



YFCA
جمعية رعاية الأسرة
RESEARCH
UNIT

YFCA's Interventions to Address Climate Change Impact

Feb 2025

Yemen





ABOUT YFCA

YFCA is a leading, independent, and neutral non-governmental organization that works nationwide at different levels to promote equitable and sustainable development, humanitarian response, and other relevant interventions for the betterment and wellbeing of Yemeni communities and individuals. YFCA works closely with the government, local and international partners, and urban and rural Yemeni communities in an endeavor to complement the efforts of other actors and stakeholders who work towards common purposes.

Report on: YFCA's Actions to Mitigate Climate Change Impact, Yemen

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Acronym

AWD	Acute Watery Diarrhea
CCCM	Camp Coordination and Camp Management
DKH	Diakonie Katastrophenhilfe
DRC	Danish Refugee Council
DRMKC	Disaster Risk Management Knowledge Centre
FCDO	Foreign, Commonwealth & Development Office
FSL	Food Security and Livelihoods
GDP	Gross Domestic Product
GFFO	German Federal Foreign Office
GNDR	Global Network of Civil Society Organizations for Disaster Reduction
HNO	Humanitarian Needs Overview
IDP	Internally Displaced Person
IDPs	Internally Displaced Persons
IOM	International Organization for Migration
IPC	Integrated Food Security Phase Classification
KIIs	Key Informant Interviews
MAUK	Muslim Aid UK
MENA	Middle East and North Africa
MSNA	Multi-Sector Needs Assessment
NAPA	National Adaptation Program of Action
NWRA	National Water Resources Authority
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
RCP	Representative Concentration Pathway (climate projection scenarios)
SOPs	Standard Operating Procedures
START	Start Fund (rapid humanitarian response funding)
UMCOR	United Methodist Committee on Relief
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention to Combat Desertification
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Water, Sanitation, and Hygiene
WFP	World Food Programme
YFCA	Yemen Family Care Association
YHF	Yemen Humanitarian Fund



1. Summary

Yemen Family Care Association (YFCA) has implemented a range of context-specific interventions to mitigate the catastrophic effects of climate change in Yemen, one of the worst-hit countries suffering from one of the world's most severe humanitarian crises. This report shows YFCA's climate-resilient interventions in various sectors as its effort towards building community resilience and sustaining its intervention under increased climate threats.

On the Water, Sanitation, and Hygiene (WASH) front, YFCA tackled water shortages and infrastructure vulnerability by employing cutting-edge, climate-smart interventions. These include protecting groundwater sources, diversifying sources of water supplies, applying climate-friendly technologies like solar-powered water pumps, and strengthening communities through capacity development and training. Through this, access to clean and safe water supply has increased as well as enhancing WASH infrastructure in resisting weather-climate change shocks of flooding and droughts.

Through the Food Security and Livelihoods (FSL) programme, YFCA prioritized resilience building by rehabilitating agricultural infrastructure, such as irrigation canals and constructing gabions and flood-protection structures to prevent soil. YFCA also established rainwater harvesting facilities and delivered sustainable agriculture training, equipping farmers with climate-smart agriculture practices and livestock management to maximize productivity and reduce rain-fed farming. Aside from this, YFCA has also supplied seeds and sustained cash-for-work interventions, enhancing further food security and economic resilience.

YFCA works in Shelter and Camp Coordination and Camp Management (CCCM) sectors by constructing climate-resilient shelters, reinforcing drainage systems, providing emergency shelter kits and climate-shock-resilient camp infrastructure, thereby protecting internally displaced populations (IDPs) and host communities from extreme weather patterns.

Additionally, YFCA integrates climate considerations into the Education and Protection sector by raising climate awareness in schools, improving disaster preparedness, and advocating for the protection of vulnerable groups disproportionately affected by climate change. In the Health and Nutrition sector, YFCA promotes climate-resilient health services by installing solar power systems in health facilities, improving medical waste management, and enhancing community health awareness to mitigate climate-related health risks.

YFCA's comprehensive and climate-sensitive programming highlights its holistic approach to reducing climate risks and promoting sustainable practices across multiple sectors. By mainstreaming climate considerations into all interventions, YFCA ensures both immediate relief and long-term resilience for affected communities. This report provides valuable insights for organizations seeking to support vulnerable populations in Yemen and other climate-affected regions.



2. Introduction

2.1. Background on Yemen's Humanitarian Context

Yemen in Crisis

Yemen grapples with one of the world's most severe humanitarian crises after nine years of conflict. Over half the population (18.2 million) needs urgent assistance in 2024, facing a brutal combination of conflict, displacement, environmental threats, and economic collapse. Yemen's Gross Domestic Product (GDP) has plummeted by more than half since the conflict began, with a recent World Bank analysis showing a further decline last year. This economic downturn has plunged most Yemenis into extreme poverty, leaving them food insecure and struggling to access primary healthcare and education¹.

The war in Yemen has been characterized by mass civilian casualties, widespread displacement, acute hunger, severe water shortages, and recurrent outbreaks of infectious diseases. These factors have led to reported famine-like conditions throughout the conflict in various parts of the country². Food prices continue to soar, making sustenance increasingly unattainable for millions. This is particularly alarming for pregnant and breastfeeding women, with an estimated 2.7 million requiring acute malnutrition treatment. Just over half of health facilities (55%) remain functional, and there is an ongoing demand for a consistent supply chain to deliver essential resources such as medicines, medical equipment, fuel, water, oxygen, and other critical supplies, along with necessary logistical support³.

2.2. Climate Change Worsens Yemen's Humanitarian Crisis

Climate change significantly exacerbates humanitarian issues and increases the vulnerability of Yemenis in several ways. During the latter part of 2024, Yemen faced one of its worst flooding disasters in recent history, worsening an already fragile humanitarian situation. From July to September, the rainy season brought relentless and unusually heavy rainfall, triggering severe floods that swept through nearly the entire country. Reports revealed that around 655,000 people from 93,500 households were affected, with 240 lives lost and 635 injuries recorded. The floods caused widespread devastation, damaging homes, roads, and critical infrastructure across 20 of Yemen's 22 governorates^{4 5}.

At the same time, the floods sparked a sharp rise in cholera cases. By early September 2024, more than 186,000 suspected cases of Acute Watery Diarrhea (AWD)/cholera had been reported nationwide, with over 680 deaths linked to the disease. The heavy rains significantly contributed to the outbreak by contaminating water sources and destroying sanitation systems, thus creating ideal conditions for the disease to spread rapidly^{6 7}.

Adding to the crisis, Yemen also endured extreme heatwaves throughout 2024. In some coastal areas, temperatures soared to nearly 44 degrees Celsius, placing additional strain on communities already struggling to cope⁸. Experts stated that 2024 ranked among the hottest years globally, with temperatures expected to climb even higher by 2050 due to the escalating effects of climate change. Coastal regions are particularly at risk, facing threats like rising sea levels and unpredictable rainfall, which could lead to more frequent and severe flooding in the future⁹.

The changing climate has not only disrupted weather patterns but also triggered unusual pest and disease outbreaks. For instance, irregular rainfall in late 2024 led to desert locust swarms that devastated crops and farmland, leaving farmers struggling to recover. The economic consequences of these events are severe, as those who rely on agriculture and natural resources face significant losses, deepening poverty and restricting access to basic services like food and healthcare. Extreme weather events also damage critical infrastructure, such as roads and water systems, which



hampers aid delivery and slows economic recovery. This creates a vicious cycle, where communities already vulnerable to climate shocks find it even harder to rebuild and adapt. Women, in particular, bear a disproportionate burden in these crises. Often responsible for water collection and food security, they face increased workloads and stress as resources become scarcer. This heightened pressure can also lead to higher rates of gender-based violence, as competition for limited resources intensifies and social tensions rise^{10 11}.

2.3. Historical Context of YFCA's Work

Since its inception in 1976, YFCA has been a key player in Yemen's development and humanitarian efforts, continuously adapting to the evolving needs of local communities. In recent years, the organization has intensified its focus on climate change adaptation, particularly following the implementation of activities aligned with Yemen's National Adaptation Program of Action (NAPA), established in 2009.

While YFCA initially concentrated on broader development and family care issues, the growing recognition of Yemen's vulnerability to climate change prompted the organization to integrate climate considerations into its programming. This shift is now reflected in YFCA's approach, which ensures that climate-related activities are embedded in all its interventions. The organization has implemented a wide range of climate-resilient practices, such as protecting water sources, installing solar power systems, constructing rainwater harvesting tanks, rehabilitating water sources, for example, open wells, etc. These efforts have been progressively scaled up, with numerous projects completed across various sectors.

YFCA's evolution is evident in its strategic expansion across Yemen, where it has opened new offices to better address humanitarian needs, particularly those worsened by climate change. The organization has also enhanced its presence in the global humanitarian community by joining various international bodies and networks. YFCA has gained observer status in the United Nations Framework Convention on Climate Change (UNFCCC) and United Nations Convention to Combat Desertification (UNCCD) and is a member of the Climate Action Network of the Arab World, Global Network of Civil Society Organizations for Disaster Reduction (GNDR), and the Climate Justice Network in the Middle East and North Africa (MENA) region.

While not all these partnerships focus specifically on climate issues, they contribute to YFCA's comprehensive approach to tackling Yemen's complex challenges, including climate change. As Yemen continues to face significant climate-related risks, YFCA has adapted its work to address these issues more effectively. This adaptive approach underscores YFCA's commitment to meeting the evolving needs of Yemeni communities amid ongoing environmental challenges. Over time, YFCA has significantly expanded its climate change adaptation efforts, integrating them more fully into its broader humanitarian and development initiatives in Yemen.

2.4. Study Purpose

This study aims to evaluate and analyze the interventions implemented by YFCA to address the impacts of climate change in Yemen. Given the country's extreme vulnerability to climate change, compounded by ongoing conflict and economic challenges, the study seeks to assess the effectiveness of YFCA's climate-resilient strategies across critical sectors



Overall Objectives:

- To shed light on the effects of climate change on critical sectors in Yemen, including WASH, Health, FSL, Education, and Shelter, CCCM, and Protection and to understand how these impacts exacerbate existing vulnerabilities.
- Demonstrate YFCA's Interventions to show the interventions implemented by YFCA to address climate change challenges effectively.

3.Methodology

This research employs a multi-faceted approach to explore the effects of climate change, the interventions implemented by YFCA, and its climate-resilient strategies. The methodology comprises three key elements:

- **Literature Review**

An extensive review of available literature on the effects of climate change in Yemen was conducted. This review encompassed academic research, reports from the United Nations, international organizations, government publications, and other relevant sources.

- **Evaluation of YFCA's Climate-Related Projects**

An evaluation of previous climate-focused initiatives carried out by YFCA was conducted to analyze the approaches utilized and the outcomes attained, providing insight into the effectiveness of these interventions.

- **Interviews with YFCA Program Managers**

In-depth interviews were conducted with YFCA program managers and key personnel involved in designing and implementing climate change adaptation projects. These interviews provided valuable insights into the rationale behind YFCA's interventions, complementing the findings from the literature and project evaluations.



4. Findings

4.1. Brief Overview of Climate Change Impacts in Yemen

Yemen is one of the most vulnerable countries to climate change, facing severe impacts across various sectors. The country has experienced a significant rise in temperature of 1.8°C since the 1960s, with the rate of warming exceeding the global average¹². This temperature increase has led to more frequent and intense droughts, contributing to desertification and deforestation, which have increased from 90% in 2014 to 97% in 2022¹³. Climate change has also affected Yemen's water resources, with decreasing precipitation and dwindling groundwater levels ranging between 3 to 8 meters per year in critical basins¹⁴. This water scarcity could potentially reduce agricultural productivity by 40%. Additionally, sea level rise is expected to increase by 0.3 to 0.54 meters by 2100, threatening coastal areas and exacerbating water scarcity issues.¹⁵

The impacts of climate change have also contributed to a rise in endemic and epidemic diseases, particularly vector-borne and waterborne diseases. Furthermore, climate change is increasing the number of internally displaced people and exacerbating social and political tensions in the country.¹⁶

Yemen is ranked third out of 191 countries on the 2022 Inform Risk Index, making it one of the world's most at-risk countries (DRMKC, 2022).

Key Climate Trends

Temperature Increase

Yemen is experiencing a significant warming trend. According to projections, the country's temperature is expected to increase between 1.2 to 3.3 degrees Celsius by 2060¹⁸. This rise in temperature has far-reaching consequences for the country's ecosystems, agriculture, and human health.

The number of days surpassing the Heat Index above 35°C annually is projected to increase by 14.06 days nationwide from the reference period by mid-century, with the largest increase of 51.40 days annually above the reference period in Hajjah. By mid-century, Yemen is likely to experience a change in rainfall distribution patterns with a sharp decrease in average annual rainfall that reduces available water, worsening or advancing aridity into previously humid areas while also resulting in more intense precipitation over certain areas, leading to flash floods and other disasters¹⁹.

For the past three decades, Yemen's temperatures have been rising steadily more quickly than the global average. Many areas of Yemen have temperatures two degrees Celsius above their pre-climate change levels (USAID, 2016).



Precipitation Changes

The United Nations Development Programme (UNDP) report from 2024 examines the trends and projections of rainfall in Yemen based on the Representative Concentration Pathway (RCP) 4.5 and 7.0 scenarios¹. While the rainfall trends and projections are more uncertain and regionally varied, the report indicates that Yemen is likely to experience more frequent and intense flooding. Notably, the observed rainfall during the summer over the highlands and Red Sea coast is increasing significantly, and this trend is expected to continue in the future with high confidence. The report further highlights that not only is the mean rainfall increasing, but the variability is also escalating in a significant way, resulting in larger extremes. These changes have manifested as major and often persistent flood events as well as shifting rainfall patterns. Interestingly, the spring rain has been declining modestly, leading to a change in the seasonality of rainfall in both regions, which will likely impact agricultural production²⁰.

Climate projections indicate that rainfall in Yemen is expected to become more intense, particularly from September to November. This could lead to more severe flooding events with greater negative impacts.

Cross-cutting Issues

The impacts of climate change in Yemen are severe and wide-ranging, affecting virtually every aspect of life in the country. These impacts intersect with and exacerbate existing challenges, creating a complex crisis that requires multifaceted, integrated solutions.

Food Insecurity

Climate change is expected to exacerbate Yemen's severe food security challenges. Reduced agricultural productivity combined with rising food prices could drive more Yemenis into acute food insecurity.²¹

Agriculture and oil are the two most crucial sectors of Yemen's economy. Over 30 million people live in Yemen, and around 50% of its population works in the agricultural sector, which relies on traditional, rainfall-dependent farming methods.²²

Sudden intense rainfall and flash flooding events have become more frequent in Yemen. These events destroy crops and vegetation, cause livestock losses, and degrade the soil. They also damage critical infrastructure like irrigation systems and roads.

Overall, the climate change impacts on Yemen's agricultural sector and food system are expected to further worsen the country's dire food security situation in the coming years.

¹ RCPs are different scenarios developed by the Intergovernmental Panel on Climate Change (IPCC). Each RCP represents a different trajectory of GHG emissions and concentrations. RCP 4.5 and RCP 7 assume medium and severe levels of emissions, respectively.



Health Impacts

Climate change is having a significant impact on health in Yemen. Shifting temperatures and rainfall patterns are contributing to the spread of infectious and vector-borne diseases like dengue fever, malaria, and cholera. Floods and water scarcity are increasing the risk of waterborne illnesses, while the ongoing conflict is worsening malnutrition. Extreme weather events are displacing people, damaging infrastructure, and elevating health risks for vulnerable populations. Due to the conflict, only 51% of health facilities remain operational, leaving 21.9 million people in need of critical medical services²³.

Displacement and Migration

Climate change is worsening displacement in Yemen, as increased weather-related hazards like floods and heavy rains disproportionately impact vulnerable groups such as IDPs and small-scale farmers. Environmental degradation, resource scarcity, and infrastructure damage further compound these issues. Changing temperature and rainfall patterns are leading to land degradation, soil erosion, and desertification, driving people to migrate. Coastal areas also face challenges from rising sea levels and pollution. These climate-related factors are straining resources in relocation areas and heightening tensions with host communities²⁴.

Unpresented climate events

Beginning in March 2024, Yemen was hit by heavy rains and flooding that severely damaged infrastructure, destroyed homes, and resulted in numerous deaths and injuries. The situation escalated significantly at the end of June, worsening further through late July and early August, impacting tens of thousands of families, many of whom were already displaced. In the first week of August, 9,259 families were reported affected in the Al Hodeidah Hub (6,042 in Al Hodeidah, 2,753 in Hajjah, and 464 in Al Mahwit). Additionally, 2,861 families were impacted across the Sana'a Hub (112 in Al Bayda, 1,800 in Sana'a City, 486 in Amran, 233 in Dhamar, 170 in Sana'a Governorate, and 60 in Mairb). The Aden Hub saw 4,955 affected families (611 in Abyan, 660 in AdDhale', 961 in Al Maharah, 1,616 in Hadramawt, 584 in Lahj, and 523 in Shabwah). The Ibb Hub reported 5,374 affected families (271 in Ibb and 5,103 in Ta'iz), while the Sa'dah Hub had 4,400 families impacted (3,451 in Sa'dah and 949 in Al Jawf)²⁵.

Gender Inequality

Recent UNFPA research shows that climate extremes have a disproportionate impact on the mental and physical health of Yemeni women, girls, and newborns. As one of the country's most vulnerable to climate change, the fallout for women and girls in Yemen has been wide-ranging and life-threatening. For instance, they may travel for hours, often alone, through dangerous terrain and conflict zones to fetch water and firewood, exposing them to significant risks²⁶.

Capacity and Resource Constraints

Yemen's ability to adapt to climate change is severely hampered by capacity and resource constraints. The ongoing conflict has drained the country's financial resources and human capital, making it challenging to implement comprehensive climate adaptation strategies. Moreover, the focus on immediate humanitarian needs often overshadows long-term climate resilience planning.



Impacts of Climate Change on humanitarian Sectors



4.2. Water, Sanitation and Hygiene

4.2.1. Climate Change Impacts on WASH

WASH is impacted by climate change in several ways, which aggravates the already dire humanitarian conditions of the country. The following sections discuss important issues and implications for WASH in Yemen.

Severe Water Shortages

With an estimated 14.5 million people without access to adequate drinking water and sanitation facilities, Yemen is among the most water-scarce countries in the world. Rising temperatures and erratic rainfall patterns brought on by climate change have exacerbated this scenario by annual depletion rates of 3 to 8 meters in the groundwater levels of important basins. The present conflict aggravates the difficulties in infrastructure maintenance and water management, leaving many areas without regular access to clean water ^{27 28}.

Groundwater Over-extraction

Agricultural demand and the rapid population increase have caused over-extraction of groundwater supplies. Particularly in areas like Sana'a where groundwater abstraction exceeds recharge rates by 400%, this unsustainable practice has caused notable decreases in water tables. The depletion of these vital resources has created increased competition for water among communities, heightening tensions and conflicts ^{29 30}.

Malnutrition and Food Insecurity

Climate change impacts on agriculture have added to food insecurity and compounded health hazards connected to insufficient WASH facilities. With 16.7 million people suffering acute hunger as of late 2024, the rate of malnutrition has so grown particularly among children and pregnant women, who are already more vulnerable to health issues resulting from inadequate water quality and sanitation ^{31 32}.

Waterborne Diseases

With around 2.1 million probable cases reported recently, Yemen has one of the worst cholera outbreaks of any country since 2016. The sudden outbreak of diseases is mostly caused by inadequate sanitation and hygiene as well as climatic flooding compromising water supplies ^{33 34}.

Increased Maintenance Costs

Along with declining infrastructure quality and growing frequency of weather events, these factors cause a significant increase in the maintenance and repair costs related to WASH buildings. The financial burden in issue can cause resources to be diverted from other vital services, so reducing local authorities' capacity to properly meet newly arising needs. ^{35 36}.



4.2.2. Approaches to Address Climate Change Impact on WASH

Emphasizing the need of building resilience, reducing vulnerability, and supporting sustainable, environmentally friendly practices, YFCA has carefully included climate change considerations into its WASH program. These projects seek to ensure, among growing climate variability, the continual effectiveness and sustainability of water and sanitation projects. Through a combination of groundwater protection water source diversification climate-friendly technologies, flood-resilient infrastructure, strategic site selection, community empowerment, and contributions to solid waste management standards, YFCA is setting a new standard for integrating climate adaptation into WASH services.

Below are some of the key approaches YFCA has implemented in the WASH sector to enhance climate resilience and promote sustainable practices.

1. Protection of Groundwater Resources

To protect groundwater from contamination by floodwater and runoff, the Yemeni Family Care Association implemented preventive measures in Damt district, Ad Dhale'e, with funding from Yemen Humanitarian Fund (YHF). These measures included building high barriers around wellheads and installing secure covers to prevent contamination from dust, animals and debris. This intervention ensures safe and reliable access to clean drinking water, reducing health risks during extreme weather events.

2. Diversifying Water Sources

To enhance water security and reduce dependence on single sources, YFCA established alternative water solutions, such as rainwater harvesting systems. For instance, in Al Dhalea governorate, with the support of Diakonie Katastrophenhilfe (DKH)-funded projects, household and community-level rainwater collection tanks were constructed, providing sustainable water access during droughts and climate-induced disruptions. This intervention strengthens water resilience by promoting resource diversification.

3. Implementing Climate-Friendly Technologies

YFCA incorporates sustainable technologies within its WASH projects to reduce reliance on fossil fuels and promote environmental sustainability. This initiative was implemented in Hadramawt, Shabwah, Al Dhalea, and Marib City, with funding from donors such as Muslim Aid, DKH, YHF, United Nations Children's Fund (UNICEF), and the Arab Fund. The goal is to transition to renewable energy solutions for water and sanitation infrastructure and reduce the carbon footprint of WASH operations. YFCA installed over 50 solar-powered water pumps across multiple locations and integrated solar lighting into latrine facilities in Marib City. These efforts have not only enhanced the sustainability of WASH services but also reduced operational costs and environmental impact.

4. Flood-Resilient WASH Facilities

YFCA, under the YHF projects, has built elevated water tanks and latrines and implemented drainage systems in Marib City to reduce the effects of flooding on WASH infrastructure. These flood-resilient designs prevent contamination and ensure that water and sanitation services are not disrupted during extreme weather events, strengthening overall system resilience.

5. Climate Considerations in Site Selection

YFCA identified strategic locations of water and sanitation facilities using comprehensive climate risk assessment in Al Jawf and elsewhere with the aid of YHF, Arab Fund, and UNICEF. YFCA reduced exposure to drought, flooding, and landslides by picking locations that are resilient to floods and



engaging the local stakeholders in the process and thereby guaranteeing the sustainability of WASH interventions.

6. Building Capacities of the Communities through Training

In that effect, local ownership and sustainability are ensured by the establishment and training of 14 Water Management Committees (WMCs) spread across four governorates and 14 districts by YFCA with support from IOM. The training equips the committees with skills in pump operation and maintenance for the community-led management of water resources, increasing the long-term WASH resilience.

7. Contribution to Solid Waste Management Standard Operating Procedures (SOPs)

As an active partner of the WASH Cluster, YFCA has contributed significantly to developing SOPs for solid waste management nationally in Yemen. The SOPs provide standardized guidance on the process of handling waste within IDP camps, rural and urban areas, and health facilities to enhance the status of sanitation and protection of the environment.

YFCA strengthens resilience within the WASH sector by protecting groundwater, diversifying sources, promoting climate-friendly technologies, flooding-resilient infrastructure, strategic site selection, community empowerment, and contributions to solid waste management. YFCA is not only mitigating immediate climate risks but also paving the way for a more resilient and sustainable future in the WASH sector.

4.3. Food Security and Livelihoods

4.3.1. Climate Change Impacts on FSL

The impacts of climate change on FSL in Yemen are critical in 2024, exacerbating existing vulnerabilities due to ongoing conflict and economic instability. The following sections outline the key challenges faced by the agricultural sector and food security in the country.

Reduced Agricultural Productivity

Climate change is expected to reduce agricultural productivity by 40% due to higher temperatures, altered rainfall patterns, and extreme weather events like droughts and floods. These changes jeopardize the viability of both rain-fed and irrigated crops, which are critical to Yemen's food security³⁷.

Severe Water Shortages

Yemen's agricultural sector heavily relies on water availability, which has been significantly affected by climate change. The country experiences extreme water scarcity, with many rural families unable to access sufficient water for irrigation and livestock. Changing weather patterns, including prolonged droughts and erratic rainfall, hinder agricultural productivity, leaving thousands vulnerable to food insecurity. In 2024, it was reported that 14.5 million people lack access to safe drinking water and sanitation, further complicating food production efforts^{38 39}. According to the National Water Resources Authority (NWRA), the rate of groundwater overdraft is currently much higher than the recharge rate, with a deficit situation of around 2.6 billion cubic meters/year. This means that groundwater withdrawal rates are more than twice the recharge ratio. For instance, in Sana'a Basin, the water deficit reached 271 million m³ per year, while in Sa'dah Basin it was 85 million m³ per year, and in Amran Basin it was 79 million m³ per year. These basins face pressures in terms of both quantity and quality. The decline in groundwater levels ranges between 3 to 8 meters per year in



critical basins. The country receives limited rainfall, ranging between 19 to 600 mm/year, and has no permanent rivers. Thus, overexploitation of groundwater resources has been on the rise to respond to different water needs. The rate of groundwater overdraft is currently much higher (twice) than the recharge rate, and is increasing, bringing depletion of water reserves, inequity, and shortages².

Impact of Flooding and Drought

The dual threats of flooding from torrential rains and drought-induced desertification have devastated agricultural lands. In 2024, severe flooding caused by heavy rains damaged crops and infrastructure, leading to significant losses in agricultural output. Reports indicated that 85% of displaced families were unable to meet their daily food needs due to these climatic events. The combination of these factors creates a precarious situation for farmers, making it increasingly difficult to sustain agricultural production⁴⁰.

Rising Food Insecurity Rates

In 2024, Yemen is facing a severe food security crisis, with around 17.6 million people experiencing acute food insecurity and 6 million of them facing emergency levels of food insecurity. Yemen's heavy dependence on food imports, which account for 70-90% of its cereal needs, makes the country highly vulnerable to disruptions in the global food market as well as local agricultural production failures driven by the impacts of climate change⁴¹.

According to the Integrated Food Security Classification (IPC), nearly half of the population in government-controlled areas experienced high levels of acute food insecurity between July and September 2024, with 1.2 million people classified as facing critical levels of food insecurity (IPC Phase 4) characterized by large food gaps and high levels of acute malnutrition ^{42 43}

A report by Action Against Hunger highlighted that the economic downturn, characterized by currency depreciation and rising food prices, combined with irregular humanitarian food aid, continues to result in high levels of acute food insecurity. The report also noted that 4.7 million people were experiencing crisis levels of food insecurity during this period ⁴⁴

Economic Constraints

High fuel prices and deteriorating economic conditions further limit income-earning opportunities for millions of households. The World Food Programme (WFP) reported that humanitarian food assistance has been paused in some areas since late 2023, affecting around 9.5 million beneficiaries. This situation is expected to persist as crisis-level food insecurity continues across various governorates ⁴⁵.

Yemen's economy has contracted significantly as a result of the combined pressures of conflict and climate change. Since 2014, the GDP per capita has fallen by nearly 60%, with six out of ten Yemenis living in extreme poverty. This economic instability reduces households' ability to adapt to climate shocks and increases their reliance on humanitarian assistance⁴⁶.

The World Bank warns that without immediate action on climate resilience, Yemen's annual GDP could decline significantly due to decreased agricultural productivity ⁴⁷.

² https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies?gad_source=1&gclid=Cj0KCQjwrp-



4.3.2. Approaches to Address Climate Change Impact on FSL

YFCA has implemented a range of climate-resilient interventions in FSL sector across Hadramawt, Aden, Marib, Hajjah, Abyan, Lahj, Al Dhalea, Ibb, Amran, Shabwah, Sa'dah and Dhamar governorates. Funded by various donors, these initiatives aim to enhance agricultural sustainability, conserve natural resources and improve rural livelihoods while addressing the increasing impact of climate change. YFCA strengthens food security, economic stability, and environmental resilience in vulnerable communities by focusing on flood protection, sustainable water management, infrastructure strengthening and agricultural capacity building. A comprehensive summary of the key interventions YFCA has implemented to promote sustainable food security and livelihoods is provided below for some of our donors and listing some of the projects.

1. Building Gabions for Flood Protection

To reduce the impact of flooding and soil erosion caused by climate change, YFCA has built gabions in several districts in Hadramawt, Abyan, Al Dhalea, Marib and Shabwah. These protective structures protect agricultural lands, prevent land degradation and preserve fertile topsoil, ensuring long-term agricultural productivity and community resilience to climate-related disasters. This intervention was made possible by Muslim Aid UK (MAUK) and United Methodist Committee on Relief (UMCOR) supporting flood reduction efforts in Haridhah and Rakhyah, Hadramawt Governorates. In addition, Foreign, Commonwealth and Development Office (FCDO) contributed to similar efforts in Shabwah and Al Dhalea governorates, while the German Federal Ministry of Foreign Affairs (GFFO), in partnership with DKH, funded gabion construction in Ar Rawdha, Mayfa'ah (Shabwah) and Ash Shuaib and Al Dhalea (Al Dhalea Governorates).

2. Rainwater Harvesting for Water Security

In response to long dry seasons, YFCA repaired and constructed rainwater harvesting systems in Ibb, Al Dhalea, Dhamar, Shabwah and Marib to provide sustainable water sources for irrigation, domestic use and livestock. This intervention supports climate adaptation and enhances agricultural through reducing groundwater dependency and promoting efficient water conservation, sustainability by ensuring reliable water supply throughout the year. FCDO financed rainwater harvesting projects in Al Dhalea (Al Dhalea, Al Azariq, Jahaf, Qataba), while YHF supported similar efforts in Jabal Ash Sharq in the Dhamar Governorate. In addition, GFFO, in partnership with DKH, contributed to the expansion of these efforts to multiple districts in Shabwah.

3. Sustainable Agriculture Training and Livestock Management

YFCA organized agricultural training in Al Dhalea, Shabwah, Ibb, Amran Hadramawt, Marib and Dhamar to empower local farmers, focusing on animal husbandry, home gardening, cereal and horticultural farming. This training increased agricultural productivity, reduced production costs and promoted biodiversity conservation, ultimately increasing food security and economic resilience in vulnerable communities.

These were all supported by HelpAge in Marib City, Marib Governorate, and MAUK, with UMCOR supporting trainings in Hadramawt Governorate, Haridhah, and Rakhyah. YHF also funded training activities that took place in Jabal Ash Sharq within Dhamar Governorate, ensuring that farmers in various governorates get trained on items that are locally relevant to the agricultural challenges.



4. Rehabilitation of Irrigation Canals for Water Management

YFCA facilitated the cleaning and rehabilitation of irrigation canals in Shabwah, Hadramawt, Abyan and Abyan to improve access to water for agricultural lands. This intervention reduces the need for fuel-based water pumping and trucking by ensuring direct access to water resources, thus saving energy and minimizing the carbon footprint. DKH financed irrigation canal projects in Ar Rawdha and Bayhan, Shabwah Governorate, while the GFFO, in partnership with DKH, supported similar projects in Ar Rawdha, Mayfa'ah (Shabwah), Ash Shuaib and Al Dhalea (Al Dhalea Governorate), contributing to sustainable water management in drought-prone areas.

5. Afforestation: Ornamental and Shade Tree Planting

YFCA has planted shade and ornamental trees in Hadramawt to contribute to the fight against rising temperatures, reduce soil erosion, and increase biodiversity. All of these contribute to climate adaptation, environmental protection, and community well-being and thus make the rural areas resilient and livable. This initiative was made possible with funding from MAUK and UMCOR, who supported tree planting efforts in Haridhah and Rakhyah in Hadramawt Governorate.

6. Infrastructure Strengthening: Road Rehabilitation

To improve transportation and access to markets and mitigate the blockage caused by the rain and floods, YFCA rehabilitated roads in Al Dhalea, Ibb, Hadramawt, Dhamar, Sa'dah and Shabwah. These improvements enhance economic opportunities and encourage investment while reducing environmental degradation to ensure safer and more efficient mobility for residents, farmers, and traders. Funding for these road rehabilitation efforts was provided by YHF in Al Azariq, Al Dhalea Governorate, while the German Federal Foreign Office, in partnership with DKH, supported projects in multiple districts across Shabwah.

7. Water Flow Rehabilitation for Environmental and Social Benefits

YFCA rehabilitated natural water flows in Dhamar to restore water flow, recharge groundwater, and improve drainage systems. This initiative provides a sustainable and climate-resilient environment for agricultural activities and local communities by improving water quality, biodiversity, and soil fertility. These efforts were funded by YHF in Jabal Ash Sharq, Dhamar Governorate, to improve land and water resource management in vulnerable agricultural areas.

8. Removal of Harmful Trees to Restore Agricultural Land

YFCA undertook tree removal in Hadramawt and other flood-prone areas to restore natural stream flows, improve soil conditions, and prevent the spread of invasive species. This intervention supports long-term farming productivity and ecosystem restoration by restoring farmland. This activity was supported by MAUK and UMCOR funded tree removal initiatives in Haridhah and Rakhyah, Hadramawt Governorate to improve land restoration and agricultural sustainability.

9. Reducing the carbon footprint for Sustainable Climate Action through CVA.

YFCA's Cash and Voucher Assistance (CVA) programs offer a valuable opportunity to support climate action goals while addressing community needs. In Shabwa, Al Dhalea, and Saada Governorates, YFCA implemented CVA activities under the BRIGHTLY project, funded by FCDO. These programs allow recipients to purchase goods and services from local markets, reducing transportation emissions and promoting sustainable consumption by minimizing reliance on long-distance supply chains. Additionally, the flexibility of CVA helps reduce food waste, as families can buy only what they need, thereby lowering methane emissions from landfills.



The financial flexibility provided by CVA also encourages investments in energy-efficient products and the use of public transportation, further contributing to lower carbon emissions. By integrating environmental considerations into program design and promoting eco-friendly practices, YFCA helps build resilient communities better equipped to face future climate challenges. These CVA interventions not only address immediate needs but also promote long-term environmental responsibility, highlighting the strong connection between economic support and climate action.

Overall, through gabion construction, rainwater harvesting, irrigation system rehabilitation, afforestation, road and water stream restoration, and sustainable farming training, YFCA has significantly enhanced food security and livelihood resilience in Hadramawt, Abyan, Aden, Marib, Hajjah, Lahj, Al Dhalea, Shabwah, Sa'dah and Dhamar Governorates. YFCA ensures that vulnerable communities can stand with climate challenges while fostering long-term economic and environmental sustainability by adopting climate-smart solutions and integrating sustainable resource management, YFCA ensures that vulnerable communities can stand with climate challenges while fostering long-term economic and environmental sustainability.

4.4. Shelter and Camp Coordination and Camp Management

4.4.1. Climate Change Impacts on Shelter and CCCM

The impacts of climate change on shelter and CCCM in Yemen have become increasingly severe as the country grapples with ongoing conflict and environmental degradation. As of February 2025, the situation remains critical, with climate-induced challenges exacerbating the already dire humanitarian conditions. The Shelter Cluster's strategy for 2025-2028 emphasizes the importance of integrating climate resilience into shelter planning and management⁴⁸

As of 2024, over 4.5 million people have been internally displaced as a result of the protracted civil war that began in 2015⁴⁹.

The country's vulnerability to climate change has intensified in recent years. Severe seasonal flooding and other natural disasters have caused significant damage to housing, essential household items, and public infrastructure. This has disrupted livelihoods and basic services, forcing families to flee their homes and exacerbating existing vulnerabilities. Yemen's INFORM Risk Index for 2024 stands at 7.5, placing it seventh among the most vulnerable countries to humanitarian crises and disasters. This ranking underscores the severe hazards, exposure, vulnerability, and lack of coping capacity that characterize the nation. According to the Shelter Cluster's flood susceptibility analysis, approximately 173 districts in Yemen are highly susceptible to severe flooding (severity 5)⁵⁰.

Increased Frequency of Extreme Weather Events

Yemen has witnessed a marked increase in extreme weather events, including heavy rainfall, flooding, and droughts. These events have resulted in significant damage to shelters, particularly in IDP camps. For instance, in 2024 it was reported that over 56,000 homes were damaged due to severe weather events, which directly impact the living conditions of displaced populations⁵¹. Such destruction not only displaces families but also heightens their vulnerability to further environmental hazards.



Vulnerability of IDP Shelters

Many IDPs reside in makeshift shelters that are ill-equipped to withstand harsh weather conditions. These structures are often constructed from weak materials that fail to provide adequate protection against flooding and erosion. The lack of proper drainage systems exacerbates the risk of waterlogging and structural collapse during heavy rains^{52 53}. As a result, the living conditions for IDPs deteriorate rapidly during climate-related disasters.

Impact on Livelihoods

Climate change has also adversely affected agricultural productivity, which is crucial for many displaced families' livelihoods. Flooding and droughts destroy crops and erode arable land, forcing families to abandon their homes in search of safer living conditions or alternative employment opportunities^{54 55}. This cycle of displacement further strains shelter resources and complicates CCCM efforts.

Destruction of CCCM Facilities

Heavy rains and flooding have caused significant damage to CCCM facilities, including temporary shelters and communal spaces. In 2024, it was reported that over 56,000 homes were damaged due to severe weather events, which directly impacts the living conditions of displaced populations⁵⁶. The destruction of infrastructure not only disrupts shelter but also complicates access to vital services such as healthcare and sanitation.

Compounding Humanitarian Needs

The increased frequency of climate-related disasters places additional strain on CCCM operations. As displacement sites become overcrowded, the need for effective management and coordination becomes more urgent. Humanitarian organizations are tasked with addressing the needs of a growing population while navigating the complexities introduced by climate impacts, such as deteriorating infrastructure and resource shortages^{57 58}.

Increased Maintenance Challenges

The ongoing climate crisis leads to more frequent repairs and maintenance for CCCM facilities. The combination of flooding and erosion increases the operational costs associated with maintaining safe living environments for IDPs. This situation diverts resources away from other essential services, hindering the overall effectiveness of CCCM programs⁵⁹.

4.4.2. Approaches to Address Climate Change Impact on Shelter and CCCM

YFCA employs a well-rounded approach to reinforce community resilience in response to climate-driven challenges by implementing programs in shelter, education, CCCM, and protection. These initiatives are crafted to reduce the consequences of climate shifts, strengthen adaptation strategies, and maintain the welfare and sustainability of vulnerable populations. By weaving climate-aware methods into housing projects, camp operations, security measures, and educational curricula, YFCA furnishes communities with the resources needed to endure, adjust, and bounce back from climate-related disruptions. These efforts do more than just address immediate requirements; they pave the way for a more resilient future.

Outlined below is a structured overview of YFCA's primary interventions across these sectors, designed to strengthen climate resilience.



1. Shelter Strategies To improve the sturdiness of housing amid climate threats, YFCA has launched shelter initiatives across Taiz, Marib, Al Jawf, and Hadhramaut, made possible through financial backing from YHF, START FUND, and the Hilton Foundation. These efforts deliver long-lasting, climate-resilient housing solutions to at-risk communities.

- **Durable Shelter Construction:** YFCA educates local populations on erecting homes using environmentally friendly, disaster-resistant materials. These shelters feature passive cooling and heating techniques and are built to withstand harsh environmental conditions.
- **Hands-On Maintenance and Repair Training:** Practical workshops equip communities with skills to sustain and repair their homes, ensuring extended use and resilience against climate fluctuations.
- **Flood-Resistant Housing and Protective Measures:** Elevation-based construction, water-repellent materials, and optimized drainage systems are implemented to safeguard homes from flooding.
- **Distribution of Emergency Shelter Kits and Seasonal Protection:** Emergency kits with weather-resistant supplies and insulation materials are allocated to displaced families, ensuring safety from extreme climate conditions.
- **Integration of Renewable Energy Solutions:** Solar-powered systems are incorporated into shelters to support sustainable lighting, heating, and essential energy needs.

2. Camp Coordination and Management YFCA enhances camp operations in flood-prone regions, facilitating effective resource distribution and essential services for displaced individuals in Marib and Hajjah, with support from YHF and Danish Refugee Council (DRC).

- **Effective Camp Coordination and Emergency Response:** YFCA partners with authorities and humanitarian organizations to ensure well-managed camps that uphold dignified living standards.
- **Community-Inclusive Resilience Strategies:** CCCM interventions emphasize participatory decision-making and community engagement to strengthen adaptive capacities.
- **Sustainable Camp Infrastructure Enhancements:** Environmentally conscious site management practices, improved drainage, waste management upgrades, and renewable energy adoption contribute to long-term camp sustainability.

4.5. Education and Protection

4.5.1. Climate Change Impacts on Education and Protection

The impacts of climate change on education and protection in Yemen in 2024 are profound, exacerbating existing vulnerabilities and challenges within the country. The following sections outline the key effects of climate change on these critical areas.

Yemen's education system has been severely disrupted by climate change, with frequent climate-related shocks such as floods, droughts, and extreme weather events affecting both school infrastructure and access to education. Over 3.2 million children in Yemen are not attending school, and the situation is further aggravated by displacement. Families who have lost their livelihoods due to climate-induced disasters often struggle to invest in their children's education. Moreover, the education environment is hindered by overcrowded classrooms, inadequate teaching resources, and



the lack of salaries for many teachers. These conditions contribute to high dropout rates, making children more vulnerable to child labor, early marriage, and recruitment into armed groups⁶⁰.

Climate change significantly affects educational access and retention, particularly for girls. As water scarcity worsens due to changing weather patterns, many families rely on their daughters to fetch water, leading to increased dropout rates. In rural areas, girls often leave school to help with household chores or to marry early, driven by economic necessity and cultural norms. OCHA Yemen HNO 2024 highlighted that **over 4.5 million children** in Yemen did not attend school in 2024, with many schools damaged or repurposed due to conflict and climate-related disasters⁶¹.

Across Yemen, over 3,400 schools have been partially or completely damaged; or are being used for non-education purposes. Overall, some 4.5 million children are out of school, among them displaced children; and it's a struggle to manage crowded classrooms and overstretched teachers⁶².

Because Yemen is so exposed to climate change—meaning temperature rise, extreme weather events, water scarcity, food insecurity, and displacement—it exacerbates the existing challenges due to conflict and economic instability impacting the different groups in unique ways.

Children are the hardest hit: 2.2 million are suffering from acute malnutrition, exacerbated by droughts, floods, and crop failures. Diseases such as cholera spread like wildfire because of polluted water sources, while school dropout numbers swell as more families opt out for survival over education. Many are forced into child labor or early marriage due to economic stress. Women and girls are at a higher risk of gender-based violence, especially in displacement camps, and lack access to water, health care, and economic opportunities⁶³.

The elderly are at risk from heat stress and dehydration, worsening chronic conditions, whereby immobility limits the ability to evacuate. It is difficult for people with disabilities to respond, access health services, and, therefore, one of the most susceptible groups in a disaster situation. The water shortage and crop failure hit the rural communities, farmers, the hardest, and fuel poor resource conflicts with high prices of food⁶⁴.

At risk are the IDPs, numbering more than 4.5 million people, living in overcrowded camps without clean water, sanitation, and healthcare. They are exposed to disease and potential further displacement from flooding, heatwaves, and poor infrastructure. Many displaced children are at risk of trafficking, labor exploitation, or recruitment by armed groups⁶⁵.

4.5.2. Approaches to Address Climate Change Impact on Education and Protection

Education Initiatives YFCA incorporates climate awareness and sustainability concepts into education programs, equipping communities with knowledge and tools for climate adaptation. These initiatives are implemented in Taiz, with funding from the Hilton Foundation.

1. Climate change awareness campaigns & school awareness programs

YFCA Organizing campaigns in schools to educate students and teachers about the causes, effects, and potential consequences of climate change. These programs highlight the importance of both individual and collective actions in mitigating and adapting to the climate crisis.



2. Training on Climate Change

YFCA Conducting training sessions that address global and context-specific challenges related to climate change. These sessions emphasize shared responsibility and collaborative solutions.

3. Installation of solar power systems promoting clean energy

As part of our commitment to reducing carbon emissions, we prioritize the installation of solar power systems in educational settings. We also focus on repairing and maintaining existing solar systems to ensure they provide a reliable and sustainable power supply to schools.

Regarding protection, YFCA has taken a comprehensive approach to address the protection needs of the most vulnerable populations. The following sections outline some of YFCA's approaches:

1. Identifying Protection Needs

YFCA focuses on understanding, recognizing, and addressing the special needs of the most vulnerable: women, children, the elderly, and persons with disabilities, often the hardest hit by disaster-related climate change and displacement.

2. Implementing Protection Mechanisms

Developing and designing measures to be put in place for the prevention of and response to risks, including gender-based violence, human trafficking, and other forms of violence that may emerge in the context of climate-related crises.

3. Advocacy for Rights and Inclusion

YFCA advocates for the rights of affected communities to be represented in climate change adaptation and disaster risk reduction decision-making. Their voices and perspectives help shape solutions.

4. Collaboration with Local Authorities

Working collaboratively with local authorities and community-based organizations to strengthen community-level protection systems and enhance the resilience of local support networks.

4.6. Health and Nutrition

4.6.1. Climate Change Impacts on Health and Nutrition

Climate change is intensifying Yemen's existing health and nutrition challenges, disproportionately affecting vulnerable populations. Factors like rising temperatures, altered rainfall patterns, and extreme weather events contribute to a precarious situation ^{66 67}

Increased Disease Outbreaks

Climate change fosters conditions conducive to the spread of communicable diseases ⁶⁸. With heavy rains and droughts, diseases like cholera, dengue, and malaria are likely to persist and intensify, severely jeopardizing vulnerable lives and escalating morbidity and mortality ^{69 70}. Yemen is already grappling with rising rates of infectious diseases, including measles and polio, with a concerning rate of unvaccinated children (28%) increasing susceptibility to preventable outbreaks⁷¹. In 2024, there



were close to 20,000 cases of measles and rubella with 183 deaths. Additionally, there were 186,000 suspected cholera cases and 680 deaths reported across 22 governorates⁷².

Malnutrition and Food Insecurity

With changing weather patterns and extreme events, food production is affected, and the situation is worsened for refugees with 85% of displaced families being unable to meet their daily food needs⁷³. By 2060, it is projected that 3.8 million more people would suffer from malnutrition in Yemen if climate action to build resilience is not undertaken⁷⁴. In 2025, an additional 483,000 children are expected to receive treatment for severe waste, a condition where children are too thin for their height⁷⁵.

Water Scarcity and Sanitation

Climate change has specific impacts on water resources, as air temperature increases resulting in increasing evaporation, declining precipitation, and changing weather patterns that are contributing to water scarcity⁷⁶. 17.4 million people in Yemen lack access to safe water, sanitation and hygiene services, leaving many children vulnerable to cholera and other waterborne diseases⁷⁷.

Infrastructure Damage and Displacement

Severe flooding killed at least 97 people in August 2024 and exacerbated food shortages for millions already displaced by years of war⁷⁸. The floods also damaged at least 56,000 homes across Yemen, while some 33,000 families have been impacted since the start of the monsoon season in mid-July⁷⁹. Increased storm surges and floods have led to displacement, injuries, and loss of life⁸⁰.

Vulnerable Populations

Climate change exacerbates existing health challenges in Yemen, leading to increased healthcare costs and strain on already fragile health infrastructure⁸¹. Extreme heat can increase morbidity and mortality of the most vulnerable such as older people, especially those above 65 years of age; people with pre-existing health conditions, such as heart disease, respiratory illness, and diabetes⁸².

4.6.2. Approaches to address the Climate Change Impact on Health and Nutrition

With thoughtful consideration, YFCA has put in place interventions to build climate resilience and promote sustainability in practices of vulnerable populations in the health and nutrition sectors. These interventions are designed to safeguard essential services during climate-related disruptions while fostering long-term environmental sustainability, including renewable energy solutions, improvement of waste management, resilient infrastructure, and comprehensive community outreach etc.

Below are some of the key approaches YFCA has implemented to enhance climate resilience and promote sustainable practices in the health and nutrition sectors.

1. Solar Power Installation and Extension

This was achieved through the installation and expansion of solar energy systems in targeted health facilities across Al Mahweet, Al Dhalea, Marib, Hajjah, and Sa'ada. A key objective of this intervention was to reduce reliance on non-renewable sources of energy and ensure the continuity of power



supply during disruptions wrought by climate variability. YFCA has improved operational resilience of these health facilities by switching to renewable solar energy, which guarantees the continuity of health service provision even in extreme environmental conditions.

2. Waste Management Enhancement

This effort focused on improving medical waste management practices in health facilities; for example, in Al Mahweet, Al Dhalea, Marib, Aden, and Sa'ada YFCA constructed and rehabilitated incinerators while providing regular training for health workers on sustainable waste management practices. These practices include proper segregation, recycling, and the safe disposal of medical and non-medical waste. This approach ensures that health facilities can manage waste effectively, minimizing environmental and public health risks during climate-related disruptions.

3. Climate-Resilient Health Facility Rehabilitation

Recognizing the urgent need to safeguard healthcare services from the impacts of climate change, YFCA has taken proactive steps to upgrade and strengthen health facilities, making them more resilient to extreme weather conditions. For example, In governorate like Marib, Al Jawf, Amanat Al Asimah, Hadhramout, and Hajjah, YFCA has carried out extensive rehabilitation and maintenance of several health facilities. YFCA has strengthened the physical infrastructure of these facilities through the use of climate-resilient construction materials and techniques in modern designs. The facilities are therefore able to provide essential health services during floods, storms, or other climate-related emergencies, enhancing the resilience of the health sector to the growing impacts of climate change.

4. Community Health Awareness

To address the growing health risks posed by climate change, for example, YFCA mobilized community health volunteers (CHVs) to conduct targeted awareness sessions in several regions, including Al Dhalea and Al Hodeidah governorates. These well-trained CHVs delivered sessions focused on the connection between climate change and health risks, such as vector-borne diseases, heat-related illnesses, and waterborne diseases. YFCA aimed to raise public awareness and prepare for climate-induced health hazards through engaging and empowering communities with preventive health measures. This approach was designed to reduce vulnerability and strengthen community resilience against the growing impacts of climate change.

5. Environmentally Responsible Nutrition Practices

To promote both health and environmental sustainability, YFCA launched an initiative training hundreds of community health volunteers to educate mothers on the sustainable handling and use of nutrition supply packages. This approach ensures that nutritional interventions are delivered in an eco-friendly way, minimizing waste and fostering sustainable practices at the household level. Through this program, YFCA not only improves the impact of nutrition services but also supports environmentally conscious behaviors, contributing to wider conservation efforts.



Endnote

- ¹ United Nations Office for the Coordination of Humanitarian Affairs (OCHA). (2024). Humanitarian Needs Overview: Yemen.
- ² UN NEWS (2022). Yemen facing 'outright catastrophe' over rising hunger, warn UN humanitarians.
- ³ United Nations Office for the Coordination of Humanitarian Affairs (OCHA). (2024). Humanitarian Needs Overview: Yemen.
- ⁴ <https://reliefweb.int/report/yemen/yemen-flood-operation-update-1-mdrye014>
- ⁵ <https://www.rescue.org/press-release/yemen-flooding-crisis-deepens-cholera-spreads-irc-launches-emergency-response>
- ⁶ <https://concernusa.org/news/hunger-in-yemen/>
- ⁷ <https://reliefweb.int/report/yemen/yemen-flood-operation-update-1-mdrye014>
- ⁸ <https://reliefweb.int/report/yemen/agrometeorological-early-warning-bulletin-21-31-july-2024-enar>
- ⁹ https://knowledge4policy.ec.europa.eu/publication/yemen-climate-development-report_en
- ¹⁰ <https://reliefweb.int/report/yemen/gIEWS-country-brief-yemen-31-october-2024>
- ¹¹ https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies?gad_source=1&gclid=Cj0KCQjwvwp-
- ¹² https://www.kpsrl.org/sites/default/files/2018-03/a_real_tragedy%20%285%29.pdf
- ¹³ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ¹⁴ Ibid
- ¹⁵ Ibid
- ¹⁶ https://www.kpsrl.org/sites/default/files/2018-03/a_real_tragedy%20%285%29.pdf
- ¹⁷ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ¹⁸ https://pdf.usaid.gov/pdf_docs/PA00MX8Q.pdf
- ¹⁹ https://reliefweb.int/report/yemen/yemen-humanitarian-needs-overview-2024-january-2024-enar?gad_source=1&gclid=Cj0KCQjwzva1BhD3ARIsADQuPnW8XPVvypCMqP8zoApb_fXIng8v004qhsAuDN_boswy48clGzkGWuEaAo
- ²⁰ https://www.undp.org/sites/g/files/zskgke326/files/2023-11/impact_of_climate_change_on_human_development_in_yemen.pdf
- ²¹ Yemen 2023 IFRC network country plan (MAAYE001)
- ²² Ibid
- ²³ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ²⁴ <https://environmentalmigration.iom.int/sites/g/files/tmzbd1411/files/documents/2024-03/yemen-desk-review.pdf>
- ²⁵ <https://reliefweb.int/report/yemen/yemen-flood-flash-update-no-01-09-august-2024-enar>
- ²⁶ <https://www.usaforunfpa.org/in-yemen-climate-crisis/>
- ²⁷ <https://www.yemenwatcher.org/en/post/yemen-faces-increasing-climate-challenges-we-must-shift-to-sustainable-adaptive-strategies>
- ²⁸ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ²⁹ https://www.climatecentre.org/wp-content/uploads/RCCC-ICRC-Country-profiles-Yemen_2022-Final-1.pdf
- ³⁰ <https://environmentalmigration.iom.int/sites/g/files/tmzbd1411/files/documents/2024-03/yemen-desk-review.pdf>
- ³¹ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ³² <https://yemen.un.org/en/224345-being-change-yemen-improving-integrated-water-resources-management-food-security>
- ³³ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ³⁴ https://www.climatecentre.org/wp-content/uploads/RCCC-ICRC-Country-profiles-Yemen_2022-Final-1.pdf
- ³⁵ <https://www.washingtoninstitute.org/policy-analysis/palms-sands-how-climate-change-destroying-green-yemen>
- ³⁶ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/979121468153566240/yemen-assessing-the-impacts-of-climate-change-and-variability-on-the-water-and-agricultural-sectors-and-the-policy-implications>
- ³⁷ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ³⁸ <https://reliefweb.int/report/yemen/undp-yemen-combatting-effects-climate-change-build-food-security-yemen>
- ³⁹ <https://www.undp.org/yemen/news/combatting-effects-climate-change-build-food-security-yemen>
- ⁴⁰ <https://www.washingtoninstitute.org/policy-analysis/palms-sands-how-climate-change-destroying-green-yemen>
- ⁴¹ https://www.kpsrl.org/sites/default/files/2018-03/a_real_tragedy%20%285%29.pdf
- ⁴² <https://www.ipcinfo.org/ipc-country-analysis/details-map/en/c/1157981/>



- ⁴³ <https://reliefweb.int/report/yemen/yemen-ipc-acute-food-insecurity-analysis-july-2024-february-2025-published-16-october-2024>
- ⁴⁴ <https://www.actioncontrelafaim.org/en/press/food-security-continues-to-deteriorate/>
- ⁴⁵ <https://reliefweb.int/report/yemen/yemen-food-security-outlook-update-assistance-paused-some-sba-areas-deteriorate-emergency-ipc-phase-4-december-2023>
- ⁴⁶ https://knowledge4policy.ec.europa.eu/publication/yemen-economic-monitor-spring-2024_en
- ⁴⁷ <https://www.worldbank.org/en/news/press-release/2024/11/20/navigating-climate-challenges-amidst-conflict-pathways-for-yemen-s-future>
- ⁴⁸ https://sheltercluster.s3.eu-central-1.amazonaws.com/public/docs/Yemen%20Shelter%20Cluster%20Strategy%202025-2028%20Final_0.pdf?VersionId=.IU6SB6HCStYaaZoEIPYd.0tYATTjSgy
- ⁴⁹ <https://www.unrefugees.org/news/yemen-crisis-explained/>
- ⁵⁰ <https://reliefweb.int/report/yemen/yemen-shelter-cluster-flood-preparedness-and-emergency-response-plan-2024>
- ⁵¹ <https://www.washingtoninstitute.org/policy-analysis/palms-sands-how-climate-change-destroying-green-yemen>
- ⁵² https://www.acaps.org/fileadmin/Data_Product/Main_media/20240829_ACAPS_Middle_East_Hub_Impacts_of_2024_heavy_rains_in_Yemen.pdf
- ⁵³ <https://reliefweb.int/report/yemen/yemen-shelter-cluster-flood-preparedness-and-emergency-response-plan-2024>
- ⁵⁴ <https://arabcenterdc.org/resource/climate-change-a-new-battlefield-in-yemens-ongoing-conflict/>
- ⁵⁵ <https://environmentalmigration.iom.int/sites/g/files/tmzbd11411/files/documents/2024-03/yemen-desk-review.pdf>
- ⁵⁶ <https://www.washingtoninstitute.org/policy-analysis/palms-sands-how-climate-change-destroying-green-yemen>
- ⁵⁷ <https://arabcenterdc.org/resource/climate-change-a-new-battlefield-in-yemens-ongoing-conflict/>
- ⁵⁸ https://knowledge4policy.ec.europa.eu/publication/yemen-climate-development-report_en
- ⁵⁹ https://www.climatecentre.org/wp-content/uploads/RCCC-ICRC-Country-profiles-Yemen_2024_final.pdf
- ⁶⁰ <https://yemen.un.org/en/287505-yemen-humanitarian-needs-and-response-plan-2025-january-2025#:~:text=The%202025%20Humanitarian%20Needs%20and,operating%20environment%20and%20existing%20capacities.>
- ⁶¹ <https://south24.net/news/newse.php?nid=4295>
- ⁶² <https://reliefweb.int/report/yemen/learning-all-more-children-more-classrooms>
- ⁶³ <https://reliefweb.int/report/yemen/growing-changing-climate-impact-children-middle-east-and-north-africa>
- ⁶⁴ Ibid
- ⁶⁵ Ibid
- ⁶⁶ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ⁶⁷ <https://www.worldbank.org/en/news/press-release/2024/11/20/navigating-climate-challenges-amidst-conflict-pathways-for-yemen-s-future>
- ⁶⁸ <https://www.emro.who.int/images/stories/yemen/health-emergency-appeal-in-yemen.pdf?ua=1>
- ⁶⁹ Ibid
- ⁷⁰ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ⁷¹ <https://www.emro.who.int/images/stories/yemen/health-emergency-appeal-in-yemen.pdf?ua=1>
- ⁷² <https://www.unicef.org/media/165851/file/2025-HAC-Yemen.pdf>
- ⁷³ <https://www.washingtoninstitute.org/policy-analysis/palms-sands-how-climate-change-destroying-green-yemen>
- ⁷⁴ <https://reliefweb.int/report/yemen/impact-climate-change-human-development-yemen>
- ⁷⁵ <https://www.unicef.org/media/165851/file/2025-HAC-Yemen.pdf>
- ⁷⁶ Ibid
- ⁷⁷ <https://www.unicef.org/media/165851/file/2025-HAC-Yemen.pdf>
- ⁷⁸ <https://www.washingtoninstitute.org/policy-analysis/palms-sands-how-climate-change-destroying-green-yemen>
- ⁷⁹ Ibid
- ⁸⁰ <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>
- ⁸¹ <https://www.worldbank.org/en/country/yemen/publication/yemen-country-climate-and-development-report>
- ⁸² <https://reliefweb.int/report/yemen/climate-change-impacts-yemen-and-adaptation-strategies>