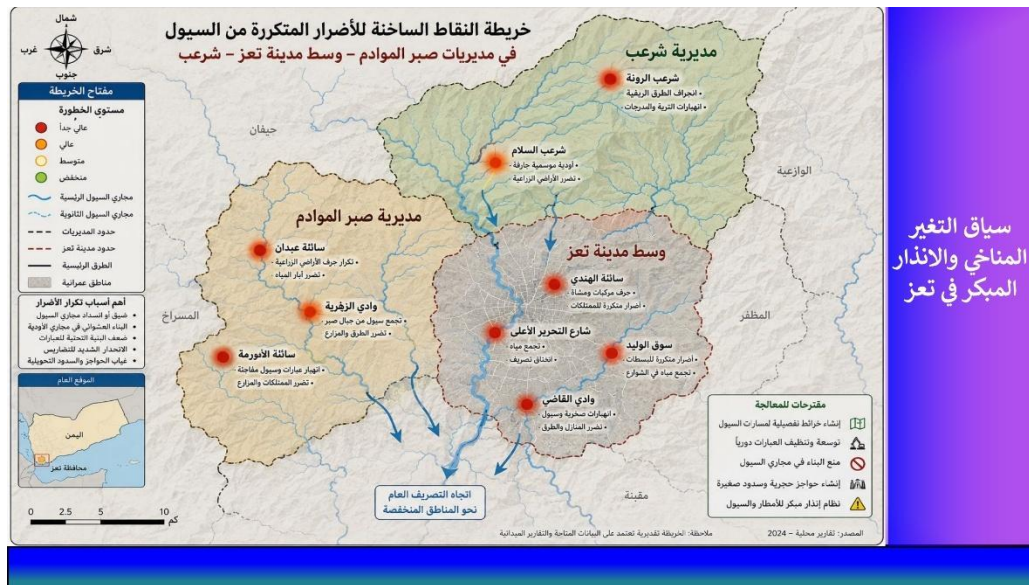
The material presented an early warning system as a chain that begins with detection and monitoring, continues through data analysis and alert issuance, and ends with a response by communities and responsible authorities. Proposed components included rainfall-intensity stations, devices for measuring water flow and level, warning sirens, text messages to civil defense units, and gates or barriers that close when the risk level rises. This sequence emphasizes that an accurate warning is not sufficient unless the message reaches people at risk and is translated into clear action.



Early warning system chain: detection, analysis, alert, and response.

Hotspot Mapping Exercise

The material included a practical exercise to map recurrent damage in three areas: Sabir Al-Mawadim, central Taiz City, and Shar'ab. The map attributed the high risk below the mountain slopes in Sabir Al-Mawadim to rapid flows. It identified the city center as a flood-collection area receiving runoff from the highlands, compounded by weak drainage networks and blocked culverts. Damage in Shar'ab was linked to mountainous terrain, dense seasonal rainfall, and erosion.



Hotspot map of recurrent damage in Sabir Al-Mawadim, central Taiz City, and Shar'ab, as presented in the training material.

Causes and Proposed Measures Highlighted in the Material

Category	Content
Causes of Recurrent Damage	Narrow or blocked flood channels; unplanned construction within wadi channels; weak culvert infrastructure; steep terrain; and the absence of diversion barriers and dams.
Proposed Measures	Prepare detailed GIS maps of flood routes; periodically expand and clean culverts; prevent construction in flood channels; build stone barriers and small dams upstream; and develop an early warning system for rainfall and floods.

Theme Two: Designing Local Adaptation Solutions

The Day Two material defined its objective as developing low-cost engineering and community solutions using local resources. It emphasized that floods in mountainous environments are not merely an accumulation of water, but a rapid movement of hydraulic energy across slopes and wadis. Effective solutions should therefore manage water movement progressively from mountain highlands into cities rather than rely on a single isolated intervention.

Nature-Based Solutions and Water-Path Management

The material presented the rehabilitation of agricultural terraces as flood barriers that break up water pathways, slow flow velocity, and increase contact time with the soil, thereby supporting infiltration and reducing erosion. It also presented gabions—wire-mesh units filled with stone—to reduce flow speed and protect wadi banks. This sequence is completed through organized drainage networks in urban areas that reduce risks to residents and infrastructure.



Scanned with OKEN Scanner

Sequence of local solutions from terraces and afforestation to gabions, stone barriers, and organized drainage networks.

Water and Sanitation Sector Resilience

The material linked climate, water, and health, explaining that heavy rainfall can carry soil, waste, and wastewater into wells, tanks, and networks. It defined water-sector resilience as the ability to withstand climate shocks, continue operating during disasters, protect water sources from contamination, recover quickly, and provide safe water even under harsh conditions.

- Protect wells from contamination by raising the wellhead and improving sealing and drainage around it.

- Clean wells, remove sediment, pump out contaminated water, and conduct shock chlorination after floods.
- Elevate tanks, reinforce their foundations, and secure their covers while accounting for pressure, weight, and structural safety.
- Harvest rainwater from roofs, convey it through filters, and store it in tanks, applying a “first-flush” system before storage.

Climate and Health Resilience

The “Yemen in the Eye of the Climate Storm” material added a health dimension to the discussion by linking climate-related health risks to the intersection of geography, climate change, health-system fragility, and water scarcity. It presented risks including communicable diseases, heat stress, injuries and displacement, and food insecurity. It also proposed an integrated adaptation framework that includes early warning and surveillance, water and sanitation infrastructure, climate-smart agriculture, local community capacities, financing, and technology.



Guidance on protecting wells from contamination within the water-resilience module.



Integrated adaptation framework for building a climate-resilient health system.

Theme message: A sustainable solution is not a single intervention, but an interconnected chain combining slope and wadi management, urban drainage, protection of water sources, and health and community preparedness.

Key Activities and Interactions

Activity	Documented Description
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Activity	Documented Description
Exploring Expectations	The opening included a question about what participants expected to gain from the course.
Discussion and Dialogue	Participants discussed concepts, risks, and local challenges during the presentations.
Case Study and Maps	Maps of Taiz, Sabir Al-Mawadim, the city center, and Shar'ab were used for risk analysis.
Practical Exercise	Practical mapping of recurrent-damage hotspots.
Solutions Lab	Design of technical solutions for mountainous-road problems and blocked drainage channels in crowded neighborhoods, as documented in the attached report.
Final Evaluation	The material included a course-evaluation form; participant responses and quantitative evaluation results were not available.



Direct discussion between the trainer and participants.



Training presentation linking the discussion to content displayed on the screen.

Contributions of Key Entities

The workshop highlighted the importance of joint participation by entities concerned with water resources, agriculture and irrigation, water and sanitation, cleanliness, the environment, and local development. This representation strengthens the potential to connect risk analysis, infrastructure maintenance, water-source protection, waste management, community awareness, and emergency response. However, the materials do not document a separate intervention or specific commitment attributed to each entity; accordingly, the report does not assign any individual statement or recommendation.



Participation of representatives from multiple entities in the workshop sessions.

Results and Outputs

The workshop helped increase participants' awareness of the importance of climate resilience and its role in reducing disaster impacts, while developing knowledge of rapid-response mechanisms and risk management. Practical activities and discussions also supported a better understanding of crisis management and connected local problems with possible solutions.

Result Type	Output Documented or Directly Derived from the Materials
Knowledge	Understanding the concepts of disaster, crisis, floods, early warning, and the stages of disaster management.
Analytical	Interpreting the geographic, hydrological, and structural factors affecting flood risk.
Practical	Using maps to identify hotspots and discuss local solutions to recurrent risks.

Result Type	Output Documented or Directly Derived from the Materials
Sectoral	Linking climate adaptation with water and sanitation resilience, well and tank protection, and water harvesting.
Institutional	Providing space for knowledge exchange and emphasizing coordination between government entities and organizations.
Planning	Defining intervention priorities that include improved drainage, barriers, early warning, awareness, and preparedness.

Challenges Addressed by the Workshop

Classification	Challenges
Environmental and Climatic	Heavy rainfall, flash floods, steep slopes, and erosion.
Urban and Technical	Construction within wadi channels, blocked flood channels and culverts, and weak drainage networks.
Water and Health	Contamination of wells, tanks, and networks, and weak continuity of water and sanitation services during disasters.
Institutional and Capacity-Related	The need for coordination, information exchange, and stronger capacities for monitoring, warning, and response.

Lessons Learned

- 1) The following lessons are derived from the themes and activities documented in the attached materials:
- 2) Flood-risk reduction should begin with an understanding of the basin, slopes, and water pathways—not only the point of damage inside the city.
- 3) The effectiveness of early warning depends on a complete chain from monitoring and analysis to delivery of a clear message and timely action.

- 4) Progressively managing hydraulic energy through terraces, gabions, barriers, and drainage networks is more integrated than relying on a single solution.
- 5) Protecting water and sanitation is a core component of climate response because contaminated sources can turn floods into a health hazard.
- 6) Diversity among participating entities is important, but the greatest institutional value is achieved when participation is translated into clear coordination roles, plans, and responsibilities.
- 7) Local solutions need to combine technical knowledge, community participation, routine maintenance, and financial sustainability.

Recommendations

Area	Practical Recommendation
Preparedness and Early Warning	Strengthen emergency plans, define roles and communication pathways, and develop an integrated early warning system from monitoring to response.
Mapping and Land Use	Update GIS maps of flood routes and hotspots and prevent construction in channels and high-risk areas.
Infrastructure	Periodically expand and clean culverts and drainage channels and support more disaster-resilient projects.
Nature-Based Solutions	Rehabilitate terraces, expand afforestation, and use suitable gabions, stone barriers, and small dams.
Water and Sanitation	Protect wells and tanks, improve drainage around them, disinfect after floods, and expand rainwater harvesting.
Community Awareness	Raise awareness of warning messages, safety behaviors, and water-source protection before, during, and after emergencies.
Coordination and Follow-Up	Strengthen coordination between government entities and organizations, link support to capacity building, conduct simulation exercises, and document evaluation results and group-work outputs.

Conclusion

The workshop provided a professional space to connect knowledge with practice on an issue affecting multiple sectors in Taiz. It brought together flood-risk analysis, early warning, local adaptation solutions, and water and health resilience, supported by diverse institutional participation. The materials emphasize that reducing losses requires integrated action beginning with slopes and drainage basins, continuing through wadis and drainage networks, and ending with warnings and safe services reaching communities. Sustaining the impact depends on following up the recommendations, updating plans and maps, clarifying roles, and maintaining coordination among the relevant entities.



A segment from the presentation of the “Strengthening Climate Resilience and Emergency Response in Taiz” workshop themes.

Appendices

Appendix (1): Training Program Summary

Day	Session/Topic	Brief Content
Day One	Opening and Expectations	Introduction to workshop objectives, participant expectations, and training methods.
Day One	Crisis and Disaster	Concepts, differences, and the nature of threats, time constraints, and information.
Day One	Floods	Definitions, types, causes, damage, benefits, and risks.
Day One	Disaster Management	Before, during, and after a disaster, and the roles of relevant entities.
Day One	Risk Assessment	Drainage basins; morphometric, hydrological, and geological characteristics; and GIS.
Day One	Early Warning	Monitoring, analysis, reporting, alerting, response, and proposed tools.
Day One	Application and Evaluation	Hotspot map, discussion, and course-evaluation form.
Day Two	Local Adaptation Solutions	Water-path management and low-cost engineering and community solutions.
Day Two	Nature-Based Solutions	Terraces, afforestation, gabions, barriers, and drainage networks.
Day Two	WASH Resilience	Protection, cleaning, and disinfection of wells; tank protection; and rainwater harvesting.

Day	Session/Topic	Brief Content
Day Two	Health Resilience	Climate-related health risks and the adaptation, forecasting, prevention, and resilience framework.
Day Two	Solutions Lab	Designing solutions for mountainous-road problems and drainage channels in crowded neighborhoods.



Discussion and interaction during one of the training sessions.



Use of maps and slides to explain local risks.