GEF-8 PROJECT IDENTIFICATION FORM (PIF)

TABLE OF CONTENTS

General Project Information

Project Title	
Building Climate Resilience for Vulnerable Groups in Rural and Urban Areas of Yemen	
Region	GEF Project ID
Yemen	11717
Country(ies)	Type of Project
Yemen	FSP
GEF Agency(ies):	GEF Agency ID
UNDP	10120
Executing Partner	Executing Partner Type
UNDP	GEF Agency
GEF Focal Area (s)	Submission Date
Multi Focal Area	9/18/2024
Project Sector (CCM Only)	
Climate Change Adaptation Sector	
Taxonomy	
Influencing models, Transform policy and regulatory environments, Strengthen institutional capacity and decision-making, Convene multi-stakeholder alliances, Demonstrate innovative approache, Deploy innovative financial instruments, Stakeholders, Private Sector, SMEs, Individuals/Entrepreneurs, Civil Society, Local Communities, Beneficiaries, Type of Engagement, Information Dissemination, Partnership, Consultation, Participation, Community Based Organization, Non-Governmental Organization, Communications, Awareness Raising, Education, Capacity, Knowledge and Research, Capacity Development, Knowledge Generation, Learning, Theory of change, Adaptive management, Gender Equality, Gender Mainstreaming, Sex-disaggregated indicators, Women groups, Gender results areas, Access and control over natural resources, Participation and leadership, Access to benefits and services, Land Degradation, Land Degradation Neutrality, Land Cover and Land cover change, Sustainable Land Management, Restoration and Rehabilitation of Degraded Lands, Ecosystem Approach, Sustainable Livelihoods, Improved Soil and Water Management Techniques, Income Generating Activities, Climate Change, Climate Change Adaptation, Least Developed Countries, Climate resilience, Livelihoods, Ecosystem-based Adaptation, Community-based adaptation, Climate Change Mitigation, Renewable Energy, Focal Areas, Sustainable Development Goals	
Type of Trust Fund	Project Duration (Months)
MTF	60
GEF Project Grant: (a)	GEF Project Non-Grant: (b)
19,883,486.00	0.00
Agency Fee(s) Grant: (c)	Agency Fee(s) Non-Grant (d)
1,789,514.00	0.00
Total GEF Financing: (a+b+c+d)	Total Co-financing

21,673,000.00	61,100,000.00
PPG Amount: (e) 300,000.00	PPG Agency Fee(s): (f) 27,000.00
PPG total amount: (e+f) 327,000.00	Total GEF Resources: (a+b+c+d+e+f) 22,000,000.00
Project Tags CBIT: No NGI: No SGP: No Innovation: No	

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. The explanation and justification of the project should be in section B "project description".(max. 250 words, approximately 1/2 page)

Recent years have seen an increasing frequency of both flooding events and drought episodes across Yemen, and climate change projections indicate that these hazards will continue to worsen. Intensified rainfall during the rainy season has led to more frequent flash floods, particularly in the western highlands and coastal plains, which have devastating impacts on water systems and agricultural terraces. Flooding contributes to surface water contamination, damage to irrigation infrastructure, and soil erosion, which reduces the long-term availability of water for both household and agricultural use.

Simultaneously, Yemen's increasing temperatures and irregular rainfall patterns have worsened drought conditions. Prolonged droughts deplete groundwater reserves and diminish rainfed agricultural yields, which are vital to the food security of subsistence farmers in the targeted districts. The combined effect of these hazards is mounting food and water insecurity, as communities struggle with both immediate crop and livestock losses from flooding and long-term productivity declines due to extended drought periods."

Yemen is highly vulnerable to worsening climate hazards, including prolonged droughts, more frequent and intense floods, rising temperatures, and land degradation. These hazards severely affect rainfed agriculture, water resources, and food security, particularly in rural areas. The project aims to support communities in 21 districts across 5 governorates in Yemen where households are acutely vulnerable to climate change risks due to their reliance upon traditional rainfed agricultural practices; fragile and/or degraded water availability; deep poverty levels; lack of access to modern energy services; **The project's primary objective** is to increase the resilience of vulnerable households to climate change impacts in 21 districts across 5 governorates. This will be achieved by addressing food and water insecurity through an integrated approach to sustainable land and water management and climate-smart agriculture. The project will focus on promoting improved livestock husbandry, introducing climate-resilient agricultural practices, increasing access to modern energy services, and strengthening local capacity to adapt to climate risks.

The overarching development objective is to foster long-term, systemic change by shifting from unsustainable dryland farming practices to climate-resilient systems across the region. This broader goal will be achieved by enhancing water and land conservation, fostering sustainable agricultural production, and building institutional and community capacity for climate adaptation. The project will also contribute to knowledge-sharing and climate services that support wider climate resilience and sustainable development across the targeted areas.

The project will achieve its climate resilient development objective through the implementation of four components. Component 1 (water and land conservation) involves i) developing sustainable integrated water resources management plans to optimize water capture and storage capacities through innovative techniques and traditional methods; ii) rehabilitating and expanding existing water harvesting and storage systems to improve efficiency in targeted communities; and iii) reusing treated wastewater and greywater for ecosystem restoration efforts to enhance water availability. Component 2 (climate-resilient practices) involves i) improving spatial and land use planning to facilitate sustainable production practices; ii) rehabilitating and protecting water micro-sheds and irrigation canals in selected areas; iii) deploying climate resilient agriculture technologies to enhance agricultural productivity through innovative financial mechanism; iv) improving livelihood income diversification through Ecosystem-based Adaptation (EbA) approaches; and v) expanded access to climate-resilient energy technologies that support community-level water security, income-generating activities, and adaptive capacity to extreme temperatures and heatwaves.. Co . Component 4 (knowledge management) involves i) developing a strategy for mainstreaming climate change awareness into the communities and education systems; ii) developing a model for climate-resilient communities and awareness-raising; iii) implementing an effective Monitoring and Evaluation Plan; and iv) enhancing knowledge management and sharing through digitization of products.

The project's global environmental benefits are associated and aligned with the GEF's LDCF programming directions that focus on enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with the view to contributing to sustainable development and ensuring adequate adaptation response in the context of the temperature goal of the Paris Agreement. Project activities will improve the provision of agro-ecosystem goods and services as well as the conservation and sustainable use of natural resources in productive agricultural landscapes. The project will also ensure local adaptation benefits that are associated with increased resilience against adverse impacts of climate change among traditional subsistence farming households and communities. The delivery of both global and local benefits is an outflow from achieving the four components of the project.

Indicative Project Overview

Project Objective

Increase resilience of vulnerable households against the impacts of climate change through enhanced food security, improved land/water resource management, improved livestock husbandry, increased access to modern energy services, and strengthened local capacity in selected districts across five governorates in Yemen

Project Components

Water/land conservation

Component Type	Trust Fund
Investment	LDCF
GEF Project Financing ($)	Co-financing ($)
4,446,484.00	20,500,000.00

Outcome:

1. Enhanced water availability and energy reliability during the dry seasons and extreme climatic events

Output:

1.1 Sustainable integrated Water resources management plans for selected districts
1.2 Increased community capacity for water capture, harvesting, and storage for water access to support agriculture and resilient livelihoods
1.3 Maximise the utilization of , wastewater and greywater treatment and reuse for ecosystem reforestation to reduce soil and land degradation; increase green cover within schools; and reduce natural resources contamination through innovative nature-based technologies.

Climate-resilient practices

Component Type	Trust Fund
Investment	LDCF
GEF Project Financing ($)	Co-financing ($)
8,442,176.00	15,500,000.00

Outcome:

2. Enhanced climate-resilient ecosystems, Agriculture including smart technologies, education systems, and income diversification practices for vulnerable groups

Output:

2.1 Improved spatial and land use planning to facilitate sustainable production practices to improve livelihoods of for local communities in selected districts
2.2 Rehabilitation & protection of degraded irrigation canals and micro-watersheds in selected districts to improve water access and distribution for agricultural and livestock water supply during dry seasons
2.4 Deployment of Smart agriculture technologies to enhance agricultural productivity through innovative financial mechanism.
2.3 Improved livelihood diversification through Ecosystem-based Adaptation (EbA) approaches in the targeted districts
2.5 Expanded access to climate-resilient energy technologies that support community-level water security, income-generating activities, and adaptive capacity to extreme temperatures and heatwaves

Climate-resilient practices

Component Type	Trust Fund
Investment	GET
GEF Project Financing ($)	Co-financing ($)
1,300,000.00	11,000,000.00

Outcome:

2. Enhanced climate-resilient ecosystems, Agriculture including smart technologies, education systems, and income diversification practices for vulnerable groups

Output:

2.5 Expanded access to climate-resilient energy technologies that support community-level water security, income-generating activities, and adaptive capacity to extreme temperatures and heatwaves

Capacity building

Component Type	Trust Fund
Technical Assistance	LDCF
GEF Project Financing ($)	Co-financing ($)
2,373,242.00	7,500,000.00

Outcome:

3. Enhanced climate risk information availability and capacities of stakeholders including local communities, assosiations, local government institutions, and education systems

Output:

3.1 Established enabling environment for climate-resilient education systems at primary/secondary schools in selected districts
3.2: Developed Climate hazard maps, disaster risk information networks, climate services and real-time access, hydrologic maps, and climate risk scenarios in all targeted districts 3.4 Tailored capacity building and trainings for various stakeholders, including government officials, community leaders, local NGOs/CSOs and local SMEs in the area of climate resilience sustainable livelihood.

Capacity Building

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
250,000.00	1,000,000.00

Outcome:

3. Enhanced climate risk information availability and capacities of stakeholders including local communities, assosiations, local government institutions, and education system

Output:

3.3 Developed pre-feasibility studies, business models and investment plans for the development and diffusion of solar PV technology in selected districts.

Knowledge management

Component Type	Trust Fund
Technical Assistance	LDCF
GEF Project Financing ($)	Co-financing ($)
1,182,720.00	1,500,000.00

Outcome:

4. Increased capacities, learning, and collaboration among all relevant stakeholders for project-affected sectors

Output:

4.1 Developed strategy for mainstreaming climate change awareness into the communities and education systems

4.2: Model for Climate-resilient communities developed and awareness-raising.

4.3: Knowledge management enhanced through digitisation of gender-sensitive knowledge products

M&E

Component Type	Trust Fund

Technical Assistance	LDCF
GEF Project Financing ($)	Co-financing ($)
954,002.00	500,000.00

Outcome:

M&E

Output:

Effective Monitoring and Evaluation Plan implemented, including (i) Conducting inception workshop and preparing report, (ii) Ongoing M&E, and (iii) Terminal Evaluation (TE).

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
34,862.00	500,000.00

Outcome:

M&E

Output:

Effective Monitoring and Evaluation Plan implemented, including (i) Conducting inception workshop and preparing report, (ii) Ongoing M&E, and (iii) Terminal Evaluation (TE).

Component Balances

Project Components	GEF Project Financing ($)	Co-financing ($)
Water/land conservation	4,446,484.00	20,500,000.00
Climate-resilient practices	8,442,176.00	15,500,000.00
Climate-resilient practices	1,300,000.00	11,000,000.00
Capacity building	2,373,242.00	7,500,000.00
Capacity Building	250,000.00	1,000,000.00
Knowledge management	1,182,720.00	1,500,000.00
M&E	954,002.00	500,000.00

M&E	34,862.00	500,000.00
Subtotal	**18,983,486.00**	**58,000,000.00**
Project Management Cost	700,000.00	1,550,000.00
Project Management Cost	200,000.00	1,550,000.00
Total Project Cost ($)	**19,883,486.00**	**61,100,000.00**

Please provide justification

PROJECT OUTLINE

A. PROJECT RATIONALE

Briefly describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

Country Background:

Yemen, officially known as the Republic of Yemen, is a country located at the southern tip of the Arabian Peninsula. It shares borders with Saudi Arabia to the north and Oman to the east, while its western coastline is bordered by the Red Sea and the Arabian Sea to the south. The country has a total area of approximately 527,968 square kilometers, making it one of the larger nations in the region. Yemen is known for its rich cultural heritage, diverse landscapes, and strategic location, which has historically made it a crossroads for trade and cultural exchange.

As of 2022, Yemen's population is estimated to be around 33.7 million people, making it the most populous country on the Arabian Peninsula after Iraq and Saudi. The population is predominantly concentrated along the western and southwestern coasts and in the highlands, where the geography provides more favorable conditions for habitation and agriculture. Despite a growing trend toward urbanization, a significant majority of the population (approximately 60.8%) still resides in rural areas, relying on agriculture and pastoralism for their livelihoods.

Yemen's geography is characterized by a diverse range of landscapes, including coastal plains, mountain ranges, and desert regions. The western highlands are home to some of the highest elevations in the Arabian Peninsula, with peaks reaching over 3,000 meters. This mountainous terrain is interspersed with fertile valleys that support agriculture, particularly in the cultivation of coffee, qat, and various fruits and vegetables. The coastal areas, on the other hand, are characterized by hot and arid conditions, with limited rainfall and high evaporation rates, which significantly impact agricultural practices in these regions.

The country is characterized by a predominantly arid to semi-arid climate, with significant variations in temperature and precipitation across different regions. Yemen's can be classified into several distinct zones,

primarily influenced by its topography, geographical location, and prevailing climatic systems. The classification of Yemen's climate can be understood through the lens of several climatic zones: coastal, highland, desert, and inland plains.

1. Coastal Climate: The coastal areas of Yemen, particularly along the Red Sea and the Arabian Sea, experience a hot desert climate (BWh according to the Köppen climate classification). These regions are characterized by high temperatures, especially in summer, and low annual rainfall, typically less than 100 mm. The humidity levels can be high due to proximity to the sea, but the overall aridity limits vegetation growth to drought-resistant species.

2. Highland Climate: The western highlands of Yemen, including regions like Taiz and Dhamar, exhibit a more temperate climate due to their elevation. This area receives significantly more rainfall, ranging from 500 mm to 800 mm annually, and experiences cooler temperatures, particularly in winter. The presence of the Indian Ocean Monsoon influences this region, bringing seasonal rains that support more diverse vegetation compared to the arid lowlands. The highlands are crucial for agriculture, as they provide more favorable conditions for crop cultivation.

3. Desert Climate: The eastern and southern parts of Yemen are dominated by a desert climate, characterized by extremely low rainfall (often below 50 mm annually) and high temperatures, particularly in the summer months. This region is part of the larger Arabian Desert system, where vegetation is sparse, primarily consisting of xerophytes and other drought-resistant flora. The harsh conditions limit human settlement and agricultural activities, leading to reliance on water conservation strategies.

4. Inland Plains: The inland plains, particularly in the central part of Yemen, experience a transitional climate between the highlands and desert regions. These areas may receive moderate rainfall, but they are still subject to significant evaporation rates due to high temperatures. The agricultural potential in these regions is limited, but some crops are cultivated where irrigation is feasible.

Yemen’s Current and Observed Climate Trends

Yemen's weather is characterized by significant regional variability. Coastal areas, such as Aden and Al Hudaydah, experience hot and humid conditions, especially during the summer months, where temperatures can soar above 40°C. In contrast, the western highlands, including cities like Sana'a and Taiz, enjoy milder temperatures due to their elevation, with average summer temperatures around 20°C. The interplay between these climatic conditions results in a diverse range of weather patterns across the country.

One of the most significant observed trends in Yemen is the increase in average temperatures. Data indicate that Yemen has experienced a rise in temperature of approximately 1°C over the last century, with projections suggesting that this trend will continue. This increase in temperature has been associated with a rise in the number of extreme heat days, which can have severe implications for public health, agriculture, and water resources. The World Bank's assessments highlight that Yemen is already facing a higher incidence of heat-related illnesses, particularly among vulnerable populations. The increase in extreme heat days is particularly concerning for rural communities that rely on agriculture, as crops are sensitive to temperature fluctuations. Near surface temperatures along coastal, plateau, and highland agroecological zones have shown steady increases since 1960, with average temperature increases of 0.12, 0.11, and 0.14 °C per decade in these zones, respectively (see **Figure 1**).

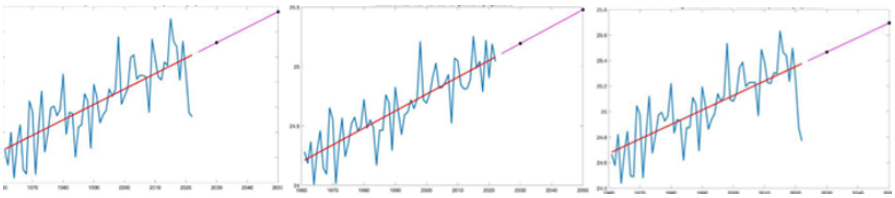


Figure 1 - Historical trends for average near-surface temperature (°C) across Yemen. Left: Coastal zones (0-500 meters); Middle: Plateau areas (500-1,000 meters); Right: Highlands (above 1,000 meters) (source: CRU TS v4.07 data product).

Precipitation in Yemen is highly variable, with significant disparities between regions. The western highlands receive the most rainfall, with annual totals ranging from 500 mm to 800 mm, while the coastal and desert areas receive much less, often below 100 mm annually. Yemen has been experiencing changes in precipitation patterns. The country has faced recurrent droughts, with several major drought events occurring over the last 30 years. These droughts have had devastating effects on food security and water availability, exacerbating existing vulnerabilities in a country where a significant portion of the population already suffers from malnutrition and food shortages. Over the period of 1971–2020, Yemen experienced significant decreases in annual precipitation along the western and southwestern coastal areas. Al Hudaydah, for example, recorded the largest decrease, with precipitation dropping by an average of **−38.25 mm per decade**, especially during summer (**−15.34 mm per decade**) and fall (**−12.46 mm per decade**). However, other regions, including governorates outside the coastal Tihama zone and east of Abyan, did not exhibit any significant changes in annual or seasonal precipitation trends. **This high level of interannual and seasonal variability** is characteristic of Yemen's climate and reflects the influence of global climatic systems like ENSO and IOD. While significant changes in rainfall intensity have not been conclusively identified, the **increasing variability in seasonal patterns** has disrupted traditional agricultural planning and water management systems. The variability in rainfall has made agricultural planning increasingly difficult, as farmers struggle to adapt to unpredictable weather patterns.

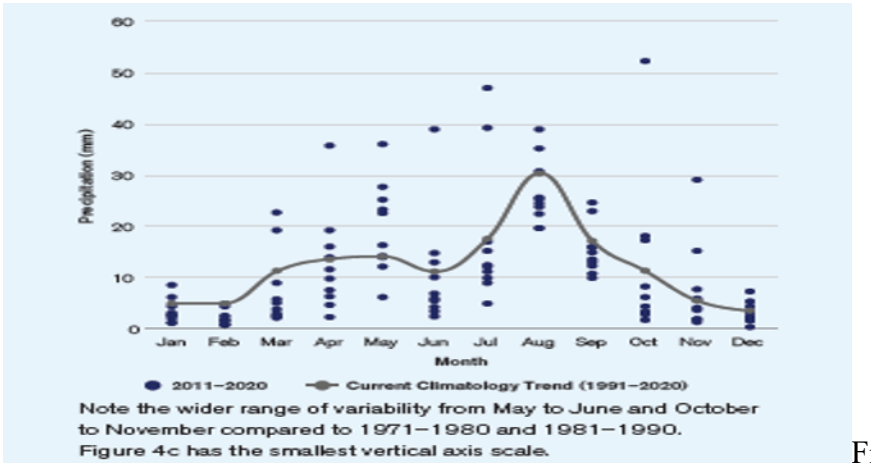


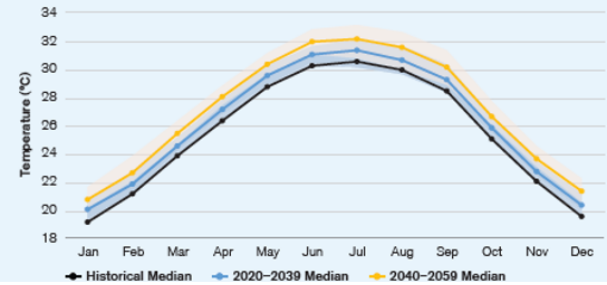
Figure 2 - Historical Precipitation Variability in Yemen (2011–2020)

Moreover, the observed increase in the frequency and intensity of tropical cyclones in the Arabian Sea has significant implications for Yemen's climate. From 1982 to 2019, the frequency of cyclones increased by 52%, while their duration grew by 80%. This trend is closely linked to rising sea surface temperatures and the positive phase of the Indian Ocean Dipole, which have contributed to more intense tropical storms. These cyclones can lead to heavy rainfall and flooding, particularly in coastal areas, complicating the already challenging water management situation in Yemen. The impacts of these cyclones can be devastating, leading to flooding, landslides, and damage to infrastructure, further complicating the humanitarian situation in Yemen.

Climate Change in Yemen

Climate change projections for Yemen indicate a troubling trajectory for the country's environmental and socio-economic landscape. Projected climate scenarios for Yemen indicate a future characterized by significant changes in temperature, precipitation, and the frequency of extreme weather events.

Temperature projections suggest that Yemen will experience a substantial increase in average temperatures over the coming decades. According to climate models, average temperatures in Yemen could rise by 2°C to 4°C by the end of the century, depending on global greenhouse gas emissions. aAdditionally, one of the most alarming projections is the anticipated increase in extreme heat events. Studies indicate that Yemen is likely to experience a higher frequency of days with temperatures exceeding 35°C, which can have dire implications for human health, agriculture, and livestock. The implications of rising temperatures are particularly concerning for public health, as heat stress can lead to increased morbidity and mortality, especially among vulnerable populations such as the elderly and those with pre-existing health conditions.



- Figure 3 - Projected Climatology of Mean Temperature Countrywide for 2020–2039 and 2040–2059

(Ref. Period 1995–2014) Under SSP3-7.0

In terms of precipitation, projections indicate a shift towards more intense and variable rainfall patterns. While some regions may experience increased rainfall, others may face prolonged dry spells and drought conditions. The World Bank's assessments highlight that Yemen has already been affected by recurrent droughts, and this trend is expected to continue, with drought frequency potentially increasing in the coming years. The variability in rainfall poses significant challenges for agricultural planning, as farmers will need to adapt to unpredictable weather patterns that could lead to crop failures and food insecurity.

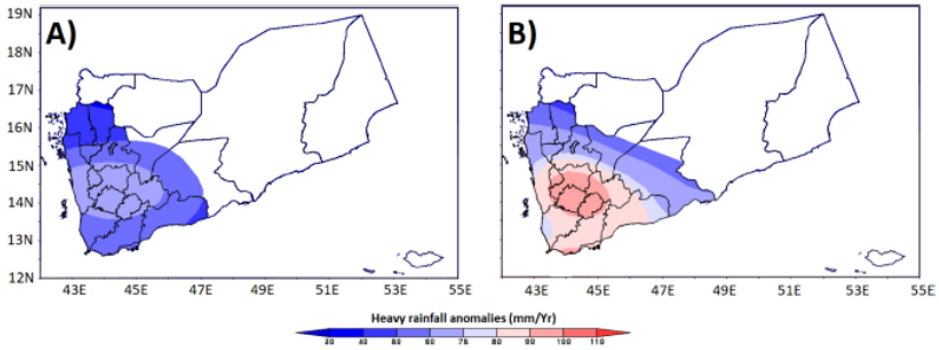


Figure 4 - Heavy rainfall anomalies (R95p, mm/yr) (A) SSP2-4.5 and (B) SSP5-8.5. For the period 2025–2050 with respect to the 1981–2005 baseline.

Moreover, the projected increase in extreme weather events, particularly tropical cyclones, is a significant concern for Yemen. The frequency of tropical cyclones in the Arabian Sea has already increased, and this trend is expected to continue as sea surface temperatures rise. These cyclones can lead to severe flooding, landslides,

and damage to infrastructure, further complicating the humanitarian situation in Yemen. The increased intensity of these storms is likely to have devastating effects on coastal communities, which are already vulnerable due to ongoing conflict and economic instability.

The projections highlight the potential for increased drought frequency and severity in other parts of Yemen. The country has already experienced recurrent droughts over the past three decades, which have severely impacted food security and water availability. The combination of heavier rainfall in some areas and increased drought in others creates a complex scenario that complicates agricultural planning and water resource management. This variability poses significant challenges for farmers who must adapt to unpredictable weather patterns while maintaining crop yields.

Floods and Drought Risk in Yemen

Yemen is increasingly facing the dual threat of both flood and drought risks, with these hazards expected to intensify in the future. Climate projections suggest that the frequency and intensity of flooding events will continue to rise, alongside ongoing risks of drought and water scarcity. These climate-related hazards are exacerbating existing vulnerabilities in the country, particularly for communities already impacted by ongoing conflict. Flooding incidents have become more frequent and severe in Yemen. For instance, in 2020, flash floods caused by intense rainfall killed nearly 150 people and left 300,000 people homeless amid ongoing conflict, according to UNHCR. More recently, the summer rainy season in 2022 was 300% above average annual intensity, leading to widespread water contamination and the displacement of over 100,000 people, particularly in conflict-affected areas like Hajjah, Al Hudaydah, and Marib. Flood hazards in Yemen present multiple risks, including threats to sanitation, hygiene, safety, and critical infrastructure access.

Geographically, the Marib region and surrounding areas are particularly susceptible to river (wadi) flooding, while Dhamar and eastern interior regions are most vulnerable to urban flood hazards. Coastal governorates are also at high risk of coastal flooding. The impact of floods is further aggravated by the destruction of vital infrastructure and disruption of essential services, which worsens the humanitarian crisis across the country.

Adding to this, tropical cyclones are a significant driver of increased flood risk in eastern Yemen. The Arabian Sea has seen a notable rise in cyclone activity, with an increase of 52% in cyclone frequency and an 80% increase in cyclone duration between 1982–2000 and 2001–2019. Cyclones like Cyclone Chapala in 2015, which caused devastating storm surges and brought rainfall many times above average levels, illustrate the increasing intensity of tropical storms. These storms pose the greatest risk to eastern governorates and the Socotra Archipelago.

Despite projections for increased precipitation, drought continues to be a major threat due to Yemen's high interannual precipitation variability and long-standing water scarcity issues. Yemen is one of the most water-stressed countries in the world, with high rates of groundwater extraction exacerbated by agricultural demands and the effects of conflict. Four major droughts have occurred in Yemen over the past 30 years, with the most recent event between 2007 and 2009. Yemen’s vulnerability to drought is further compounded by the health impacts associated with water scarcity, such as malnutrition and the spread of water-borne diseases. Drought-related health risks are especially acute in rural areas, where access to clean water is limited and agricultural livelihoods are highly sensitive to changes in water availability.

Confluence of Conflict and Environmental Degradation in Yemen

The ongoing conflict in Yemen has precipitated one of the most severe humanitarian crises in the world, characterized by widespread physical destruction, economic collapse, and a breakdown of essential public services. The rural population, particularly in coastal governorates, has been disproportionately affected, facing

extreme poverty and reliance on rainfed agriculture and communal resources. The confluence of conflict and environmental degradation exacerbates vulnerabilities, leading to significant displacement, loss of livelihoods, and increased food insecurity. Climate change is intensifying these issues through prolonged droughts, more frequent and severe flooding, and rising temperatures, all of which directly impact agricultural productivity and water availability. These climate hazards further reduce the capacity of rural households to sustain their livelihoods, leading to worsened food insecurity. Yemen is already experiencing significant climate-related challenges, including recurrent droughts that deplete water resources and reduce crop yields, and unpredictable rainfall that makes agricultural planning difficult. The frequency of tropical cyclones in the Arabian Sea has also increased, causing flooding and damage to infrastructure in coastal areas. These climate-related hazards exacerbate the impacts of conflict and environmental degradation, worsening the food insecurity experienced by millions. Yemen ranks 171st on the ND-GAIN Index, with a vulnerability score of 0.521 and a readiness score of 0.244. This places Yemen among the most vulnerable countries to climate change (39th most vulnerable) and among the least prepared to adapt (182nd in readiness). The high vulnerability score reflects Yemen's exposure to climate hazards, particularly in agricultural and water sectors, while its low readiness score underscores the urgent need for investment in adaptive capacity to protect communities from the worsening impacts of climate change. As a result, over 24 million individuals are in need of humanitarian assistance, and millions face acute malnutrition and food shortages.

Box 1: Climate-security-peacebuilding interlinkages

Environmental stress factors aggravate food and water insecurity, the widespread destruction of infrastructure, and the displacement of communities Climate change is exacerbating these stress factors and is now widely acknowledged as a systemic security risk multiplier at local and regional levels. Weather-related effects on armed conflict have been observed to be most prominent in contexts marked by low socioeconomic development, high political marginalization, and high agricultural dependence. Addressing climate change risks within a peacebuilding approach can help counteract societal tensions and potential violence connected to the physical impacts of climate change.

The humanitarian crisis in Yemen is compounded by a fragile health system that has been severely strained by the conflict. The health infrastructure has suffered extensive damage due to the ongoing conflict, leading to a lack of access to essential health services, which is critical in managing outbreaks of diseases such as cholera. Yemen has been grappling with one of the largest cholera outbreaks in history, fueled by the ongoing war and the collapse of public health systems. The combination of food insecurity, malnutrition, and disease outbreaks creates a vicious cycle that threatens the survival of vulnerable populations, particularly children.

The ongoing civil conflict in Yemen has severely exacerbated the country's vulnerability to climate change. Today, more than 750,000 people across key governorates are food insecure, with nearly 477,000 suffering from extreme hunger and malnutrition. Decades of conflict have displaced 4.5 million people from their homes, leaving them without stable livelihoods and exposing them to further environmental shocks. The disruption to public services, including education, health, and infrastructure, has made it difficult for communities to cope with environmental and climate impacts. In addition, conflict has wrecked food

supply systems and cut off most of the population from the public electricity grid, leaving them dependent on scarce resources. In a country with a population of about 34 million, over 24 million people are now at risk of hunger and disease, with 14 million needing immediate assistance and 6 million on the brink of famine.

The interlinkages between climate change and security in Yemen are evident through the ongoing environmental degradation and the socio-economic vulnerabilities that have been exacerbated by the conflict (see **Box 1**). Rural households, already living on the brink of survival, have been forced to sell off assets to cope with immediate needs, which ultimately deepens their reliance on costly food imports and diminishes their resilience to climatic shocks. The impact of climate variability is particularly pronounced in agricultural communities, where droughts and erratic rainfall patterns threaten food production and exacerbate existing vulnerabilities. The ongoing civil conflict has further complicated these challenges, as it disrupts agricultural activities and undermines the capacity of communities to adapt to changing environmental conditions.

In addition to the immediate impacts of the conflict, the long-term consequences of environmental degradation and climate change pose significant threats to Yemen's future stability. The degradation of natural resources, including water scarcity caused by drought and soil erosion, undermines agricultural productivity and exacerbates food insecurity. Addressing these interlinked challenges requires a multifaceted approach that considers both immediate humanitarian needs and long-term strategies for resilience building and sustainable development.

Baseline in the absence of the project, and identify the outcomes that the project needs to achieve, how these will change the baseline

With its arid climate and low level of social development, Yemen is currently vulnerable to various climate-related effects, including flash floods, the salinization of soils and water rising sea levels, extreme temperatures, recurrent drought, and periodic cyclones; despite representing a minuscule share of global emissions of greenhouse gases. Moreover, Yemen is one of the most water-scarce countries in the world where there are no adequate rural water networks and groundwater withdrawal rates are twice the rate of recharge. As a result, millions of Yemenis, including women and children, need to walk long distances to fetch water for basic survival. When combined with deep poverty in rural areas - Yemen ranked 183rd out of 191 countries and territories according to the Human Development Index (HDI) 2021 report – and an unstable national security situation, the baseline situation is one of low human development on which is layered increasing climate change risks and threat of political instability.

Farmer households in the districts where projects activities will be implemented share these essential baseline socioeconomic and climatic characteristics. Traditional rain-fed agriculture remains one of the main livelihood activities supporting more than 50% of households in the targeted districts, with millet, wheat and sorghum the major crops produced. As rainfall has become increasingly unreliable, the continuing dependence on traditional farming methods and seasonal wadis for irrigation have led to crop harvests that are rarely sufficient to meet household food requirements, forcing many households to depend on far-off markets that are difficult to access due to poor road conditions and civil insecurity. Moreover, farming practices have been severely impacted by a chronic shortage of drought-resistant seeds, fertilizer, and fuel. Damage to irrigation infrastructure, farm machinery and crop storage facilities has further constrained water availability by undermining crucial supply chains. When climate shocks occur under these conditions, farmer households are forced to reduce non-essential expenditures, reduce meals, and purchase cheaper foods, with the sale of assets (e.g., livestock) often taken as a last resort. Non-farm employment options remain inadequate for most households.

Box 2: UNDP's area-based approach to development programming

Since 2020, UNDP operations in Yemen have applied an "area-based" approach to support programming in its crisis-affected and complex development landscape. An area-based approach targets specific geographical areas in a country that are characterized by complex development challenge across the humanitarian-development-peace nexus. The underlying principles of the approach are an emphasis on integrated, inclusive, participatory and flexible methods that foster inclusive, conflict-sensitive, and participatory planning, as well as an emphasis on strengthening the capacity of local actors.

To confront this baseline situation, the project will adopt an area-based approach to achieve outcomes in targeted districts within the five governorates (see Box 2). First, there will be enhanced water availability during the dry season and extreme climatic events, such as drought, by increasing water capture and storage capacities, rehabilitating and protecting **water micro-sheds and wadi ecosystems**, promoting the **reuse of wastewater and grey water**, and increasing access to modern energy services. Second, the project will enhance **climate-resilient ecosystems**, including **highland terraces, wadis, and coastal mangroves**, through spatial planning, income diversification, irrigation canal repair, diffusion of climate-resilient agricultural practices, and the establishment of climate-resilient primary/secondary schools. The third outcome will be enhanced climate risk information for smallholder farmers by supporting **community-based climate risk management and preparedness planning**, strengthening local-level information dissemination frameworks, implementing targeted capacity-building programs, and developing strategies for mainstreaming climate change into the education system. The final outcome will be enhanced climate risk information to support **science-based decision-making** regarding climate change adaptation options and the development of climate-resilient school models.

The local changes associated with achieving the above outcomes will fundamentally improve the baseline situation of the targeted districts. The project will provide direct support to farmer households that are currently acutely vulnerable to climate change risks due to their reliance upon traditional agricultural practices; fragile and/or degraded water availability; deep poverty levels; unavailability of moder energy services; and the increasing frequency of drought cycles, which have historically led to mounting food insecurity. Project activities directly address the lack of resilience against climate change impacts by introducing climate-proofing practices and technologies that enhance food security, improve land/water resource management, improve livestock husbandry, introduce tree nurseries at primary/secondary schools, and strengthen local capacity. In essence, the project will promote a paradigm shift in production systems in the targeted districts through an integrated approach that enhances water security, introduces climate-smart agricultural practices, improves access to modern energy services, and involves women in capacity strengthening activities.

Reasons why the project has been selected to address the drivers of environmental degradation and/or climate vulnerabilities in preference to other potential options, and how its outcomes will endure in the face of changes in the drivers described in the future narratives.

The project is part of the overall programme entitled: "Yemen climate resilient and sustainable livelihoods programme". The overall programme aims to build the country's resilience to the impacts of climate change targeting three thematic areas: land, water, and energy, with a focus primarily on rural and peri-urban communities in selected governorates that are acutely vulnerable to the impacts of climate change. The programme has been designed consistent with UNDP's portfolio approach (see **Box 3**) in response to a governmental request to identify strategic projects that are the most closely aligned with those Yemen's priorities outlined in its Intended Nationally Determined Contributions (INDC) focused on water scarcity and food security, as well as the 2004/2007 National Water Sector Strategy and Investment Programme (NWSSIP) which is focused on protecting the interests of stakeholders in water and land resource management. The project is also closely aligned with the 2002 4th Socio-Economic Development Plan for Poverty Reduction (SEDPPR), the 2024 Climate Finance Country Programme, the 2022 Technology Needs Assessment, and the 2009 National Strategy for Renewable Energy and Energy Efficiency (NSREEE), which calls for an increased number of solar PV off-grid installations.

Box 3: UNDP's portfolio approach to strategic planning

The UNDP Yemen portfolio approach is described in the UNDP Yemen Strategic Direction 2023-2025 as a method for continuous learning and adaptability in navigating through complexity and uncertainty of the Yemen development landscape. The approach has been integrated into UNDP Yemen's strategic framework as an effective way to restore livelihoods, promote social cohesion, foster a secure environment for the local communities, and promote economic recovery and development through community-driven resilience building.

The proposed project has been designed to addresses complex and interlinked challenges between livelihoods and climate resilience; is highly aligned with strategic national priorities; addresses urgent needs of vulnerable communities to the current and future impacts of climate change; and it is taking a system approach to exploit synergies of management practices across the agriculture, water, and energy nexus in coastal communities across Yemen. To confront the baseline situation, the project will adopt an area-based approach to achieve the planned outcomes within selected districts across the five governorates (see **Box 3**).

Relevant stakeholders and their roles in the system and how they will be critical to delivering the adaptation benefits and other proposed outcomes.

The project has been designed in close consultation with relevant government agencies as well as local stakeholders living within the targeted districts. The governmental stakeholders that have been engaged thus far include representatives from the Ministry of Agriculture, Irrigation and Fish Wealth (MAIFW) which oversees technically and environmentally appropriate and complementary agricultural and water management activities; the Environment Protection Authority (EPA) which is responsible for overseeing and implementing environmental protection policies and regulations; the General Directorate of Renewable Energy (GDRE) within the Ministry of Electricity and Energy which oversees renewable energy issues and energy access in

Yemen; and the Ministry of Education (MOE) which manages pre-basic, basic, and general secondary education throughout Yemen.

The design of the project is fully in line with the mandate of all ministries. Moreover, the project will coordinate activities and seek to exploit synergies with parallel activities underway or recently completed by the World Bank and donor country projects (e.g., the recently completed Yemen Emergency Electricity Access Project-Phase II). Local ownership of the project will be facilitated through the introduction of regional and community committees formed in all implementation sites to inform and respond to installation issues or requests for information. Members of stakeholder committees will be representatives of key governmental regional institutions, as well as local NGOs and women groups

The local stakeholders that have been engaged thus far include representatives from each of the targeted districts in the five governorates that will participate in the project. The consultations that have taken place thus far are limited field missions in which project team members engaged with men and women residents at some of the proposed project sites. The design of the project reflects in large part the specific needs and challenges identified during these local stakeholder consultations, with additional proposed activities included as a way to bolster project effectiveness. The role of local male and female stakeholders during the project implementation phase will be to participate in water management committees, training activities and any climate-smart piloting initiatives.

The engagement of the above stakeholders throughout the life cycle of the project will ensure global environmental benefits. These benefits are associated with the GEF's LDCF programming directions that focus on enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with the view to contributing to sustainable development and ensuring adequate adaptation response in the context of the temperature goal of the Paris Agreement. Project activities will improve the provision of agro-ecosystem goods and services as well as the conservation and sustainable use of natural resources in productive agricultural landscapes. The project will also ensure local adaptation benefits. These benefits are associated with increased resilience against adverse impacts of climate change among traditional subsistence farming households and communities. The delivery of both global and local benefits is central to achieving the three outcomes of the project.

How the project fits within the current landscape of investments; how the project will build on the baseline and ongoing investments, both GEF and non-GEF, and on lessons learned from previous projects in the country and region, and more widely; and how this approach fits with country priorities.

The project builds on a range of adaptation activities and a range of planning frameworks a district-level scales. Through its emphasis on climate resilience, it will help to yield value added benefits over and above those achieved through past sector-based investments in agriculture, water, and soil/water conservation. As noted in the table below, there have been various complementary projects implemented since 2015. The project aims to build on the lessons learned from these projects, particularly as they related to the enhancing arable land productivity, supporting sustainable livelihoods, and providing access to modern energy services. The project builds upon these parallel activities and as such will be able to introduce additional resilience-building benefits that specifically address the need to build climate resilience and which have not yet been incorporated in these other project initiatives.

Project name and duration	**Donor and budget**	**Project focus**	**Complementarity to current project**
Supporting resilient livelihoods, food security and climate	EU, Sweden (US$ 83 million)	7 governorates	Addresses community conflict reduction and social cohesion; climate adaptation; livelihoods and food security. ERRY III aims to strengthen resilience of the

Project name and duration	Donor and budget	Project focus	Complementarity to current project
adaptation in Yemen (ERRY III)			population in the most vulnerable governorates in Yemen. It is highly complementary to the current project's objectives to develop sustainable livelihoods opportunities through enhancing food security, restoring community assets, improving agricultural value chains, and promoting gender equality and women's economic empowerment
Integrated Water Resources Management to Enhance Resilience of Agriculture (ERA) and Food Security	German Federal Ministry for Economic Cooperation and Development (US$ 16 million)	4 districts in Taiz and Lahj governorates	The ERA and Food Security project aims to address food insecurity, water scarcity, and conflict. It focuses on enhancing livelihoods and agricultural resilience through strategies like integrated water resources management, emergency financial support for food availability, and the provision of input starter kits containing fertilizers, seeds, and other farming necessities. It is highly complementary to the current project's objectives for improving livelihood opportunities through the sustainable management of water resources and the rehabilitation and protection of water micro-sheds.
Strengthening Institutional and Economic Resilience in Yemen (SIERY)	EU (US$ 71 Million)	45 districts	Support local governance systems and boost economic stability by reinforcing resilience of local authorities to respond to both existing and emerging needs of their communities. It is highly complementary to the current project's objectives for strengthening livelihoods, providing private opportunities, and working with smallholder farmers and pastoralists
Yemen Food Security Response and Resilience Project (FSRRP)	World Bank (US$ 127 million)	Wadi Al-Barakani, Al-Ma'afer, Taiz governorate	Construction of gabions to protect farms from torrential floods, protecting 18 hectares of agricultural land where soil had been washed away in floods. It is highly complementary to the current project's objectives for the rehabilitation and protection of water micro-sheds. The project is jointly implemented by UNDP, WFP and FAO.
Yemen Emergency Electricity Access Project (YEEAP)	World Bank (US$ 50 million)	20 governorates	Aims to improve access to electricity in rural and peri-urban areas. providing 3.5 million people, of whom an estimated 48% are women and girls, with new or improved services to electricity, and 700 public services facilities and 100 schools with new or improved electricity services
Renewable Energy improve access to health services and livelihood opportunities (HEAL)	Kuwait Fund for Arab Economic Development (US$ 2.9 million)	5 governorates	Addresses lack of access to energy in health facilities as well as lack of income opportunities for women and youth. Contribute to reduced energy poverty and strengthened resilience capacity of conflict-affected communities through improved health services and sustainable livelihoods.
Yemen Emergency Electricity Access Project (YEEAP)	World Bank (US$ 50 million)	20 governorates	Aims to improve access to electricity in rural and peri-urban areas. providing 3.5 million people, of whom an estimated 48% are women and girls, with new or improved services to electricity, and 700 public services facilities and 100 schools with new or improved electricity services

B. PROJECT DESCRIPTION

Project description

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the PIF guidance document. (Approximately 3-5 pages) see guidance here

The project will be implemented over a 5-year period in the selected districts shown in Figure **5**. These districts were chosen based on the high vulnerability of small holder farmer households to intensifying climate risks, increasing food insecurity, underexploited access to surface water resources from flooding wadis during the rainy seasons, degraded electricity infrastructure, a chronic lack of government agricultural extension services, and relatively good accessibility due to current lack of civil conflicts. Within each of the eight (8) targeted districts in the Abyan and Shabwah governorates, a comprehensive and multifaceted approach is proposed to enhance the climate resilience of local communities through the integration of sustainable agricultural practices, effective water resource management, and robust community engagement. This approach emphasizes the adoption of Integrated Water Resource Management, which promotes the coordinated development and management of water, land, and related resources to maximize economic and social welfare while ensuring the sustainability of vital ecosystems.

Governorates		Districts	
#	Name	#	Name
1	Abyan	1	Ahwar
		2	Al-Mahfad
		3	Loudar
		4	Sarar
2	Aden	5	Al Buraiqah
		6	Al Mansurah
		7	Al Mu'alla
		8	Al Shaikh Othman
		9	At Tawahi
		10	Dar Saa'd
		11	Khur Maksar
		12	Sirah
3	Al Hodeidah-South	13	Al-Khoukhah
		14	Al-Tuheita
		15	Hays
4	Hadramawt	16	Al Mukalla city
		17	Al Mukalla rural
5	Shabwah	18	Bayhan
		19	Markha As Sufla
		20	Nisab
		21	Radum

Figure 5: Targeted governorates and districts

Project activities will focus on enhancing climate resilience through a focus on agricultural and water resource management activities. Several dozen villages will be prioritized on the basis of the following criteria: malnutrition levels, flash flooding risk levels, number of recent drought episodes, accessibility due to current lack of civil conflict; lack of adaptation project activities. For selected villages, project beneficiaries will be small holder farmer households engaged in subsistence rain-fed crop production and livestock raising whose access to their arable land (typically 0.2 to 1.0 hectare) is severely threatened by erosion and land degradation. The project will give priority to the poorest and most disadvantaged socio-economic categories like women, women-headed households and youth. Special consideration will be given to the inclusion of people affected by the ongoing conflict situation, specifically Internally Displaced People (IDPs).

Within each of the thirteen (13) targeted districts in the Aden, Hadramawt, and El Hodeidah governorates, the proposed project activities aim to enhance climate resilience by focusing on several interconnected strategies that address the needs of vulnerable school-aged children and their communities. A primary objective is to increase the resilience of these children to temperature extremes and heatwaves through the provision of clean energy services at primary and secondary schools. This initiative not only aims to improve the learning environment by ensuring comfortable and conducive conditions for education but also seeks to mitigate the adverse effects of climate change on the health and well-being of students. By prioritizing schools that lack access to electricity from any source—whether from the central grid, onsite diesel generators, or existing solar photovoltaic (PV) systems—the project targets those institutions that are most in need of electrification. Schools with access to electricity from the central grid will be considered next in line for support, ensuring that resources are allocated where they can have the most significant impact.

The selection of specific schools within this prioritization framework will favor the poorest and most disadvantaged student communities, with particular attention given to students affected by the ongoing

conflict, specifically Internally Displaced People (IDPs). This targeted approach is essential for addressing the unique challenges faced by these populations and ensuring that the benefits of the project reach those who need them most. It is anticipated that the project will directly benefit approximately 25,401 households in Abyan and 10,000 in Shabwah, with a significant portion of these households comprising subsistence farmers. Given an estimated average household size of 7.1 people (6.7 for Shabwah and 7.5 for Abyan), the project is expected to directly benefit around 251,347 individuals, including approximately 213,645 members of subsistence farmer households. This represents about 58% of the total population in the targeted districts, highlighting the project's potential for widespread impact.

Furthermore, the project will prioritize women-headed households and youth across all activities, with an estimated 160,920 women expected to directly benefit from the project's initiatives, accounting for approximately 64% of the total beneficiaries. This focus on gender inclusivity is vital for empowering women and fostering equitable access to resources and opportunities within the community. Additionally, the project activities are expected to indirectly benefit around 10,000 individuals in 1,409 subsistence farmer and pastoralist households through the autonomous adoption of resilience-building strategies implemented by direct beneficiaries. These households represent about 4% of the total population in the targeted regions, further extending the project's reach and impact.

In addition to benefiting households, the project is expected to have a significant positive effect on primary and secondary school students and their surrounding communities. Approximately 169,919 primary and secondary students are anticipated to benefit directly from the project, which corresponds to about 70% of the total primary and secondary school-age population in the targeted districts. The breakdown of this impact is notable, with 60%, 91%, and 75% of the school-age population in the Aden, Hadramawt, and Al Hodeidah governorates, respectively, expected to benefit from the project activities. Moreover, local businesses are anticipated to benefit directly from the project, with about 10% of these enterprises engaging in income-generating activities on school grounds, utilizing surplus electricity generated by the off-grid solar PV installations for nursery operations. This not only supports local economic development but also fosters a sense of community ownership and involvement in the project.

The project is also expected to create ripple effects within the surrounding communities, indirectly benefiting additional individuals through the autonomous adoption of solar PV systems for space cooling and lighting. This aspect of the project underscores the potential for sustainable energy solutions to extend beyond the immediate beneficiaries, promoting broader community resilience and adaptation to climate change. By addressing the interconnected challenges of energy access, education, and community livelihoods, the project aims to create a comprehensive framework for enhancing climate resilience in the targeted districts.

Moreover, strengthening the adaptive capacity of local communities through income-generating activities, particularly focusing on mother plant production and tree nurseries, is a vital strategy for enhancing resilience to climate change. This approach not only addresses immediate economic needs but also contributes to long-term environmental sustainability and community empowerment. By establishing mother plant production systems, communities can ensure a steady supply of high-quality seedlings for reforestation and agroforestry initiatives, which are essential for restoring degraded lands and enhancing biodiversity.

Tree nurseries serve as a dual-purpose mechanism for economic development and ecological restoration. They provide local communities with the opportunity to generate income through the sale of seedlings while simultaneously promoting the planting of native and climate-resilient tree species. This not only enhances local biodiversity but also contributes to carbon sequestration efforts, thereby mitigating the impacts of climate change. Furthermore, the establishment of tree nurseries can foster community cohesion and social

capital, as they often involve collaborative efforts among community members, thereby strengthening relationships and collective action.

Income-generating activities centered around mother plant production and tree nurseries can also enhance food security and livelihoods. By diversifying income sources, communities can reduce their dependence on single crops or economic activities that may be vulnerable to climate variability. This diversification is crucial in building resilience, as it allows households to adapt to changing conditions and market demands. Moreover, the knowledge gained through managing nurseries and understanding plant propagation can empower community members, particularly women and youth, to take on leadership roles in environmental stewardship and sustainable resource management.

The project will incorporate knowledge management activities that are designed to ensure that project achievements are closely tracked in support of lessons learned. Knowledge management will be an essential component of the project for amplifying the visibility of the achievements with institutions, key stakeholders and the general public, and also for demonstrating the value for money of donor funding. To achieve this, the project will include sufficient time, budget and human resources that are dedicated to knowledge management activities so that they are not a simple "add-on" but a key strategic tool which can support achieving the project's transformational and long-term objectives. Certain principles will be applied in the design and implementation of knowledge management activities. To the extent possible, they will seek to focus on a systematic documentation of the impact of the project's investment in people, especially women and youth. The project's knowledge management activities will also be able to contribute to the development of public policies through its development of best practices that can be efficient tools to address climate resilience solutions. To the extent possible, the project will also seek to raise the awareness of public institutions about the good practices developed and convince them to adopt these practices. Mainstreaming project results in policy dialogues, eventually introducing policy development and change, will be a part of the knowledge management strategy.

The project will actively engage the private sector as a crucial partner in achieving climate resilience goals, particularly through targeted support for small and medium-sized enterprises (SMEs) – mainly small business and entrepreneurs - in climate-sensitive sectors such as agriculture, water resource management, and renewable energy. Given the high vulnerability of these sectors to climate impacts, the project aims to enhance the adaptive capacity of private enterprises by integrating climate-smart practices and technologies into their operations.

Role of the Private Sector in the Project:

1. **Adoption of Climate-Smart Technologies**: SMEs in agriculture and water management will be encouraged to adopt climate-smart technologies, including smart irrigation systems, drought-resistant crop varieties, and water conservation techniques. These enterprises are critical in supporting community-wide adaptation through the demonstration and implementation of sustainable practices.
2. **Deployment of Clean Energy Solutions**: The project will engage private sector actors in the deployment and maintenance of off-grid solar PV systems for productive uses, such as water pumping, agro-processing, and small-scale manufacturing. This includes minigrid operators and renewable energy suppliers who can help expand access to clean energy solutions, enhancing both energy security and resilience against climate variability.
3. **Capacity Building and Technical Assistance**: The project will provide targeted capacity-building programs for SMEs to improve their technical knowledge in climate resilience and renewable energy management. Training workshops, technical assistance, and financial tools

will be made available to build private sector capacity in adopting and maintaining climate-resilient practices and technologies.

4. **Access to Financial Mechanisms**: Through collaboration with financial institutions, the project will facilitate access to innovative financial tools, such as microloans and subsidies, to help SMEs overcome the high upfront costs of climate-smart investments. This financial support will encourage private enterprises to adopt adaptive practices and clean energy solutions that contribute to overall climate resilience.
5. **Knowledge Sharing and Collaboration**: The private sector will participate in the project's knowledge-sharing platforms, contributing to a network of climate-resilient businesses that share best practices and collaborate on innovative adaptation approaches.

Problem statement

The project's Theory of Change prioritizes climate adaptation strategies tailored to local needs, recognizing that coastal and inland districts face distinct climate challenges. Coastal districts, affected by salinity and extreme weather, and inland districts, facing drought and soil degradation, will receive customized interventions based on vulnerability assessments and local consultations conducted during the PPG phase. This tailored approach ensures that activities are contextually relevant, enhancing the long-term resilience of each community while integrating these efforts into a cohesive framework for knowledge sharing and cross-district learning.

The Theory of Change for the project is shown in **Figure 5**. The PROBLEM STATEMENT underlying the theory of change is the acute vulnerability of households in Yemen's Aden, Hadramawt, El Hodeidah, Abyan and Shabwah governorates are to increasing frequency of flash floods. Drought, and extreme heat which are compounding existing vulnerabilities that are linked to a fragile security situation, deep poverty levels, unsustainable farming practices, degraded micro watersheds, limited access to modern energy services, lack of useable climate information, and lack of alternative income sources.

Goal

The GOAL of the project is to increase resilience of vulnerable households against the impacts of climate change through enhanced food security, improved land/water resource management, improved livestock husbandry, increased access to modern energy services, and strengthened local capacity in selected districts across five governorates in Yemen.

Challenges and barriers

To realize the improved climate-resilient outcomes expected from project activities, vulnerable households face several critical barriers that prevent them from transitioning away from unsustainable practices. These barriers fall into four main categories:

1. Lack of Effective Agricultural Extension Services

Farmers in the targeted districts suffer from a lack of **effective agricultural extension services**, which has led to inadequate dissemination of **climate-resilient irrigation** and **water management practices**. The majority of farmers have very limited access to **physical water infrastructure**, which is essential for maintaining climate resilience during droughts and other extreme climatic events.

2. Insufficient Knowledge and Access to Climate-Resilient Practices

Farmers lack **knowledge** of and access to **climate-resilient crop and livestock rearing practices**. Currently, there are no comprehensive governmental efforts to support the diffusion and uptake of these practices at the necessary scale. As a result, farmers continue to rely on unsustainable agricultural practices, which are increasingly vulnerable to climate variability.

3. Limited Access to Climate Information

Access to relevant **climate information** is severely lacking. Meteorological data and forecasts that could help farmers prepare for climate change and make informed decisions are not widely disseminated in a form that is understandable or accessible to local farmers. Without tailored and usable climate information, farmers are unable to make timely decisions about **adaptation measures**.

4. High Costs of Solar PV Systems

Despite the declining cost of **solar PV systems** globally, they remain prohibitively expensive for many vulnerable households in Yemen. Although the price of diesel has tripled between 2010 and 2016 and diesel is often unavailable, solar PV systems are still not affordable for the majority of farmers and smallholder households. This financial barrier limits their access to **clean energy solutions**, which are critical for water pumping and other agricultural activities.

5. Institutional and Governance Challenges

Yemen faces a **lack of institutional capacity** to address urgent adaptation needs related to water and energy resource management. In particular, there is a weak link between the availability of **climate information** and the **local adaptive responses** required to meet the needs of vulnerable communities. **Political instability** and the **ongoing conflict** further complicate efforts to implement coordinated and long-term climate adaptation strategies.

The project concept is specifically tailored to address and overcome barriers that inhibit resilience-building by vulnerable populations with respect to climate change and resource degradation. There are several types of challenges and barriers, namely institutional, management-related, awareness-related, the lack of useable climate information; and political instability. Each is directly linked to the project's strategic outcomes, namely enhanced water and energy availability during the dry seasons and extreme climatic events; enhanced climate-resilient ecosystems; enhanced climate risk information availability; and increased capacities, learning, and collaboration among all relevant stakeholders. Chief among the challenges/barriers is a lack of institutional capacity to address urgent adaptation needs regarding water/energy resource management, food security, with a clear need to improve the link between climate information availability and local adaptive responses that account for the special needs of local communities and the country's ongoing fragile security situation and political instability.

Assumptions

Underlying the potential for launching a transition to climate resilient farming practices in targeted tropical desert zones in Yemen are several assumptions that fall under the categories of a) community attitudes and perspectives; and b) climatic and other external factors. Key assumptions include a) interventions will lead to increased climate resilience and lower vulnerability to climate and other shocks; b) farmers and governmental extensions offices will remain engaged throughout the project; c) women-run households will remain engaged on activities across farming and livestock project activities; d) communities will be willing to support micro-watershed rehabilitation; e) members of local communities are willing to participate in training workshops and other project activities; f) off-grid solar PV system installations lead to nurseries on school grounds that include

drought-resistance shrub and crop seedlings; and g) extreme drought, flooding, and conflict events will not disrupt project implementation efforts.

As inferred by these assumptions, local stakeholders (i.e., women, men, and youth) will be central to developing and implementing the project, with their respective roles being to inform workable strategies, collaborate in implementation activities, and participate in training events.

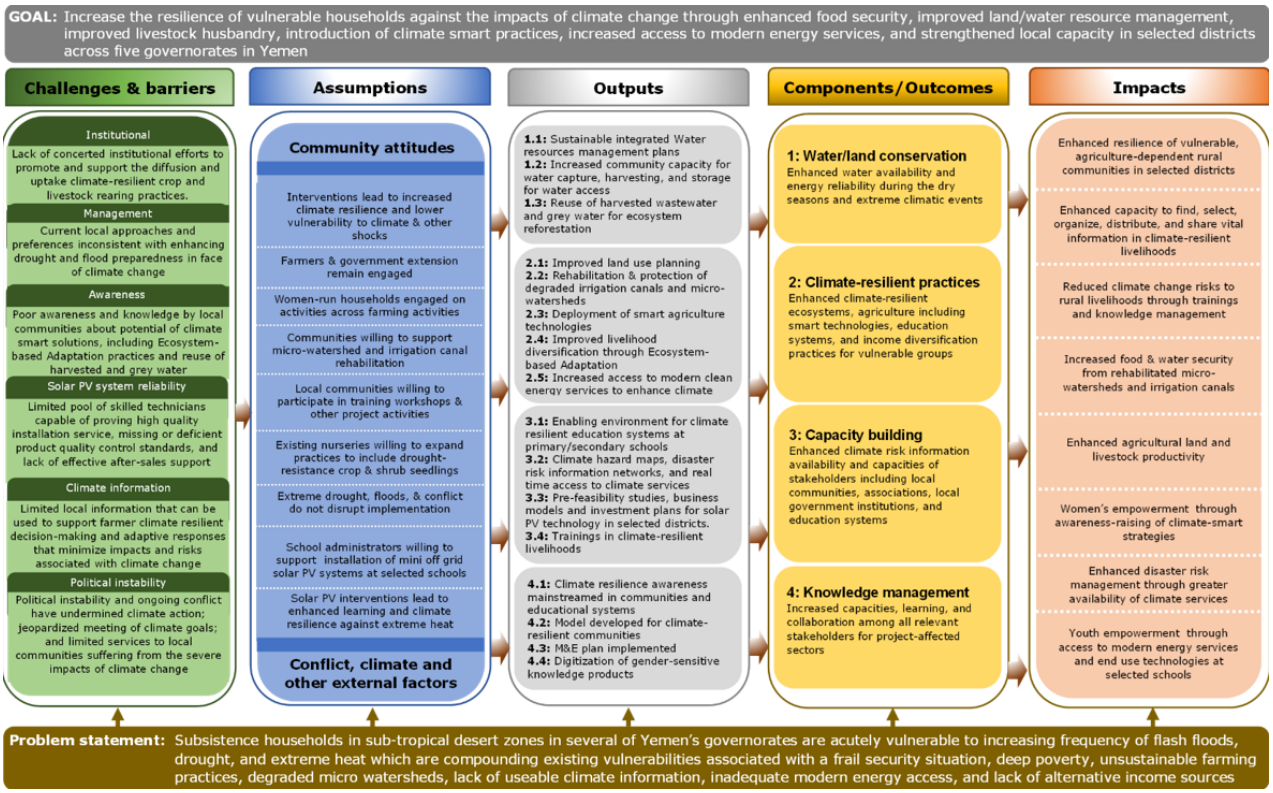


Figure 6 Theory of Change

Outcomes and outputs

There are four OUTCOMES for the proposed project.

OUTCOME 1: Enhanced Water and Land Conservation

Description:
This outcome focuses on improving water availability and energy reliability during dry seasons and extreme climatic events through sustainable land and water management. It aims to strengthen water infrastructure and resource management, promoting resilience to climate impacts on water supply. The over 25,000 hectares of degraded micro-watershed land that is restored under Output 2.2 is based on the application of techniques which comprise low-cost, simple, and sustainable land regeneration practice that local communities in the targeted districts will find compatible to use in the restoration of their micro-watersheds, while increasing their productivity and building resilience in a rapid and efficient manner. Such techniques have experienced success in other settings in Yemen as a community empowerment practice that helps align community mindsets and relationships to the landscapes on which they depend for their livelihoods.

Project activities will directly benefit women, including those who are in women-run households. In addition, there are several anticipated co-benefits from project activities that linked to gender-based development

priorities. These include direct access to rehabilitated micro-watersheds, as well as co-benefits related to health through avoidance of extended time-consuming trips to fetch water and education through a better learning environment associated with access to modern energy services. Women will also directly benefit from training activities related to household decision-making in the context of resilience-building strategies, thereby enabling empowerment and involvement of women in climate change adaptation planning and investments.

- **Output 1.1:** Development of climate risk informed sustainable, integrated water resources management plans for selected districts.

Indicative activities include conducting assessments of existing water resources and infrastructure, developing district-level water management plans that incorporate climate-resilient practices, and facilitating stakeholder workshops to integrate local knowledge into water management planning.

- **Output 1.2:** Increase community capacity for water capture, harvesting, and storage to support agriculture and resilient livelihoods.

Proposed activities involve installing or rehabilitating water harvesting systems (e.g., reservoirs, cisterns, and rainwater tanks), training local communities on water storage and management techniques, and implementing community-based water conservation programs.

- **Output 1.3:** Reuse of harvested wastewater and greywater for ecosystem reforestation, reducing soil and land degradation, increasing green cover within schools, and reducing natural resources contamination through innovative nature-based solution technologies.

Activities include establishing greywater recycling systems for schools and households, planting drought-resistant species to restore degraded lands, and promoting the use of greywater in ecosystem restoration and agriculture.

OUTCOME 2: Enhanced Climate-Resilient Ecosystems and Livelihoods

Description:
This outcome is aimed at improving ecosystem resilience and supporting sustainable livelihoods through the adoption of climate-resilient practices. It includes ecosystem-based adaptation, smart agriculture technologies, and diversification of income-generating activities to reduce vulnerability to climate risks.

A gender-sensitive approach will be integrated to ensure that women receive tailored support. This includes targeted women's involvement in sustainable livelihood programmes and facilitating their access to climate-smart technologies and financial mechanisms.

The project recognizes the unique climate adaptation needs of both coastal and inland districts. Many coastal areas face vulnerabilities such as increased salinity, water scarcity, and heightened exposure to extreme weather, while inland areas contend with prolonged droughts, soil degradation, and limited access to modern irrigation systems. To address these distinct challenges, the Project Preparation Grant (PPG) phase will involve comprehensive vulnerability assessments and community consultations within each district. This approach will ensure that interventions are customized to the specific climate risks faced by each community, thereby enhancing the project's effectiveness in building climate resilience for smallholder farmer households.

- **Output 2.1:** Improved spatial and land-use planning to facilitate sustainable production practices and improve livelihoods for local communities in selected districts. Indicative activities include conducting spatial mapping to identify areas suitable for sustainable agricultural production, developing land-use plans that prioritize climate-resilient crops, and training local authorities and farmers to implement these plans.

- **Output 2.2:** Rehabilitation and protection of degraded irrigation canals and micro-watersheds in selected districts to improve water access and distribution for agricultural and livestock water supply during dry seasons. Proposed activities include repairing critical irrigation infrastructure, implementing soil and water conservation measures such as terracing, and organizing community-based maintenance teams for long-term irrigation system upkeep.

- **Output 2.3:** Deployment of smart agriculture technologies to enhance agricultural productivity through innovative financial mechanisms. Proposed activities include introducing smart irrigation systems like drip irrigation, providing access to financing tools (e.g., microloans) for farmers, and conducting field demonstrations to showcase the benefits of smart agriculture.

- **Output 2.4:** Improved livelihood diversification through Ecosystem-based Adaptation (EbA) approaches in the targeted districts. Proposed activities include introducing sustainable agroforestry systems, developing community-led programs for sustainable harvesting of non-timber forest products, and training communities on EbA techniques for improved ecosystem services.

- **Output 2.5:** Increased access to modern clean energy services to enhance climate resilience against extreme temperatures and heatwaves, supporting water pumping and income-generating activities at the community level.

- Indicative activities include the installation of off-grid solar PV systems, such as minigrids for modern energy services and standalone systems for water pumping, irrigation. The minigrid systems will provide energy access for basic services (e.g., lighting) while also supporting income-generating activities, including cooling and other productive uses, following the UNDP-GEF Africa Minigrid Program (AMP) model.

GEF resources will primarily be allocated to investment by supporting local businesses with pre-feasibility studies and subsidizing capital costs. In light of the high costs and financial constraints faced by vulnerable households in Yemen, the project proposes the use of capital cost subsidies for off-grid solar PV systems, which are essential for climate resilience. Following extensive consultations, the subsidy model emerged as the most effective approach to support widespread adoption of these systems and catalyze private sector engagement. During the PPG phase, further assessments will determine the exact subsidy structure, but it is anticipated that up to 50% of capital costs may be covered. This investment is expected to maximize community access to clean energy, essential for agricultural productivity and income-generating activities in remote districts. This output will also conduct capacity building through training on solar technology maintenance and the development of income-generating activities.

During the Project Preparation Grant (PPG) phase:

- We will ensure that CCM activities are fully integrated into the project's overall strategy, making them an integral component rather than an add-on.

- Develop comprehensive activities and outputs that maximize the impact of CCM resources, aligning with GEF's Climate Change Mitigation objectives.
- Work closely with national regulators to identify and address policy and regulatory barriers hindering the development of off-grid and minigrid renewable energy systems.
- Engage potential minigrid operators, private sector entities, and financial institutions to understand challenges and opportunities in the sector.
- Provide technical assistance to regulators and operators to develop enabling policies and build operational capacity.
- Map out potential productive uses of energy in target communities, such as agro-processing, cold storage, and small-scale manufacturing, which can serve as anchor loads for the minigrids.
- Conduct feasibility studies to establish the economic viability of minigrids, factoring in the demand from productive uses.
- Develop sustainable business models that integrate productive uses, enhancing revenue streams and ensuring financial sustainability.
- Explore opportunities to scale up renewable energy interventions to achieve greater GHG emission reductions and adaptation benefits.
- Introduce innovative technologies and financing mechanisms to stimulate investment and adoption of renewable energy solutions.

OUTCOME 3: Enhanced Capacity Building and Climate Risk Information Availability

Description:
This outcome focuses on building the capacity of local communities, government institutions, and other stakeholders to respond to climate risks. It includes the development of climate hazard maps, real-time climate services, and tailored capacity-building programs to ensure that all relevant actors have access to critical climate risk information.

Gender will be mainstreamed to ensure that women and marginalized/vulnerable groups have equitable access to climate-resilient technologies and capacity-building support.

- **Output 3.1:** Establishment of an enabling environment for climate-resilient education systems at primary and secondary schools in selected districts.
  Proposed activities include revising school curricula to integrate climate change education, establishing climate-resilient infrastructure in schools, and training teachers on climate change education strategies.
- **Output 3.2:** Development of climate hazard maps, disaster risk information networks, climate services with real-time access, hydrologic maps, and climate risk scenarios in all targeted districts.
  Proposed activities include conducting community consultations to develop hazard maps, building local early warning systems for extreme weather, and establishing a centralized climate risk information platform.
- **Output 3.3:** Preparation of pre-feasibility studies, business models, and investment plans for the development and diffusion of off-grid solar PV technology in selected districts.

Indicative activities include conducting technical feasibility assessments, developing business models for scaling up solar PV use, and engaging with private-sector actors to secure investments.

- **Output 3.4:** Tailored capacity building and training programs to meet the needs of various stakeholders, including government officials, community leaders, local NGOs/CSOs, and local SMEs in climate resilience and sustainable livelihoods. Proposed activities include organizing training sessions on climate resilience for local authorities and stakeholders, developing tailored curricula, and providing ongoing technical support.

OUTCOME 4: Improved Knowledge Management and Collaboration

Description:
This outcome aims to foster collaboration among stakeholders and improve the dissemination of climate-related knowledge. It will focus on developing strategies to mainstream climate change awareness, implement effective monitoring and evaluation systems, and enhance knowledge sharing through the digitization of products, including gender-sensitive materials. M&E will capture gender-specific results, with reporting mechanisms that track the participation and benefits of women and men separately, ensuring that gender outcomes are adequately monitored and reported. A robust coordination framework will be established to facilitate cross-district knowledge sharing and collaboration. This framework will enable each district to benefit from the lessons learned across different regions, integrating diverse adaptation activities into a cohesive project strategy. Such a tailored and coordinated approach will maximize the project's impact and ensure each district's climate resilience is strengthened appropriately.

- **Output 4.1:** Development of a strategy for mainstreaming climate change awareness into communities and education systems.
  Indicative activities include designing communication campaigns to raise awareness of climate risks, collaborating with local media outlets for dissemination, and partnering with educational institutions for climate-focused outreach.

- **Output 4.2:** Development of a practical model for promoting climate-resilient communities and awareness.
  Proposed activities include piloting community-driven climate resilience projects, facilitating participatory workshops for community engagement, and documenting lessons learned for scaling up resilience models.

- **Output 4.3:** Implementation of an effective monitoring and evaluation plan, including an inception workshop report, an ongoing M&E plan, and a terminal evaluation (TE). Indicative activities include developing M&E frameworks, conducting regular project evaluations, and holding inception workshops to ensure alignment with project goals.

- **Output 4.4:** Enhancement of knowledge management through digitization of products, including gender-sensitive knowledge products. Suggested activities include digitizing project reports and climate-related knowledge products, ensuring gender-sensitive content, and creating an accessible platform for sharing these materials. Table 2: targeted governorates and districts:

Project Outcomes	Project Outputs	1				2								3			4		5			
		Abyan				Aden								Al Hodeidah South			Hadramawt		Shabwah			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		Ahwar	Al-Mahfad	Loudar	Sarar	Al Buraiqah	Al Mansurah	Al Mu'alla	Al Shaikh	At Tawahi	Dar Sa'd	Khur Maksar	Sirah	Al-Khoukhah	Al-Tuheita	Hays	Al Mukalla city	Al Mukalla rural	Bayhan	Markha As Sufla	Nisab	Radum
Enhanced water availability and energy reliability	Sustainable integrated Water resources management plans	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Increased community capacity for water capture, harvesting, and storage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Reuse of harvested, wastewater and grey water for ecosystem reforestation				✓														✓		✓	
Enhanced climate-resilient ecosystems and agriculture	Improved spatial and land use planning	✓	✓	✓	✓														✓	✓	✓	✓
	Rehabilitation & protection of degraded irrigation canals and micro-watersheds	✓	✓	✓	✓														✓	✓	✓	✓
	Deployment of Smart agriculture technologies	✓	✓	✓	✓														✓	✓	✓	✓
	Improved livelihood diversification through EbA	✓	✓	✓	✓														✓	✓	✓	✓
	Increased access to modern clean energy services for enhance climate resilience					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Enhanced climate risk information availability and capacity	Enabling environment for climate resilient education systems at primary/secondary schools					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
	Climate hazard maps, disaster risk information networks, climate services	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Pre-feasibility studies, business models and investment plans					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
	Capacity building and trainings	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Increased collaboration among stakeholders	Strategy for mainstreaming climate change awareness into the communities and education systems	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Model for Climate-resilient communities and awareness-raising.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Monitoring and Evaluation Plan implemented	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Knowledge management enhanced through digitization of products	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- ***Impacts***

IF the project's integrated resilience-building activities effectively reduce climatic, security, and other risks, THEN the project's sustainability objectives will be met, resulting in a) enhanced resilience of vulnerable subsistence farming communities; b) reduced climate change risks to rural livelihoods; c) increased water and food security; d) enhanced agricultural land and livestock productivity; e) women's empowerment through awareness-raising of climate-smart strategies; and f) enhanced disaster risk management through greater availability to local communities of useable climate information. Combined, these impacts will ensure that the project will produce global environmental benefits associated with reducing land degradation, improving the provision of agro-ecosystem goods and services, and conserving natural resources in productive agricultural landscapes. Moreover, the project will generate knowledge about climate risks and hazards; identify synergies between income-earning livelihood options; and develop inventory of local agro-forestry practices, agro-silvopastoral systems and non-timber forest utilization and development. This knowledge will be managed and exchanged through awareness-raising and training events and will be captured by workshop report to benefit future projects.

The proposed project addresses the urgent need to enhance climate resilience and adaptive capacity in Yemen's vulnerable coastal districts. The incremental reasoning is based on the additional activities and outcomes that will be achieved with GEF funding, which would not be possible under the baseline scenario.

in the absence of GEF intervention, Yemen's smallholder farmers and coastal communities will continue to face increasing vulnerability to climate change impacts due to:

· Limited Adaptive Capacity: Existing government and donor-funded initiatives focus primarily on immediate humanitarian needs and lack a comprehensive approach to climate change adaptation.

· Inadequate Infrastructure and Technologies: There is insufficient investment in climate-resilient infrastructure, sustainable agricultural practices, and clean energy solutions.

· Lack of Access to Climate Risk Information: Communities have limited access to climate data, early warning systems, and capacity-building programs, hindering their ability to respond effectively to climate risks.

· Gender Inequality: Women and marginalized groups have restricted access to resources and opportunities, exacerbating vulnerabilities.

With GEF funding totaling $20 million from the LDCF, the project will implement additional activities that go beyond the baseline, generating global environmental benefits (GEBs) and enhancing adaptation outcomes:

· Component 1: Strengthening institutional frameworks and policies for climate change adaptation at national and local levels.

· Component 2: Implementing climate-resilient agricultural practices, rehabilitating irrigation systems, and introducing clean energy technologies like off-grid solar PV systems.

· Component 3: Enhancing capacity building and access to climate risk information through the development of climate hazard maps, early warning systems, and tailored training programs.

· Component 4: Improving knowledge management, collaboration, and monitoring and evaluation systems, with a focus on capturing gender-specific results.

The incremental activities funded by the GEF will lead to the following additional benefits:

· Enhanced Climate Resilience:

  ▪ Improved adaptive capacity of approximately 213,645 members of subsistence farmer households through access to climate-resilient technologies and practices.

  ▪ Rehabilitation of critical irrigation infrastructure, increasing water efficiency and reducing vulnerability to droughts including through nature based approached for rehabilitation.

· Promotion of Clean Energy Solutions:

- Installation of off-grid solar PV systems providing clean energy access to communities, reducing reliance on fossil fuels and lowering greenhouse gas emissions.

- Support for sustainable energy use in agriculture (e.g., solar-powered water pumping), contributing to mitigation efforts under CCM Objective 1.2.

· Strengthened Institutional Capacity:

- Development and implementation of climate adaptation policies and land-use plans that incorporate climate risk considerations.

- Enhanced capacity of government officials and community leaders through tailored training programs.

· Improved Access to Climate Information:

- Creation of climate hazard maps and early warning systems enabling communities to prepare for and respond to climate-related disasters.

- Establishment of a centralized climate risk information platform accessible to all stakeholders.

- Gender Equality and Social Inclusion:

- Targeted support for women, ensuring equitable access to resources, technologies, and training.

- Monitoring and reporting on gender-specific results to promote gender-responsive adaptation.

- Knowledge Management and Scaling Up:

- Documentation and dissemination of best practices and lessons learned to facilitate replication and scaling up of successful interventions.

- Engagement with the private sector to foster investment and innovation in climate resilience.

· The baseline scenario is limited to ongoing humanitarian aid and development projects without a focus on climate resilience. These investments do not adequately address the long-term adaptation needs or generate GEBs.

· GEF Incremental Costs: The GEF funding of $22 million represents the additional investment required to implement the comprehensive

climate resilience interventions outlined in the project. These funds cover the costs associated with:

- Technical assistance and capacity building.
- Infrastructure rehabilitation and installation of climate-resilient technologies.
- Development of climate risk information systems.
- Gender mainstreaming and social inclusion activities.
- Monitoring, evaluation, and knowledge management efforts.

Risks to Project Preparation and Implementation

The project is highly aligned with governmental priorities to promote water/food security and more sustainable livelihoods through a transition to resilience-building practices that account for the adverse impacts of climate change. There are several known risks that are associated with project preparation activities once PIF approval is obtained. Chief among these are the risks of conflict escalation and the possibility of extreme climatic events such as flash flooding, extreme heat, and cyclonic activity. Moreover, while stakeholder consultations that have been undertaken in each of the targeted districts in support of the development of this PIF have been have been overwhelmingly positive, there is a risk that perspectives could shift during a future project preparation stage due to unforeseen circumstances.

Several risks have been identified regarding project implementation. The main risk categories are associated with a lack of effective and consistent government control throughout Yemen; pervasive local disagreements and conflict over the control of increasingly scarce natural resources; and the ongoing threats associated with a deteriorating security situation. Within these overall risk categories, project-specific risks include households and communities becoming unwilling to remain engaged in project activities; and periods of extreme weather events may temporarily limit the implementation of certain project activities. With a robust operational presence and an active portfolio exceeding $200 million across early recovery, governance, and climate change initiatives, UNDP Yemen has developed the necessary mechanisms to operate effectively under challenging conditions. Key elements of our approach to security include:

- **Risk Mitigation Strategies**: Collaborating closely with national and local institutions helps to manage risks associated with political fragmentation and insecurity, while upholding principles

of impartiality, human rights, and inclusive humanitarian assistance.

- **Flexible Implementation Modalities**: We employ contingency planning, remote monitoring, mobile project teams, and partnerships with trusted local organizations to maintain project continuity and safety.
- **Peacebuilding Integration**: The project design includes 'Climate-Security-Peacebuilding Interlinkages", focusing on mitigating resource scarcity to support community resilience and contribute to peacebuilding efforts.

Furthermore, the project will implement several risk mitigation measures, including the introduction of conflict avoidance measures that support ongoing peacebuilding initiatives; timely redesign of any project measures that are incompatible with conflict avoidance measures in place to ensure consistency with local peacebuilding initiatives; and convene high-level management meetings as needed to discuss and correct impediments to good project governance. The risk ratings below the overall risk to project outcomes considering the ambition of the project in the context of the Yemen security situation.

Coordination and Cooperation with Ongoing Initiatives and Project.

Does the GEF Agency expect to play an execution role on this project?

No

If so, please describe that role here. Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing

In Yemen, all UN organizations operate under the Direct implementation modality (DIM). For this project, per GEF policy, we will assess the implementation modality and the needs for any implementation support during the PPG phase.

Currently, the UNDP's Yemen Country Office (CO) manages a portfolio of more than 50 active projects throughout the country across three programmatic groups - i) Climate Change, Water, Energy and Environment, ii) Governance and Peacebuilding; and iii) Economic Recovery and Development – and across all project development phases; from design, implementation, monitoring, and evaluation, as well as providing technical assistance and operational/administrative services. The CO conducts these activities in close partnership with various International Finance Institutions, bilateral donors, and other UN agencies while applying a clear division of roles between UNDP staff who conduct execution support services and implementation oversight services. This demonstrates that the CO has the capacity and experience to provide implementation support, including financial management. Several projects are implemented by the country office, financed by the GEF and GCF, but also by other international donors.

The proposed project falls within the Climate Change, Water, Energy and Environment programmatic group for which the CO has reinforced its technical and operational capacities by recruiting international experts and mobilizing in-house expertise. Moreover, the existing projects within the programme demonstrate experience with managing projects similar to the one proposed. These include the joint programme Supporting resilient livelihoods, food security and climate adaptation in Yemen, (ERRY III); Enhancing resilience through sustainable water resource management; Social Protection to Provide Social Cohesion in Vulnerable

Communities in Yemen; Yemen Food Security Response and Resilience Project (FSRRP); and Renewable Energy Improve Access to Health Services and Livelihood Opportunities (HEAL); and KfW: Integrated Water Resources Management to Enhance Resilience of Agriculture (ERA) and Food Security.

The Yemen UNDP CO also has significant experience with understanding the security context for the design and management of projects in conflict situations. It has produced several reviews of the nexus between development, resource management, and conflict, including i) Assessing the Impact of War in Yemen on Achieving the Sustainable Development Goals; and ii) Yemen Resilience Monitor: Communities coping with Conflict; and the Enhancing Resilience through Sustainable Water Resource Management Project. Both of these report are aimed at better understanding the root causes and impacts of the ongoing conflict and to identify ways to aid Yemeni Communities in moving away from conflict and towards cooperative action.

Finally, the project will coordinate with other GEF-funded climate change adaptation projects, such as those being implement by the FAO and IFAD LDCF projects, as identified in the bullets below.

- IFAD is about to start the implementation of the Rural Livelihoods Development Project was designed as a five-year US$21.4 million project, in which $10 million from the GEF. The goal is to rebuild communities' resilience to economic and environmental shocks and improving the livelihoods of poor, excluded and deprived people in Yemen.
- The FAO has with ongoing projects in Yemen such as Sustainable Watershed Management through Reinforced Governance, Resilience, and Regenerative Agriculture (2022 to 2027); Emergency agricultural and livelihood support in Marib and Sa`adah governorate (2023 to 2024); Yemen Food Security Response and Resilience Project (2021 to 2026); among others. Each of these ongoing projects displays strong complementarities with the current project

To ensure effective coordination with IFAD and FAO projects, the proposed project will work through establishing a Climate Change Working Group under the UN Country Team (UNCT). This structure gathers all the agencies working on Climate Change in Yemen. The objective is to foster collaboration and greater impact. Additionally, the idea of joint field operations will be pursued, particularly in overlapping districts, to leverage FAO's work in watershed management and IFAD's resilience-building activities. This will ensure that our interventions complement ongoing initiatives, maximizing the impact on climate resilience and livelihoods in vulnerable communities. Furthermore, technical cooperation will involve sharing data, tools, and expertise on climate adaptation. This collaboration will not only promote resource efficiency but also enable learning and adaptation across projects.

Linkages with GEF-UNDP Africa Minigrid Program (AMP): The Project will coordinate and integrate the AMP concept fully. It will follow the AMP's overall concept, by on one hand develop the right policies and regulations; business model innovation and private sector engagement; and on the other hand, by mitigating the underlying investment risks, resulting in three key beneficial drivers for the competitiveness and financial viability of renewable energy mini-grids: reduced hardware and soft costs, and increased revenues and economies of scale.

Applying the Africa Minigrid Programme (AMP) concept to Yemen could be transformative in addressing the country's critical energy challenges, particularly in conflict-affected areas and remote communities. Given the severe damage to Yemen's energy infrastructure, renewable energy-based mini-grids offer a viable solution to enhance energy access, support economic recovery, and build resilience against climate change.

A Yemen-specific version of the AMP, to be developed at PPG phase, would focus on scaling up decentralized renewable energy solutions such as solar-powered mini-grids in the targeted districts, which are in rural areas and urban peripheries where grid connectivity is limited or nonexistent. By improving

regulatory frameworks, the initiative could stimulate private sector involvement and attract investments into the renewable energy sector. Capacity-building efforts is essential, empowering local technicians, engineers, and communities to manage and maintain mini-grid systems, creating job opportunities and fostering energy independence.

Moreover, it will contribute to Yemen's climate resilience by providing clean energy for critical services such as water pumping, agriculture, healthcare, and education.

Core Indicators

Indicator 3 Area of land and ecosystems under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
25000	0	0	0

Indicator 3.1 Area of degraded agricultural lands under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
Cropland	25,000.00			

Indicator 3.2 Area of forest and forest land under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.3 Area of natural grass and woodland under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.4 Area of wetlands (including estuaries, mangroves) under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
25000	0	0	0

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.2 Area of landscapes under third-party certification incorporating biodiversity considerations

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
25,000.00			

Indicator 4.4 Area of High Conservation Value or other forest loss avoided

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.5 Terrestrial OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)

Documents (Document(s) that justifies the HCVF)

Title

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	54000	0	0	0
Expected metric tons of CO_2e (indirect)	108000	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	54,000			
Expected metric tons of CO_2e (indirect)	108,000			
Anticipated start year of accounting	2027			
Duration of accounting	20			

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)				
Expected metric tons of CO_2e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)

Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	275,425			
Male	209,154			
Total	**484,579**	**0**	0	**0**

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

Direct Emissions Reductions

It is estimated that the mini-grids and standalone systems will cumulatively reach 1 MW of solar energy.

As a result of this activity during the project implementation period of five years, direct greenhouse gas emission reductions totaling 54,000 tons of CO2 equivalent will be achieved over the expected 20-year lifetime of the investment. This is equivalent to around 2.68 GWh/year, or 2.7 thousand tonnes of CO2 would be avoided annually, or 54,000 tCO2 over 20 years. totaling 28,046 tons of CO2 equivalent will be achieved over the expected 20-year lifetime of the investment. The 20-year lifetime is based on the default value provided by the GEF guideline document for calculating greenhouse gas benefits for renewable energy projects (Manual for calculating GHG benefits of GEF projects: Energy efficiency and renewable energy projects, GEF 2018).

Indirect Emission Reductions

Using the GEF bottom-up methodology, indirect emission reductions attributable to the project are 108,000 tons of CO2 equivalent. This figure assumes a replication factor of 2.

A more detailed calculation and ambitions will be provided at CEO endorsement stage.

META INFORMATION – LDCF

LDCF **true**	SCCF-B (Window B) on technology transfer **false**	SCCF-A (Window-A) on climate Change adaptation **false**

Is this project LDCF SCCF challenge program?

false

This Project involves at least one small island developing State(SIDS).

false

This Project involves at least one fragile and conflict affected state.

true

This Project will provide direct adaptation benefits to the private sector.

true
This Project is explicitly related to the formulation and/or implementation of national adaptation plans (NAPs).
false
This project will collaborate with activities begin supported by other adaptation funds. If yes, please select below

Green Climate Fund	Adaptation Fund	Pilot Program for Climate Resilience (PPCR)
false	**false**	**false**

This Project has an urban focus.
false
This project will directly engage local communities in project design and implementation
true
This project will support South-South knowledge exchange
false

This Project covers the following sector(s)[the total should be 100%]: *	
Agriculture	50.00%
Nature-based management	15.00%
Climate information services	0.00%
Coastal zone management	0.00%
Water resources management	10.00%
Disaster risk management	10.00%
Other infrastructure	15.00%
Tourism	0.00%
Health	0.00%
Other (Please specify comments)	0.00%
Total	100.00%

This Project targets the following Climate change Exacerbated/introduced challenges:*

Sea level rise	Change in mean temperature	Increased climatic variability	Natural hazards
false	**true**	**true**	**false**

Land degradation	Coastal and/or Coral reef degradation	Groundwater quality/quantity
true	**false**	**false**

CORE INDICATORS – LDCF

	Total	Male	Female	% for Women
CORE INDICATOR 1 Total number of direct beneficiaries	484,579	209,154.00	275,425.00	56.84%
CORE INDICATOR 2 (a) Area of land managed for climate resilience (ha) (b) Coastal and marine area managed for climate resilience (ha)	25,000.00 0.00			
CORE INDICATOR 3 Number of policies/plans/ frameworks/institutions for to strengthen climate adaptation	13.00			
CORE INDICATOR 4				56.84%

Number of people trained or with awareness raised	48,457	20,915.00	27,542.00	
CORE INDICATOR 5 Number of private sector enterprises engaged in climate change adaptation and resilience action	1,000.00			

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Moderate	Severe weather events (e.g. flooding, extreme heat waves, sand storms) may delay some project activities Mitigation measures include ensuring that the project management unit is well coordinated with early warning system alerts. In addition, the project will adjust practices to better complement local conditions, implementing technology alternatives where appropriate within the overall design framework of the project. Flexibility in certain modalities of project implementation will help to ensure sustainability project activities. These mitigation measures should keep the risk level at moderate.
Environmental and Social	Moderate	While the project is designed to avoid significant environmental pollution, hazards to human health, adverse social impacts on communities, and threats to biodiversity and cultural heritage in the target districts, the risk category falls under 'moderate' to reflect potential risks identified in the Social and Environmental Screening Procedures (SESP), such as gender-based discrimination, stakeholder engagement, social tensions, impacts on local livelihoods, and climate risks. The project addresses these risks through several mitigation measures: promoting gender-sensitive programming and equal access to resources, ensuring inclusive stakeholder participation with attention to marginalized groups, incorporating conflict-sensitive approaches to prevent social tensions, monitoring impacts on local livelihoods to support sustainable improvements, and embedding climate resilience strategies to safeguard against climate-related disruptions.
Political and Governance	Moderate	The political crisis and protracted conflict in Yemen, is still far from being resolved and has continued to cause inaccessibility to some sites and delays in delivery in many others. The risks of being impacted by the political fragmentation induced by the war are mitigated by the close collaborations with public institutions at the national as well as local levels. Limitations in responding to the scale of needs are mitigated by the early engagement of public institutions in the development of this document and the design of transparent approaches for implementation. The UN maintains its operational integrity through adherence to principles of impartiality, human rights and inclusive humanitarian/civilian assistance and engages stakeholders clearly communicating these principles.
INNOVATION		
Institutional and Policy	Low	The proposed outputs and activities are closely aligned with national development priorities

Technological	Low	The technical design of the project hues closely to the approaches adopted successfully for other projects/settings in Yemen, including previous solar PV installation projects
Financial and Business Model	Low	Off-grid solar PV is a sustainable option for rural regions, given their net energy, low life-cycle cost, and potential to raise the quality of life. Off-grid solar PV systems can lead to macroeconomic impacts through job creation associated with strengthening existing economic activities or enabling new ones. By reducing the reliance on fossil energy sources from the central grid, off-grid solar PV can lead to lower energy costs in the long-term, thus contributing to economic savings. Increased use of off-grid solar PV systems can also lead to increased economic activity and income generation from on-site access to electricity, increasing economic opportunities. Hence, macroeconomic risks are low.
EXECUTION		
Capacity	Moderate	The UNDP, acting under the Direct Implementation Modality, is well capacity and experienced for overseeing the implementation of the project. Nevertheless, local government office extension agents may become unsupportive and/or unwilling to remain engaged in project activities if a perception takes hold that the project is being implemented in ways that adversely affect their roles in the communities. Mitigation measures include local level awareness-raising, capacity strengthening and leadership mobilization for governorate-level officials to ensure adequate understanding of project objectives. Activities will emphasize exploiting synergies with ongoing extension services and promoting governorate/federal coordination on adaptation. These mitigation measures should keep the risk level at moderate.
Fiduciary	Low	Standardized and well-established fiduciary procedures for direct implementation will be followed to mobilize inputs and deliver on results. In cases where certain activities are to be performed by national institutions or local NGOs, procedures laid out as per the Harmonized Approach to Cash Transfer (HACT) framework will be followed.
Stakeholder	Low	Consultative processes undertaken thus far demonstrate the viability of future consultations. Nevertheless, households and communities may become unwilling to remain engaged in project activities if there is a perception that certain expectations are not being met. Mitigation measures include local level awareness-raising, capacity strengthening and leadership mobilization for communities to ensure adequate buy-in for project activities. Activities will build on traditional systems and local knowledge and emphasize a participatory approach to ensure sustained commitment to project activities. These mitigation measures should keep the risk level at low.

Other		

Overall Risk Rating	Moderate	The overall risk rating is moderate. No substantial or high risks have been identified, and mitigation strategies can be presented to manage all identified risks. The project will continue to monitor risks throughout the project development and implementation phases, and will adopt an adaptive management approach to mitigate against any additional risks that may arise.

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Describe how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how. (max. 500 words, approximately 1 page)

The proposed intervention is aligned with GEF-8 programming strategies and Yemen's development priorities, including its commitments under multilateral environmental agreements. Regarding GEF-8 programming, the proposed project is a Multi Trust Fund project between LDCF and TF (Trust Fund), namely CCM. The project is consistent with GEF's overall, long-term vision to facilitate transformational adaptation in developing countries, towards achieving the Paris Agreement's global goal on adaptation, as articulated in Article 7 of the Paris Agreement as "enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, to contribute to sustainable development and ensure adequate response to the context of the temperature goal."

Specifically, the project is aligned with the GEF-8 LDCF objectives to reduce vulnerability to droughts and floods that are exacerbated by climate change. It is also aligned with the GEF-8 programming directions of the Climate Change Focal Area, particularly Pillar I, Objective 1.2: Enable the transition to decarbonised power systems. The proposed project will contribute to Objective 1.2 by improving access to clean and modern energy services in rural and peri-urban area communities.

Regarding country priorities and strategies, the project is closely aligned with the 2002 4th Socio-Economic Development Plan for Poverty Reduction by expanding economic opportunities for the poor; enhance the capabilities of the poor and increase the return on their assets; reducing the suffering and vulnerability of the poor; enhancing human and capital assets of the poor; and improving and upgrading infrastructure. It is also closely aligned with several national plans, as briefly summarized in the bullets below:

- 2005 National Strategy for Environmental Sustainability (NSES). The project is aligned with the NSES through its focus on water, land resources, and link between environmental degradation and poverty.
- 2004/2007 National Water Sector Strategy and Investment Programme (NWSSIP) aimed at protecting the interests of stakeholders in water and land resource management.
- 2008 National Adaptation Programme of Action (NAPA) through its focus on water and agriculture.
- National Agriculture Sector Strategy (NASS) 2012-2016 that addressed food security issues, climate change, water resources challenges, and the role of government in developing the agriculture sector.
- 2019 Post Conflict Reconstruction Strategy Study which accounts for Yemen's accession to the Energy Charter Treaty and endeavors to find the best strategy to electrify the rural and urban population of Yemen through 2050;
- 2009 National strategy for renewable energy and energy efficiency which calls for cost-effective renewable energy as well as increased energy efficiency and demand side management measures.
- Climate Finance Country Programme, 2025 - 2030 which outlines development priorities proposed for donor financing on climate-resilient water, energy, agriculture and coastal zone priority infrastructure.

The project is also aligned with the commitments made under the United Nations Framework Convention on climate change (UNFCCC). Yemen submitted its Intended Nationally Determined Contribution (INDC) under the UNFCCC in 2015 which, due to the war and security crisis, became its NDC by default. The project is aligned with some of the key focal areas of the INDC, as follows: i) promoting agriculture drought management as well as sustainable crop and livestock management; ii) introducing sustainable livelihood approaches for integrating natural resources management and preservation of sensitive ecosystems; capacity building and awareness raising on climate change impacts; and institutional capacity for building resilience to climate change including planning, programing, monitoring and resources mobilization.

Finally, project activities will contribute to several of the Sustainable Development Goals (SDGs), as identified in the bullets below.

- SDG 1: No poverty (through the development of climate resilient agricultural practices);
- SDG 3: Ensure healthy lives and promote well-being for all at all ages;
- SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all;
- SDG 5: Gender Equality (through women empowerment);
- SDG 6: Ensure availability and sustainable management of water (through establishment of water management structures and promotion of water harvesting techniques); and
- SDG 13: climate action (by strengthening the resilience to climate change of local communities).

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment:

We confirm that gender dimensions relevant to the project have been addressed as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

Stakeholder Engagement

We confirm that key stakeholders were consulted during PIF development as required per GEF policy, their relevant roles to project outcomes and plan to develop a Stakeholder Engagement Plan before CEO endorsement has been clearly articulated in the Project Description (Section B).

Yes

Were the following stakeholders consulted during project identification phase:

Indigenous Peoples and Local Communities: Yes

Civil Society Organizations: Yes

Private Sector: No

Provide a brief summary and list of names and dates of consultations

List of meetings with Stakeholders and field information resources

	Name	Title	Organization
1	Eng Ahmad Nasser Alzamki	Deputy Minister, Irrigation Sector	Ministry of Agriculture, Irrigation and Fish Wealth
2	Dr. Hussein Al Haithami	General Director	Ministry of Agriculture, Irrigation and Fish Wealth - Abyan
3	Eng Iqbal	Director – Rural Women Development	Agriculture Office Abyan
4	Mayas Alawi	Director of Agricultural Marketing Department	Agriculture Office - Abyan
5	Nour Muhammad Ahmed Qaid	Chairwoman of the Abyan Women's Association	Civil society Organization
6	Dr. Saeed Muhammad Al-Atifi Al-Ma'ab	Director of the Agriculture and Irrigation Office - Radum District	Agriculture Office - Shabwa - Radum
7	Dr. Taha Bakr	Director of the Environmental Protection Office - Shabwa Governorate	Public Authority for Environmental Protection
8	Salem Ali	Director of the Agriculture Office - Al-Mahfad District	Agriculture Office - Abyan
9	Dr. Abdul Aziz Muhammad Abdullah Zaabal	Secretary General of the Cooperative Association of Yemeni Beekeepers	Civil society Organization
10	Engineer Fahd Mabrouk	Director of the Agriculture Office - Shabwa Governorate	Agriculture Office - Shabwa
11	Dr. Hanan Mohsen Abdullah	Director General of the Agricultural Statistics Office	Ministry of Agriculture and Irrigation
12	Dr. Samir Abdel Rahman Muhammad	Agricultural researcher	Agricultural Research and Extension Station - Code Abyan
13	Dr. Bassam Talbi	Director of the Agriculture Office - Sarar District	Director of the Agriculture Office - Sarar District
14	Engineer Qasim Al-Nakhai	Director of the Agriculture Office - Abyan	Director of the Agriculture Office - Lawdar District
15	Engineer Ali Darwish	Director of the Agriculture Office - Abyan- Ahwar	Abyan Agriculture Office
16	Khaleda Al-Qadiri	Head of the National Committee for Women - Abyan	National Committee for Women – Abyan Governorate Office
17	Ahmed Khairan	Head of Shabwa Youth Organization	Civil society
18	Salem Mohammed Ahmed Sameh Ali Saleh Arman Ahmed Nasser Muhammad Nagir	Water Users Association - Central Region - Abyan	Farmers - Members of the Water Users Association
19	Ahmed Mahdi Muhammad Al-Shakli	Water Users Association - Abyan	Farmers - Members of the Water Users Association

	Muhammad Abdullah H. Muhammad Labyad Abdullah Ali Muhammad Al-Masadi		
20	Shukri Saleh Mahdi Nasser Mahdi Saleh for work Nasser Omar Al-Safi	Farmers - Ahwar	Farmers - Members of the Water Users Association
21	Fatima Faraj Haidari	Chairwoman of the Rural Women's Development Association - Shabwa	Civil society organizations
22	Mohammad Ahmad Nasser Jarfush Ali Mohammad Saeed Lashab Mohammad Ali Alsaarif Hadi Ali Fanieh Aseel Mansour Ali Bamarhuul Mustafa Saleh Ali Al-Maksar	Al-Mahfad Farmers association	Famers – Water user groups

(Please upload to the portal documents tab any stakeholder engagement plan or assessments that have been done during the PIF development phase.)

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in the section B project description?

Yes

Environmental and Social Safeguard (ESS) Risks

We confirm that we have provided indicative information regarding Environmental and Social risks associated with the proposed project or program and any measures to address such risks and impacts (this information should be presented in Annex D).

Yes

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE

Medium/Moderate

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described in the Project Description (Section B)

Yes

ANNEX A: FINANCING TABLES

GEF Financing Table

Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	GEF Project Grant($)	Agency Fee($)	Total GEF Financing ($)
UNDP	LDCF	Yemen	Climate Change	LDCF Country allocation	Grant	18,098,624.00	1,628,876.00	19,727,500.00
UNDP	GET	Yemen	Climate Change	CC STAR Allocation: CCM-1-1	Grant	1,784,862.00	160,638.00	1,945,500.00
Total GEF Resources ($)						**19,883,486.00**	**1,789,514.00**	**21,673,000.00**

Project Preparation Grant (PPG)

Is Project Preparation Grant requested?

true

PPG Amount ($)

300000

PPG Agency Fee ($)

27000

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	PPG($)	Agency Fee($)	Total PPG Funding($)

UNDP	LDCF	Yemen	Climate Change	NA	Grant	250,000.00	22,500.00	272,500.00
UNDP	GET	Yemen	Climate Change	CC STAR Allocation: CCM-1-1	Grant	50,000.00	4,500.00	54,500.00
Total PPG Amount ($)						**300,000.00**	**27,000.00**	**327,000.00**

Please provide justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total($)
UNDP	GET	Yemen	Climate Change	CC STAR Allocation	2,000,000.00
Total GEF Resources					**2,000,000.00**

Indicative Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing($)	Co-financing($)
CCM-1-1	GET	1,784,862.00	14050000
CCA-1-1	LDCF	18,098,624.00	47050000
Total Project Cost		**19,883,486.00**	**61,100,000.00**

Indicative Co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Ministries (of Water & Environment and Agriculture)	In-kind	Recurrent expenditures	100000
GEF Agency	UNDP	Grant	Investment mobilized	1000000
Donor Agency	EU	Grant	Investment mobilized	20000000
Donor Agency	World Bank	Grant	Investment mobilized	30000000

Donor Agency	KFW	Grant	Investment mobilized	10000000
Total Co-financing				**61,100,000.00**

Describe how any "Investment Mobilized" was identified

The investment mobilized as co-finance to the proposed project will contribute to addressing the vulnerability resilience in the targeted areas. Specifically:

- UNDP cofinancing is a resource mobilization that the GEF agency will be setting aside, either from internal resources or from other donor funding opportunities, channeled to this project.
- EU, WB and KFW cofinancing have been identified during a series of consultations with these donors during PIF design. This constitutes future funding opportunities that might be available, in case this proposed GEF-funded project is under implementation.

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Name	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	Nancy Bennet	9/18/2024	Executive Coordinator (Ad Interim)		Nancy.bennet@undp.org
Project Coordinator	Ahmad Afaneh	9/18/2024	Regional Technical Advisor		ahmad.afaneh@undp.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Name	Position	Ministry	Date (MM/DD/YYYY)
Faisal S. Al Thalabi	Acting Chairman, Environment Protection Authority	Ministry of Water and Environment	10/16/2024

ANNEX C: PROJECT LOCATION

Please provide geo-referenced information and map where the project interventions will take place

Detailed map of targeted village locations is TBD.

ANNEX D: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

(PIF level) Attach agency safeguard screen form including rating of risk types and overall risk rating.

Title

10120 Yemen LDCF CCM PIF - SESP 2Sept2024

ANNEX E: RIO MARKERS

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
Significant Objective 1	Principal Objective 2	No Contribution 0	No Contribution 0

ANNEX F: TAXONOMY WORKSHEET

Level 1	Level 2	Level 3	Level 4
Influencing models			
	Transform policy and regulatory environments		
	Strengthen institutional capacity and decision-making		
	Convene multi-stakeholder alliances		
	Demonstrate innovative approaches		
	Deploy innovative financial instruments		
Stakeholders			
	Private Sector		
		SMEs	
		Individuals/Entrepreneurs	
	Beneficiaries		
	Local Communities		
	Civil Society		
		Community Based Organization	
		Non-Governmental Organization	
	Type of Engagement		
		Information Dissemination	
		Partnership	
		Consultation	
		Participation	
	Communications		
		Awareness Raising	
		Education	
Capacity, Knowledge and Research			
	Enabling Activities		
	Capacity Development		
	Knowledge Generation and Exchange		
	Targeted Research		
	Learning		
		Theory of Change	
		Adaptive Management	
		Indicators to Measure Change	
	Innovation		
	Knowledge and Learning		
		Knowledge Management	
		Innovation	
		Capacity Development	

		Learning	
	Stakeholder Engagement Plan		
Gender Equality			
	Gender Mainstreaming		
		Beneficiaries	
		Women groups	
		Sex-disaggregated indicators	
	Gender results areas		
		Access and control over natural resources	
		Participation and leadership	
		Access to benefits and services	
		Capacity development	
		Awareness raising	
Focal Areas/Theme			
	Land Degradation		
		Sustainable Land Management	
			Restoration and Rehabilitation of Degraded Lands
			Ecosystem Approach
			Community-Based NRM
			Sustainable Livelihoods
			Income Generating Activities
			Improved Soil and Water Management Techniques
		Land Degradation Neutrality	
			Land Cover and Land cover change
	Climate Change		
		Climate Change Adaptation	
			Least Developed Countries
			Climate Resilience
			Ecosystem-based Adaptation
			Community-based Adaptation
			Livelihoods
		Climate Change Mitigation	
			Renewable Energy
Rio Markers			
	Paris Agreement		
	Sustainable Development Goals		
	Climate Change Mitigation 1		
	Climate Change Adaptation 2		