



ADAPTATION FUND

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regular-sized Project Concept

Country/Region: Egypt
Project Title: Climate Change Adaptation to Improve Livelihoods in Siwa Oasis (CCAILSO)
Thematic Focal Area: Multisector
Implementing Entity: Sahara and Sahel Observatory (OSS)
Executing Entities: Ministry of Agriculture - Desert Research Center (DRC)
AF Project ID:
IE Project ID: **Requested Financing from Adaptation Fund (US Dollars):** 8,000,000
Reviewer and contact person: Daniel Gallagher **Co-reviewer(s):** Ming Yang
IE Contact Person: Khaoula JAQUI

Technical Summary

The project “Climate Change Adaptation to Improve Livelihoods in Siwa Oasis” aims to to strengthen the resilience of the SIWA Ecosystem while improving the community’s livelihoods to climate impacts through the enhancement of soil and water management systems, agricultural production and promotion of ecotourism. This will be done through the three components below:

Component 1: Improving water resource access and management for local communities (USD 3,030,000);

Component 2: Building the resilience of ecosystems and livelihoods to climate change variability (USD 3,105,000);

Component 3: Strengthening knowledge and adaptive capacities of stakeholders to climate change impacts (USD 605,000).

Requested financing overview:

Project/Programme Execution Cost: USD 635,000

Total Project/Programme Cost: USD 7,375,000

Implementing Fee: USD 625,000

Financing Requested: USD 8,000,000

The proposal includes a request for a project formulation grant of USD 50,000.

	The initial technical review raised several issues, including cost effectiveness, the lack of focus on concrete adaptation measures, and sustainability concerns over project benefits, as discussed in the number of Clarification Requests (CRs) and Corrective Action Requests (CARs) raised in the review.
Date:	26 January 2023

Review Criteria	Questions	Comments	IE Response
Country Eligibility	1. Is the country party to the Kyoto Protocol, or the Paris Agreement?	Yes	OK
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes. Egypt is vulnerable to climate change, with a projected increase in heat waves, dust storms, and storms and extreme weather along its coastline.	OK
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	Yes. As per the endorsement letter dated Oct 2021.	OK
	2. Does the length of the proposal amount to no more than Fifty pages for the project/programme concept, including its annexes?	Yes. The proposal amounts to 46 pages.	OK
	3. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?	Not significantly. The proposal focuses predominantly on water resource management and technical assistance for livelihood adaptation. There is not a substantial focus on concrete adaptation interventions.	

Review Criteria	Questions	Comments	IE Response
		<p>CAR1: Please revise the project activities, outputs, and components, to support concrete adaptation that will deliver substantial tangible benefits to communities vulnerable to climate change. In doing so, please specify how the specific concrete actions are selected to be commensurate with the adaptation challenges under long term climate scenarios.</p>	<p>The project activities are delivering substantial tangible benefits to climate change vulnerable communities, by responding to their main challenges related to water scarcity and drought related disasters. To better show the paradigm shift and the improvement of livelihoods a TOC has been developed to show the relationship between the barriers and the planned activities aligning with a clear project philosophy. The concrete adaptation actions have been linked and described below:</p> <p><i>Concrete Action= CA</i></p> <p>The beneficiaries of the project will vary greatly, as it will include all the relevant sectors including farmers and rural communities, who are the target beneficiaries by establishment of solar powered irrigation systems (CA).</p> <p>This combined with the proposed promotion and enhancement of improved irrigation systems (CA), methods and techniques as well as drainage networks (CA), pest control, introduction of CRA techniques (CA) and providing the necessary tools (CA) will enhance their adaptive capacities</p>

Review Criteria	Questions	Comments	IE Response
			<p>toward long term climate change impacts, and ensure food security among the community.</p> <p>The promotion of short-cycle livestock (CA) and facilitation of the veterinary access (CA) as well as installing pasture management systems (CA) and promotion of the fodder production techniques using the low saline water/ drain waste water (CA) will also contribute to better livestock husbandry. It will also aid in diversifying the sources of income from purely agricultural activities among the communities and therefore enhance their adaptive capacities toward climate variability impacts.</p> <p>The establishment of water collection models for human consumption (CA) will also have positive effects on the daily activities of especially youth and women by reducing the time spent to look and fetch for water. Time saved will be utilised socially as well as to enhance the family economic situation and also reduce on the spread of water related diseases.</p> <p>Capacity building of youth and women in hand craft manufacturing and IGAs (CA) will further support</p>

Review Criteria	Questions	Comments	IE Response
			<p>household breadwinners by providing the necessary and suitable capacity building and funds to start and enhance their small-scale economic projects, providing them with better economic power and access to job opportunities (Highlighted in activity description and para 61, 107, 117, 118, 119 and 121)</p>
	<p>4. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?</p>	<p>Unclear. The initial gender analysis is helpful, however there is little demonstration of concrete benefits that accrue to communities from project activities.</p> <p>CAR2: After addressing CAR1, please provide further detailed information on the intended project beneficiaries across target areas, with reference to how benefits will be shared equitably between them including from a gender perspective.</p> <p>In doing so, please quantify to the extent possible the number of beneficiaries that stand to gain from each of the project outputs and what they stand to gain.</p>	<p>At this early stage of Concept Note we are aware of the project area, however the exact project sites within the Siwa oasis where we will be able to quantify in detail the beneficiaries are not yet decided.</p> <p>One of the main objectives of the project is to increase and diversify the sources of income of communities within the Siwa Oasis, which has a population of about 30,260. Of these, 15,934 (52.7%) are males and 14,326 (47.3%) are females. Because the project area is covering the whole oasis the figures provided remain global and will be further desegregated during the full proposal development phase.</p> <p>During the implementation of project activities, a focus on gender balance with at least 40% of women and youth participation in order to uplift them economically and socially</p>

Review Criteria	Questions	Comments	IE Response
			<p>through involvement in the income generating activities will be observed.</p> <p>Furthermore, the project through its activities is proposing to establish and support a savings and credit co-operative societies as well as a revolving fund scheme with a gender focus in order to support communities and small business and to enhance their resilience to CC impacts</p> <p>The TOC highlights the benefits of the outputs to the beneficiaries and shall be elaborated further in the extensive consultation process during FP stage (TOC para 156) (Highlighted in activity description and para 108, 109,110, 111, 119, 121, 146 and 147)</p>
	<p>5. Is the project / programme cost effective?</p>	<p>Not demonstrated.</p>	<p>At this stage of the CN development, the cost effectiveness was initially undertaken to highlight how the CCAILSO Project will take into account the and utilize the requested funds for concrete adaptation actions.</p> <p>Further this, an extensive and elaborative CE study will be undertaken during full development stage.</p>

Review Criteria	Questions	Comments	IE Response
			(Highlighted in para 126, 127, 128, 132)
	6. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?	Yes. The proposal is broadly in line with the range of identified strategies and plans.	OK
	7. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?	Yes. The relevant national technical standards are identified, and compliance is demonstrated sufficiently at this stage.	OK
8. Is there duplication of project / programme with other funding sources?	<p>No. The proposal outlines a range of initiatives that could have overlap, and demonstrates synergies.</p> <p>CR1: Please clarify how the proposal has been informed by other cited initiatives, demonstrating the lessons learned for the development of this proposal.</p>	<p>CR 1</p> <p>At this stage of the project design, initiatives already implemented, or ongoing within the country and region are taken into consideration. The lessons learned from these initiatives have been taken into account and valorized during the conceptualization of the concrete actions to be undertaken during the implementation ensuring result-based activities.</p> <p>Furthermore, a participatory approach and consultations with all stakeholders within the project area will be a continuous process that will</p>	

Review Criteria	Questions	Comments	IE Response
			<p>assist in emphasizing synergies, benefit from the lessons learned.</p> <p>(Highlighted in activity description and paragraph 136)</p>
	<p>9. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?</p>	<p>Yes. The project has a learning and knowledge management component (Component 3) with budgets to capture and feedback lessons.</p>	<p>OK</p>
	<p>10. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?</p>	<p>Yes. The proponents have consulted with a range of project stakeholders collectively and individually, including women and youth throughout 2022.</p> <p>CR2: Please clarify how consultation processes would be carried forward in the development of any fully-developed proposal in a gender-sensitive way, with attention to the methods and duration of consultation.</p>	<p>CR2</p> <p>Further clarification on the consultation Processes that would be carried out during the full proposal development has been added to the CN.</p> <p>It has highlighted the gender sensitive approach that will be adopted and gave an overview of the key steps of this new consultation process to be carried out at several levels during the full proposal development. This will be conducted post funding proposal approval to further ensure inclusivity as per the Environmental and Social Management plan and Gender Assessment and Action Plan to be elaborated and implemented. The selection criteria will be further elaborated and a robust stakeholder mapping will be undertaken to ensure the bottom-up and top</p>

Review Criteria	Questions	Comments	IE Response
			<p>bottom approach towards the consultations.</p> <p>Various avenues such as field meetings, boardroom meetings as well as virtual meetings where necessary will be the avenues and methods undertaken to ensure the consultations are covering the proposed project areas and are extensive.</p> <p>(Highlighted in para 144, 145, 149 and 150)</p>
	<p>11. Is the requested financing justified on the basis of full cost of adaptation reasoning?</p>	<p>Unclear. This can be more fully assessed when the corrective action requests on concrete adaptation measures and cost effectiveness are addressed.</p>	<p>The concrete actions have been updated and identified in the TOC as well as the description of activities and both have been addressed in CAR 1.</p> <p>Following the above, a full cost effectiveness study will be undertaken during the full proposal stage preparation.</p> <p>(Highlighted in para 155)</p>
	<p>12. Is the project / program aligned with AF's results framework?</p>	<p>Yes.</p>	<p>OK</p>
	<p>13. Has the sustainability of the project/programme outcomes been taken into account when designing the project?</p>	<p>No. Long term sustainability is predicated on the active participation of target community members in implementation, however there are no financial resources assigned or explored to</p>	<p>To ensure sustainability: The bottom-up approach is being exercised to ensure inclusivity and needs of the beneficiary communities. The element of sustainability of the project results</p>

Review Criteria	Questions	Comments	IE Response
		<p>sustain project benefits. The proponent mentions “<i>The project will develop concrete initiatives in the community that will continue to provide results beyond the year of implementation</i>” without explanation of what these concrete initiatives are and how long-term financial resources will be secured to sustain them.</p> <p>CAR3: In addressing the corrective action requests on concrete adaptation initiatives, please ensure that financial and institutional sustainability are considered so that project benefits are sustained in the long term.</p>	<p>was taken into account as a general philosophy of the project, through conducting initial targeted consultations including all institutions and actors working in the oasis as well as representatives from ministries and governmental authorities and tribal leaders in cooperation with the head of the Siwa City Council, and the governor, the meeting has concluded that the projects outputs will be considered under the annual budget of the DRC and under its management which will ensure the long-term sustainability of the outcomes after its lifespan.</p> <p>In addition, the DRC owns a research station in the oasis that provides various services to the community for more than 20 years. To complement the activities (CAICs, FC, WUAs..) being implemented and adding to their energy independence and internal management capability, the cooperation developed will be considered under the annual budget of the DRC and under its management which will ensure the long-term sustainability of the project outputs.</p>

Review Criteria	Questions	Comments	IE Response
			(Highlighted in activities description and paragraphs 123, 157,158,160, 161)
	14. Does the project / programme provide an overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	Yes. The proposal identifies potential environmental and social impacts and risks. However, this will require reassessment after revision of the proposal to provide funding for concrete adaptation interventions.	OK
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	Yes.	OK
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	Yes.	OK
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	Yes.	OK
Eligibility of IE	1. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes.	OK

Review Criteria	Questions	Comments	IE Response
Implementation Arrangements	1. Is there adequate arrangement for project / programme management, in compliance with the Gender Policy of the Fund?	n/a at concept stage	
	2. Are there measures for financial and project/programme risk management?	n/a at concept stage	
	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy and Gender Policy of the Fund?	n/a at concept stage	
	4. Is a budget on the Implementing Entity Management Fee use included?	n/a at concept stage	
	5. Is an explanation and a breakdown of the execution costs included?	n/a at concept stage	
	6. Is a detailed budget including budget notes included?	n/a at concept stage	
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators, in compliance with the Gender Policy of the Fund?	n/a at concept stage	
	8. Does the M&E Framework include a break-down of how implementing entity IE fees will	n/a at concept stage	

Review Criteria	Questions	Comments	IE Response
	be utilized in the supervision of the M&E function?		
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	n/a at concept stage	
	10. Is a disbursement schedule with time-bound milestones included?	n/a at concept stage	



CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

Egypt Oasis Project Climate Change Adaptation to Improve livelihoods in Siwa Oasis (CCAILSO)

1. Title of Project	Climate Change Adaptation to Improve Livelihoods in Siwa Oasis (CCAILSO)
Country:	Egypt
Thematic Focal Area:	Multisector project
Type of Implementing Entity:	Regional Implementing entity
Implementing Entity:	Sahara and Sahel Observatory (OSS)
Executing Entities:	Ministry of Agriculture - Desert Research Center (DRC)
Amount of Financing Requested:	8,000,000 in U.S Dollars Equivalent
Project Formulation Grant Request:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Amount of Requested financing for PFG:	50,000 in U.S Dollars Equivalent
Letter of Endorsement (LOE) signed:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Stage of Submission:	This is the first submission ever of the concept proposal

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PART I: PROJECT JUSTIFICATION

1. Project Background and Context

1.1. National background

2. Egypt is about 1 million km² in area. It is located on the edge of Africa and Asia, within the geographic boundaries of latitude 22°–32° N and longitude 25°–35° E¹, with a population of about 100 million people². Egypt is ranked 111 on the Human Development Index³. According to the National Household Income, Expenditure and Consumption Survey (HIECS), 15.9% of the population have poor access to food. Additionally, unemployment rates remain persistently high at 12.5%⁴.
3. Egypt is a lower-middle income country, with a GDP per capita of USD 2,448 (2020). The GDP by sector in 2017 was: 12% for agriculture; 32% for industry, and 56% for services. The Labour force in 2019 was 28 million, with 29% in agriculture, 24% in industry and 47% in services. Agriculture directly and indirectly engages about 55% of Egypt's Labour force.⁵
4. Egypt launched its "Vision 2030" which aims to achieve sustainable development that would enable Egypt possess a competitive, balanced and diversified economy that is dependent on innovation and knowledge, with the right to secure access to food and nutrition being a priority in the strategy.
5. In spite of its ambitious SDG 2030 Vision, Egypt faces significant challenges, particularly with a very high population growth which will exacerbate levels of food, water and energy insecurity. Other issues related to water shortages, soil salination and extreme weather events particularly temperature changes will make it challenging to achieve this vision.
6. Current and future government measures and efforts to combat climate change and its impacts have been expressed in the National Determined Contributions (NDCs). Adaptation and mitigation measures have been put forward in all the relevant sectors and their implementation will depend on international support in relation to financial flows, capacity building and technology transfer.
7. Initial estimates indicate that Egypt, with the assistance of international partners, will need about 73.04 billion USD to implement adaptation and GHG emission reduction measures for the period of 2020-2030⁶ (GoE, 2015). To mobilize the required financial resources, Egypt like other African countries, will need diverse internal and external funding sources in addition to public sources.
8. Private sector climate finance for NDCs is considered to be a critical part of the financial landscape. However, African countries including Egypt, have not yet attracted the levels of private climate finance that are widely believed to be necessary. This gap can be related to the fact that the role of the private sector, which is key in driving climate finance and climate innovation has not been clearly defined and understood within the African context. Thus, enhancing private sector participation in NDC-related investments in Africa in general and Egypt in particular is crucial.

1.1.1. Climate of Egypt

9. Egypt's climate is hot and dry. The average daily temperature ranges from 17°C to 20°C along the Mediterranean to more than 25°C in Upper Egypt along the Nile. Precipitation is generally very low. It is highest along the Mediterranean where it averages more than 200 mm/yr. Precipitation rates drop quickly as one moves away from the coast. Most of Egypt receives about 10 mm of precipitation per year which shows average annual precipitation across the country. Thus, most of Egypt is a desert and can be classified as arid. The exception is the slightly wetter Mediterranean coast, which can be considered semi-arid. Generally, the small amount of rain that does fall comes in the winter, and hence Egypt has a Mediterranean type of climate.⁷

¹ Hamed MM, Nashwan MS, Shahid S .2022. Novel selection method of CMIP6 GCMs for robust climate projection. Int J Climatol. <https://doi.org/10.1002/joc.7461>.

² WDI, Macro Poverty Outlook, and official data.

³ Household Income Expenditure and Consumption Survey, Central Agency for Public Mobilization and Statistics (CAPMAS), Jan-Dec 2015.

⁴ Quarterly Labour Survey, CAPMAS. <https://dsbb.imf.org/sdds/dqaf-base/country/EGY/category/EMP00>

⁵ <https://www.cia.gov/the-world-factbook/field/gdp-composition-by-sector-of-origin/>

⁶ <https://unfccc.int/sites/default/files/NDC/2022-07/Egypt%20Updated%20NDC.pdf>.

⁷ <https://www.eeaa.gov.eg/portals/0/eeaaReports/SoE2011en/completereport/SOE-2010-En.pdf>

1.1.2. Bioclimatic zones in Egypt

10. According to Köppen climate classification, Egypt experiences the 'hot desert climate type' (BWh) in the southern and central parts of the country and the 'hot steppe climate type' (BSh) along the coast. Most parts of Egypt are occupied by the Sahara Desert, which represents the most extensive arid area on the planet. In general, Egypt possesses a hot-arid climate throughout the year.⁸

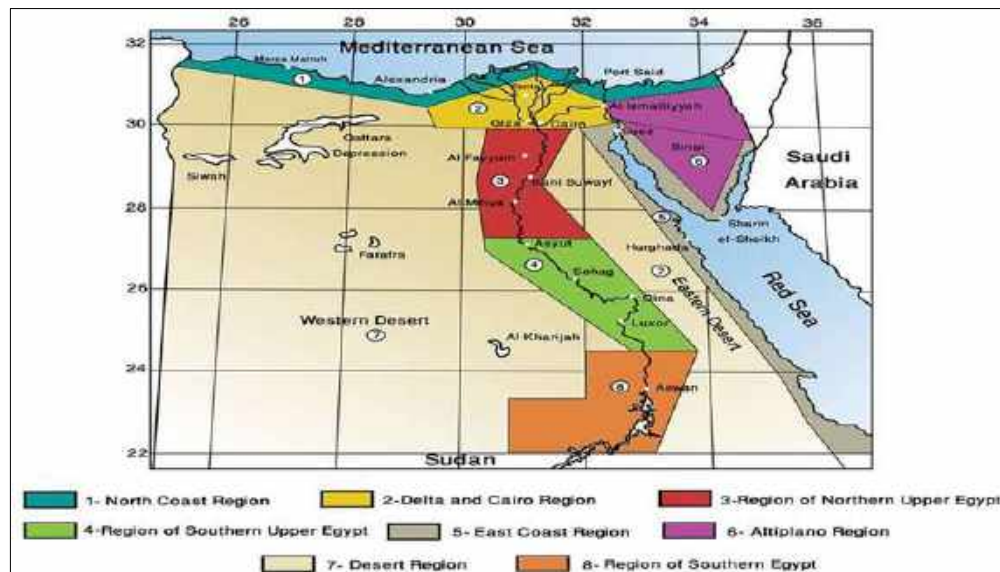


Figure 1: Bioclimatic zones in Egypt

1.1.3. Temperature

11. Throughout Egypt, days are often warm, and nights are cool. Egypt has only two seasons: a mild winter from November to April and a hot summer from May to October. The only differences between the seasons are variations in daytime temperatures and changes in prevailing winds. In the coastal regions, temperatures range between an average minimum of 14°C in winter and an average maximum of 30°C in summer. The annual average temperatures increase from about 20°C on the Mediterranean coastline to around 24°C on the Red Sea coastline, 25°C in Cairo, and 26°C in Aswan.

1.1.4. Precipitation and Flooding

12. Egypt receives less than 80 mm of precipitation annually. Most of the rain falls along the coast, but even the wettest area, around Alexandria, receives only about 200mm of precipitation per year. Precipitation rates drop quickly as one moves away from the coast and most of Egypt receives only about 2 mm of precipitation per year. Over the last few years there has been a heightened severity and frequency of flash flooding across Egypt.
13. Egypt has 97% dependency ratio as far as water is concerned, since its renewable water sources comes from outside its territory, increasing its sensitivity to external influences. The Nile River is the main source of fresh water for Egypt, supplying 55.5 billion cubic meters (BCM) per year. Additional marginal amounts are provided from deep non-renewable groundwater aquifers (2.1 BCM), limited rainfall (1.3 BCM), and desalination (0.35 BCM) to increase the total yearly available water resources to 59.25 BCM. Climate change impacts, water pollution, and geopolitical factors are expected to exacerbate water stress in Egypt. The climate change scenarios indicate that the Nile inflow at Aswan will decrease as a result of the impact throughout the Nile Basin.
14. Future precipitation trends for Egypt are highly uncertain and information is not readily available. There is however agreement across climate models that temperatures are projected to increase significantly under climate change, increasing the prevalent water scarcity. Data from the World Bank's Climate Change Knowledge Portal (CCKP) below shows historical information for annual mean temperature for Egypt between 1901–2019 was 22.5°C, with average monthly temperatures ranging between 30°C (July) and 13°C (January).

Table 1: Climate summary statistics in Egypt

⁸ M. Kottek J. Grieser . Beck B. Rudolf and F. Rubel "World Map of the Köppen-Geiger climate classification updated" Meteorol. Z., vol. 15, no. 3, pp. 259–263, Jun. 2006

Climate Variables	1901-2019
Climate Variables	22.5°C
Mean Annual Temperature (°C)	33.3 mm
Mean Annual Precipitation (mm)	29.9°C
Mean Maximum Annual Temperature (°C)	15.1°C

1.1.5. Future Climate

15. The German Climate Service Centre predicts that the climate of Egypt will become hotter and drier, with temperatures increasing by 2 to 3°C by mid-century. GERICS further predicts a rise in annual mean temperature of between 2 to 5°C, with the maximum temperatures increasing by 2 to 6°C and minimum temperatures increasing by 1.5 to 4.6°C. Rainfall projections are variable and it is more likely that there will be a reduction in the total precipitation, longer dry spells, and a higher number of extreme weather events, including flash floods. The Working Group on Coupled Modelling 5 in Figure 2 below shows the following projected changes over Egypt.
16. Future Temperature Trends: The mean annual temperature in Egypt is projected to increase by 1.07°C to 1.27°C by 2030 for the RCP4.5 and RCP8.5 median model ensemble, and by 0.37°C and 0.61°C for the RCP4.5 and RCP8.5 10th percentile, and by 1.78°C and 2.11°C for the RCP4.5 and RCP8.5 90th percentile [CCKP]. Maximum temperatures are projected to increase by 1.0°C to 1.22°C, and minimum temperatures by 1.09°C and 1.32°C for the RCP4.5 and RCP8.5 median ensemble. Annual minimum and maximum temperatures are projected to increase in the future.

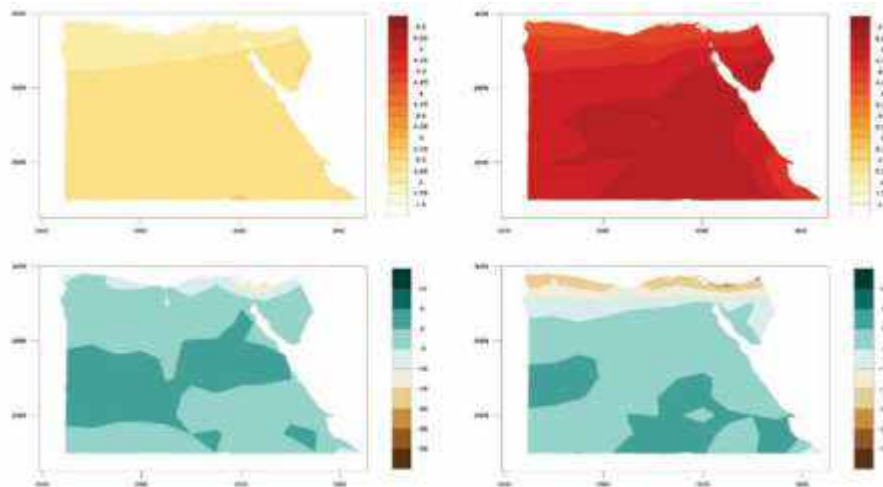


Figure 2: Projected annual temperature/precipitation changes over Egypt

1.1.6. Climate Change context in Egypt

17. Egypt is highly vulnerable to climate change, with projected increase in heat waves, dust storms, storms along the Mediterranean coast and extreme weather events. Stronger warming has been documented over the past 30 years, with average annual temperatures increasing by 0.53 degree Celsius per decade. Crucially, the awareness of the importance of climate change action both domestically and at the global level is fast increasing in Egypt. The country is at a turning point in its commitment and action to tackle the consequences of climate change. In the 2030 Vision and sustainable development strategy, Egypt has also made commitments to integrate climate change in national development policies and to progressively green its budget across sectors.
18. The government of Egypt is part of the UNFCCC, and thus recognizes the importance of collectively meeting the ultimate objective of the Convention, which is mainly to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Egypt submitted the Initial National Communication in 1999, the Second National Communication in 2010, the Third National Communication in 2016 and the first Biennial Update Report (BUR1) in 2018. Climate policies, strategies and actions revolve around the two key areas of CC vulnerability and adaptation and climate change mitigation. In July 2022, Egypt submitted its updated first Nationally Determined Contribution (NDC), in which the country reviewed its emission reduction objectives for 2030. These goals are conditional to an outside support financing of US\$246bn (US\$196bn for mitigation interventions and US\$50bn for adaptation interventions).

1.2. Siwa Oasis Context

1.2.1. Local background

19. The Siwa Oasis is a natural depression located in the northern edge of the Western Desert. It is about 300 km south of the Mediterranean port town of Marsa Matrouh and lies between 29° N and 25.5° E, covering an area of about 800 km². It stretches about 80 km in east-west direction is bounded by the Qattara Depression from the east, the Jaghub Depression from the west, the Great Sand Sea from the south, and the El-Diffa Plateau from the north. The Siwa Oasis is covered by a variety of eolian sands and sabkhas. The distinctive natural elements of the Siwa Oasis are saline lakes, which receive water from natural springs and from agricultural drainage.

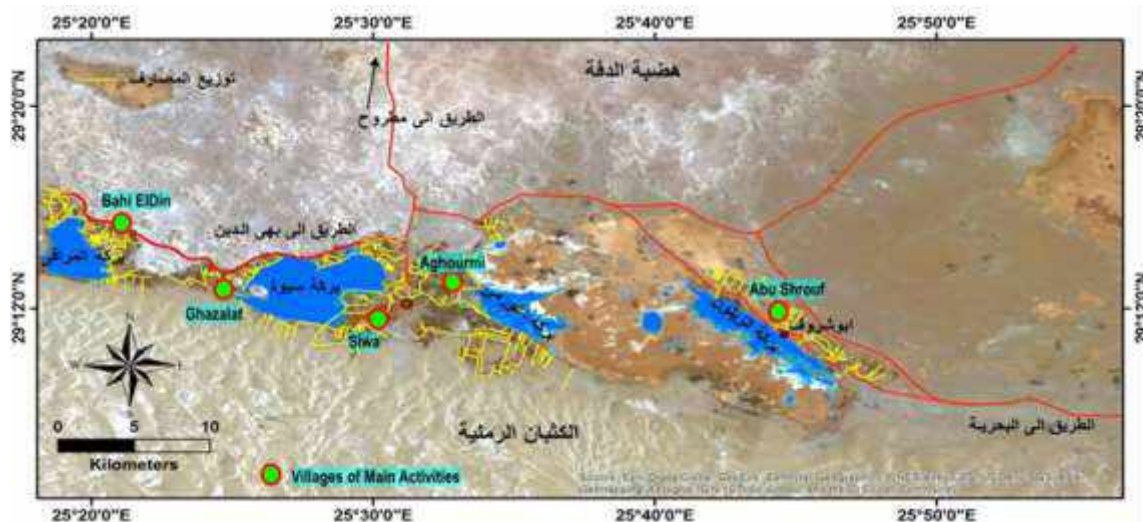


Figure 3: Satellite image of the Siwa Oasis, Egypt Source: Google Maps

1.2.2. Siwa Oasis Climate

20. The climate of Siwa exhibits extreme aridity from April to November with very low rainfall experienced from December to March, usually an average of just 10 mm/year. The monthly mean maximum temperatures range from 20°C in January to 38°C in July, with a yearly average of approximately 30°C. Monthly mean minimum temperatures range from 4°C in January 21°C in July. Maximum temperatures can reach 50°C while the absolute minimum is 4.5°C. Rainfall is scarce with an average annual rainfall of 13 mm, but humidity is relatively high ranges from 22% in May to

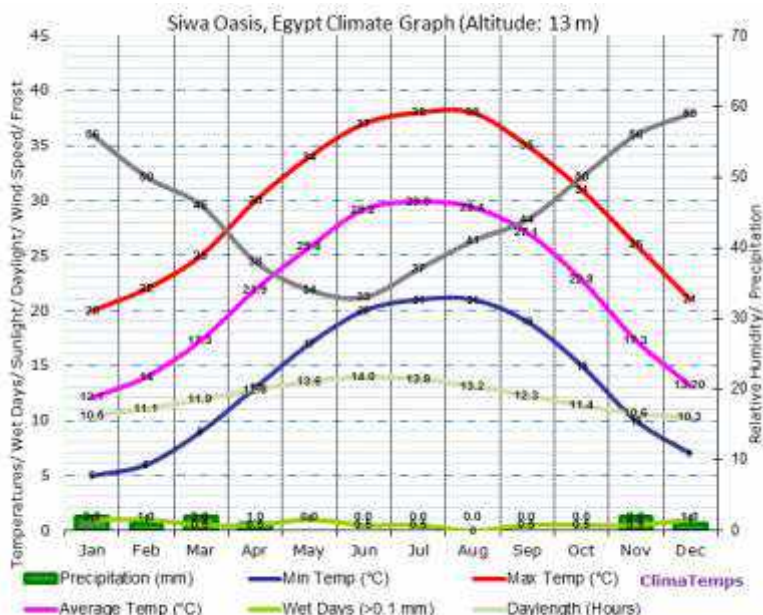


Figure 4: Climate diagram of Siwa Oasis Climate (temperature and precipitation)

45% in December depending on the associating daily evaporation rate (average 17 mm in June–5.2 mm in December).⁹

1.2.3. Siwa Oasis Biodiversity

21. Siwa Oasis became a protectorate in 2002 as per Prime Ministerial decree number 1219, although nowadays visitors would have a hard time noticing any overt measures meant to be in place to ensure that the environment in the area is in fact protected. Such measures are much needed since Siwa is particularly rich environmentally and in cultural history. A total of 7800 km² of this oasis is classified as PA. (figure 5, zone N°22).
22. Biodiversity reported in Siwa includes 53 plant species, 28 wild mammals including 8 rare species threatened with extinction (namely cheetah, striped hyena, Egyptian gazelle, white gazelle, red fox, wild cat and Fennec fox), 32 reptile species, 164 bird species and 36 insects and a large number of invertebrates. In Wadi El Gemal and Hamata 140 plant species including 32 used in traditional medicine, 24 mammal species, 29 species of reptiles and amphibians and 45 bird species were recorded.¹⁰



Figure 5: Location of Egypt's protected areas

1.2.4. Siwa Oasis Hydrology

23. Siwa is located above two huge reservoirs of groundwater, the only substantial fresh water supply in the region. The upper reservoir is composed of interstitial water confined in the cavities of Miocene limestone. This reservoir extends down to a depth of about 550m below ground surface. The deep aquifer consists of thick layers of Nubian Sandstone, which go down to a depth of about 2000m below ground surface but being a high artesian pressure, it comes out of the ground appearing as natural springs.¹¹

1.2.5. Siwa Oasis Climate Vulnerability

24. The Siwa oasis is a specific ecological landscape that characterizes the Western part of Egypt. It is a complex and fragile agro-ecosystem which sustains agriculture under extreme climatic conditions. Agriculture, the main economic activity in the oasis will be impacted negatively by climate change as the area typically prone to water scarcity and increasing soil salinization will require more water for irrigation as evaporation levels increase will lead to more water usage for irrigation compounding the problem of waterlogging and soil salinization in the Siwa oasis.

9 EMA, Egyptian Meteorological Authority (2012) <http://www.ema.gov.eg/map?menu=3&lang=en> (<http://www.ema.gov.eg/map?menu=3&lang=en>)

10 <https://www.cbd.int/doc/world/eg/eg-nbsap-v2-en.pdf>

11 El-Fadl, Moustafa & Wassel, Magdy & Zaky Sayed, Ahmed & Mahmod, Ammar. (2013). Hydrochemical Characteristics of Groundwater in Siwa Oasis, Egypt. Part I. Significance of the Situation Groundwater Resources and Future Outlook. 4. 4-438

1.2.5.1. Drainage water and stagnation in Siwa

25. Siwa depression is an isolated closed drainage basin, which uses naturally flowing springs and deep groundwater wells as the only source for everyday domestic use as well as all other development and economic activities. Because of the intensive use of groundwater, the drainage lakes or evaporation pond in Siwa oasis became insufficient to accommodate the water from the groundwater wells. The cultivated lands are therefore suffering from waterlogging and soil salinization problems. Climate change is expected to increase the pressure on water resources in Siwa Oasis. It is predicted that with the increase in temperatures and the increase in the rate of evaporation, the problems within the oasis will exacerbate and may eventually lead to the disappearance of the historical oasis known today.



Figure 6: Water Drainage and stagnation issues

1.2.5.2. Impacts on Soils

26. The soil water retention level in the oasis is rising steadily. The increase in the ground water level has been estimated by the Desert Research Center in the oasis about 4.5 cm/year¹². This phenomenon is concentrated around the lakes, where the rise in the soil water level leads to the destruction of the land and its transformation into bare marshes or highly saline water pools.
27. The reasons for the rise in ground water in the oasis vary, but often it is from the wasteful exploitation of irrigation water, as flood irrigation is the prevailing method of irrigation in the oasis, the small drainage network, the poorly permeable clay soil that covers most parts of the oasis, as well as the presence of a solid, impermeable rocky layer under the soil layer that prevents water from percolating into the lower stratospheres.
28. The lands in Siwa Oasis have deteriorated significantly, as part of the fertile agricultural lands turns into weak agricultural lands and further into waste lands as a result of salts concentration in the soil. The reasons for this deterioration in the soil are due to the stagnated ground water at certain points, high rate of heat and evaporation, among others. This therefore, sets up a cycle for more salts to accumulate in the soils. The project will provide a set of practices to reduce the deterioration of agricultural land, including encouraging the transition to improved irrigation



systems as well as raising awareness of the concern for internal drainage.

¹² A.Wassel, Magdy & Zaky Sayed, Ahmed & El-Fadl, Moustafa & M.Mahmod, Ammar. (2016). EVALUATION OF GROUNDWATER QUALITY OF SIWA OASIS. Journal of Advances in Chemistry. 12. 4292-4311. 10.24297/jac.v12i4.2170

Figure 7: Soil salinization and degradation

1.2.5.3. Impacts on agriculture and food security

29. The occurrence of agricultural water drainage in the oasis is the main barrier that besieges the Siwa Oasis. This problem began its manifestation at the end of the seventies with the growth of the agricultural area and the increase



in the frequency of drilling groundwater wells in the oasis. It was developed in the eighties and exacerbated in the nineties until it reached the current critical status. This situation threatens the existence of the oasis itself. The temperature increases being experienced will reduce Siwa's level food production by at least 20% by 2040 as a result of the effects of climate variability¹³. This will include losses from extreme weather events, reduced crop and livestock productivity, and increased demand for water and crops.

Figure 8: Decreased productivity of soils due to increased temperatures

1.2.5.4. Impacts on the Siwa oasis ecosystem

30. The southwest of Siwa Oasis is exposed to the problem of sand dune encroachment. Wind causes sand particles to move threatening roads infrastructures, cultivated lands and newly reclaimed areas, as well as causing severe damage to human settlements, irrigation and drainage constructions. The total area affected by the Sand Dune Movement (SDM) is about 21,200 Ha. The total cost of economic losses as a result of SDM is estimated to 485.9 million EGP (19,606,260.33 USD). The total protecting cost of the cultivated area, roads and drainage from SDM risk in Siwa Oasis are estimated to 47.9 million EGP (1,932,784.26 USD)¹⁴.
31. The developing tourism sector in the Siwa will suffer from indirect impacts from climate induced changes in assets of the tourism particularly from biodiversity loss, to water shortages, to increased sand dune activity and ultimately migration. The dunes submerge the unique architectural, geological and paleontological sites in the desert environment cutting off all access into the region and particularly causing losses for olive crop, reclaimed cultivated areas, roads, drainage canals and buildings.¹⁵

1.2.6. Socio-demographic characteristics

32. Siwa covers an area of 48,031.9 km², with a population of 30,260. Out of these 15,934 (52.7%) are male and 14,326 (47.3%) are Female. Having been at the crossroads of trade routes, the people of Siwa are of mixed genetic origin, but culturally of Berber origin. The people are primarily farmers, craftsmen and raise livestock. As a result of their isolation, the Berber inhabitants of the Oasis developed a unique culture manifested in its crafts of basketry, pottery, silverwork and embroidery and in its dress style. The most visible and celebrated examples of Siwa's material culture were the bridal silver and the ensemble of silver ornaments and beads that women wore in abundance to weddings

¹³ Moghazy, Noha H., and Jagath J. Kaluarachchi. 2021. "Impact of Climate Change on Agricultural Development in a Closed Groundwater-Driven Basin: A Case Study of the Siwa Region, Western Desert of Egypt" Sustainability 13, no. 3: 1578. <https://doi.org/10.3390/su1303157>

¹⁴ Abo-Ragab Samy, (2015), Sand dunes movement and its impact on development plans, Siwa Oasis, International Journal of Research in Economics and Social Sciences(IJRESS), Volume 5, Issue 11

¹⁵ Alhaddad, Ashraf & Ibrahim, Osama & Lotaf, Hoda. (2017). The Potential of Ecotourism in Siwa Oasis: Opportunities and Obstacles. International Journal of Heritage, Tourism and Hospitality. 11. 1-16. 10.21608/ijth.2017.27862

and other ceremonies. These pieces were decorated with symbols, which related to Siwa's history and beliefs and attitudes.

1.2.7. Siwa Oasis Economic activities

33. Agriculture has been, and continues to be, the most important economic activity in Siwa and is the foundation for the Siwan livelihoods. Siwa soils are saline in nature and mostly salt tolerant crops like oil palm and olives are cultivated in this oasis. FAO estimates that there are currently about 280,000 date palms generating some 25,000t of dates per year and 27,500t of Olives. Apart from the income generated through primary agricultural production, there are considerable employment and additional income effects from the drying and packaging as well as from the value-added processing of dates and olives.¹⁶ The farming communities also cultivate watermelon, black grapes, figs, olives, cucumber, tomatoes, wheat and barley with many households also rearing livestock.
34. The Siwa Oasis is very rich in cultural and natural assets that attract tourists. The historical sites host the presence of many Romanic monuments such as the temple of Alexander the Great and mountain of the Dead, Shali Fortress, the temples of Amun, Cleopatra Spring and Fitness Island, among others. This is boosted by The Siwan culture which is exhibited through the baskets, jewellery and embroidered women's clothing, makes them highly desirable to tourists.

2. Project Objectives

35. The Siwa Oasis environment is an example of a fragile marginal desert ecosystem that has been affected and will be more severely impacted in the future by climatic changes. The overall objective of this project is to strengthen the resilience of the SIWA Ecosystem while improving the community's livelihoods to CC impacts through the enhancement of soil and water management systems, improvement of agricultural production and promotion of ecotourism.
36. The project targets to consolidate synergies and adopt resilient and innovative food security in order to strengthen the adaptive capacities of the community to combat climate change impacts in such fragile ecosystems through the following specific objectives: (i) Improve water access and water demand throughout a sustainable water management and irrigation systems, (ii) Improve food security in response to climate change impacts, and (iii) Enhance local communities' resilience to climate change impacts through diversification of livelihood practices.
37. To fulfil the above objective, the project will have three components as follows:
38. Component 1: Improving water resource access and management for local communities: The sustainable water resources management is vital for the Siwa Oasis existence, the need of a sustainable management of water is crucial in ensuring the food security and livelihood practices among the local communities. This component seeks to enhance an equitable and more efficient water distribution for agricultural use and human consumption by increasing the access and building the capacity of local communities to manage the water resource.
39. Component 2: Building the resilience of ecosystems and livelihoods to climate change variability: The fragile ecosystem of the Siwa Oasis is getting more vulnerable to climate change, this is impacting the resilience of the community and thus compromising their food security. the component two aims to improve the resilience of ecosystem and community in order to empower adaptive capacity within the target area of Siwa Oasis to combat the CC impacts and variability by adopting SLM practices and diversifying livelihood practices.
40. Component 3: Strengthening knowledge and adaptive capacities of stakeholders to climate change impacts: The empowerment of local communities and institutions through strengthening their institutional capacities and systems is a fundamental aspect in the fight against CC impacts. Component 3 of the project will work to improve communication and knowledge management. This will include designing and implementing innovative approaches to engaging government agencies, private enterprises, and communities in order to build capacities through dissemination of project best practices and valorisation of the local knowledge.

3. Project Components and Financing

Project Components	Expected Outcomes	Expected Concrete Outputs	Amount (US\$)	%
COMPONENT 1: Improving water		Output 1.1.1: Water resources are sustainably managed and utilized	300,000	4

¹⁶ <https://www.fao.org/giahs/qiahsaroundtheworld/designated-sites/near-east-and-north-africa/siwa-oasis/en/>

resource access and management for local communities	Outcome 1.1: Management capacity of water resource is enhanced.	Output 1.1.2: Water resources management is strengthened.	450,000	7
	Outcome 1.2: Access to irrigation and potable water for target communities is enhanced	Output 1.2.1: Irrigation water access among target community is increased	1,380,000	20
		Output 1.2.2: Potable water access among target community (40% women) is increased	900,000	13
Subtotal C1			3,030,000	45
COMPONENT 2: Building the resilience of ecosystems and livelihoods to climate change variability	Outcome 2.1: Sustainable Land Management Practices Promoted	Output 2.1.1: Climate resilient Agricultural practices are adopted.	1,170,000	17
		Output 2.1.2: Green belts are developed and sustained	650,000	10
	Outcome 2.2: Climate resilient livelihood Enhanced	Output 2.2.1: livestock production practices are improved and adopted.	400,000	6
		Output 2.2.2: Community livelihoods resilience is enhanced through adoption of (IGAs).	885,000	13
Subtotal C2			3,105,000	46
COMPONENT 3: Strengthening knowledge and adaptive capacities of stakeholders to climate change impacts	Outcome 3.1: Knowledge and awareness of CC impacts at national and international levels sustained	Output 3.1.1: Understanding of governmental staff and stakeholders to integrate CC into planning processes is enhanced	284,000	4
		Output 3.1.2: Community awareness to CC impacts is improved	321,000	5
Subtotal C3			605,000	9
6. Project Execution cost			635,000	
7. Total Project Cost			7,375,000	
8. Project Cycle Management Fee charged by the Implementing Entity			625,000	
Amount of Financing Requested			8,000,000	

4. Projected Calendar

Milestones	Expected Dates
Start of Project Implementation	January 2024
Mid-term Review (if planned)	February 2026
Project Closing	December 2027
Final Evaluation	June 2028

PART II: PROJECT JUSTIFICATION

A. Description the project components

41. The project will leverage on the trust and capacities that the local communities and stakeholders, supported by the local and national authorities, have managed to build over time to introduce new adaptation interventions. This will widen the scope of resilience and contribute to strengthen adaptive capacities within the oasis. The project will generate knowledge, document lessons learnt and best practices on climate resilience building and enhancing food security of the most vulnerable communities to climate change threats. This will be further shared and adversely used to inform policy and serve as baselines for future similar /related interventions in the Siwa area.
42. The main actions to be deployed in the sites will eventually lead to a significant reduction of the impacts related to major climate hazards in the Siwa Oasis (particularly the Water and food security), to the improvement of the livelihoods and living conditions of the communities as well as to revitalize the ecosystem. For a better efficiency/effectiveness, CCAILSO project will be implemented following a participatory and inclusive community and inter-institutional approach which will integrate the knowledge management and set forth the appropriate channels to enable an active participation of all key stakeholders, including the project's beneficiaries during the entire cycle of implementation.
43. The project is thus organized around three components where the planned activities as well as the expected outputs and outcomes to achieve the project objectives are in line with the Adaptation Fund's strategic outcomes. Further below, are the detailed description of the components, outcomes, outputs and activities.

Component 1: Improved water resources access and management for local communities

44. Water, the most important natural resource in the oasis is extracted from a non-renewable ground source and given the projected higher temperatures that the oasis is facing due to climate change, it is expected there will be an increase in the demand for water in the oasis for both household and agricultural needs.
45. Climate change is predicted to increase temperatures¹⁷, which will lead to an increase in water demand and consumption in the oasis particularly for irrigation. This will ultimately exacerbate the water drainage problem, leading to higher water stagnation level, loss of fertility and increased salinization.
46. The project in this component aims to achieve two main results; i) to enhance access to improved irrigation techniques and systems and ii) to ensure access to potable water for target communities and to strengthen the management of water resources.
47. Therefore, to enhance the resilience of the local communities, it is imperative to improve the water management, and the soil properties as well as solve the problem of increasing water drainage. On other hand, water access and management will be improved, through promoting and enhancing the irrigation infrastructure systems and wastewater drain networks. Solar powered small-scale irrigation systems and waste water drain networks will assist to reduce fuel dependency and to resolve the drainage problem.

Outcome 1.1 Management of water resources is enhanced.

48. The resilience of the water resources is essential to maintain the economic and life balance on the Siwa Oasis ecosystem. With its effects on food security and livelihood practices, the water in its excess and shortage consists of a vital debate in Siwa Oasis. This outcome depends on three main pillars, (i) to enhance the water resources management plans, (ii) to strengthen water resources management in the community, and (iii) to ensure increased irrigation water access and use in the target communities.

Output 1.1.1 Water resources are sustainably managed and utilized.

49. Siwa Oasis depends on groundwater as the main source of water, and this water is derived from a number of non-renewable groundwater reservoirs, most notably the fractured limestone aquifer and the Nubian sandstone aquifer. Climate change impacts are expected to increase the pressure on water resources in Siwa Oasis. Managing water resources effectively is thus fundamental to ensure the sustainability of these resources on which people's health and livelihoods depend. This output aims to build the capacity of the different national authorities and local communities to cope with the increased water demand among the Siwa Oasis.

Activity 1.1.1.1: Assess/identify the status of surface and ground water resources in target areas.

50. The project will assess /identify the current status of surface and ground water resources as well as the management and planning instruments in the Oasis in order to support and better guide the design of management plans under Ac. 1.1.1.2.

Activity 1.1.1.2: Elaborate/update water resources management plan.

51. The Oasis being in an arid area, water scarcity is a major problem. The elaboration and update of the Water Resources Management (WRM) plan that is a strategic level guide on how to manage the water supply for agriculture and human consumption the region will be undertaken. The plan will be built on a community-based approach with a consultative process for the purpose of providing resilient water supplies for all beneficiaries.

Activity 1.1.1.3: Enhance the national, sub-national and local institutions' capacity to manage water resources.

52. The national, sub-national and local institutions capacities will be effectively and efficiently built to manage the water resource in the oasis through various initiatives such as trainings, workshops and seminars. This will include but not limited to the various topics under: (i) safe water use and hygiene (ac 1.1.2.2.); (ii) water demand management, (iii) best practices sharing in specific water resources related activities (ac 3.1.2.4); (iv) analysis on the effects of climate change and/or climatic variability on water resources management (ac 3.1.2.4) inter alia.

Output 1.1.2 Water resources management is strengthened.

¹⁷ https://report.ipcc.ch/ar6/wg2/IPCC_AR6_WGII_FullReport.pdf

53. Water resources management and especially the implementation of adaptation measures requires real adhesion with the involvement of communities especially at the grassroots level. The project will strengthen the community's capacity in order to ensure sustainable and equitable access to water.

Activity 1.1.2.1: Identify and enhance institutional capacities of Water Users Associations (WUAs)

54. The project will identify and enhance the institutional capacity of WUAs as a fundamental activity for improving the performance and sustainability of irrigation and the project will employ the model involving local entrepreneurial water operators selected by the community to operate, maintain and manage the water supply systems.

Activity 1.1.2.2: Develop Water and Sanitation Health training modules.

55. Informed by the baseline assessment under ac. 2.1.2.1, and building on existing evidence, a detailed training plan for the project will be developed. These modules will create awareness and social responsibility among the community members to promote and apply the role of optimal potable water (ac 1.2.2.2), sanitation and hygiene practices for the improvement of the health and nutritional status of women, children and vulnerable community groups. Furthermore, based on the health situation of communicable diseases between livestock to livestock and livestock to human, the project will take into account the ES principal 13 on Public health of the area during the development of the modules. This will also be supported by the dissemination through the extension agents services (ac. 2.2.1.1).

Activity 1.1.2.3: Strengthen communities' capacity to manage water resources.

56. The capacity of relevant stakeholders especially at the community level, who are the main resource users, will be strengthened and enhanced to operationalize the water management processes (activity 1.1.1.2). This will be through in order to optimize its equity, efficiency, and environmental sustainability. Based on the baseline and capacity need assessment (ac 2.1.2.1) these resources will include but not limited to (i) Water availability, access and demand, (ii) Water Sanitation and Hygiene - WASH (ac 1.1.2.2.), and (iii) Practical engagement of the community in identifying and managing risk to water resources and water supply systems (ac 1.2.2.3).

Outcome 1.2 Access to irrigation and potable water for target communities is enhanced

57. The alternating hydrological cycles and the unpredictable precipitation linked to mainly rain influencing the increasing frequency and intensity of drought which are part of the climate change impacts have affected the increasing water scarcity among the communities in the target area. In order to cope with these complex and interlinked water challenges, there is need to enhance the community's capacity to manage water resources and associated services. Irrigation is a particular rich climate resilient agricultural technology that will assist in boosting farmers yields. This outcome seeks to ensure equitable and sufficient access to water both, to enhance the oasis community's food security and prosperity.

Output 1.2.1 Irrigation water access among target community is increased

58. Water resources management (extraction) and climate change are serious problems that are threatening the existence and sustainability of Siwa Oasis and have crucial impact on agriculture development and consequently on population welfare in particular in arid and semi-arid zones of Egypt. This output seeks to ensure there is increased access to water for irrigation in order to sustain agricultural production as well as livestock and ensure the food security in the region.
59. Conservation of water resources in the oasis will be based on an integrated management system for water resources and reduction of excessive water consumption. The improvement of irrigation water management will be undertaken on the three levels of the irrigation cycle namely: the source, the channels and the irrigation stage.
60. CCAILSO project will initially intervene through its activities on the first two levels of the irrigation cycle (stated above) by the dissemination and promotion of new irrigation methods and infrastructures (solar powered pumping) as well as to improve use and maintenance of the waste drainage network. For the third level of the irrigation cycle, the project will intervene through capacity building sessions for farmers on the management of irrigation networks and the promotion of the use of low salinity wastewater - particularly to grow fodder for the livestock. In order to achieve the objectives of this output the activities below will be carried out in different areas in the Siwa Oasis.

Activity 1.2.1.1: Promote and enhance the irrigation infrastructure system and wastewater drain network.

61. The awareness of the community will be enhanced to the benefits of open field drainage for the removal of excess surface, sub-surface water and excess soluble salts. The project will provide the technical support in establishing and updating the physical drain networks in conjunction with the farmers. The farmers in groups and as individuals will be

provided with small implements (handheld tools) for use to maintain the subsidiary drains around their farms. Practical sessions will be undertaken in the established demonstration plots (ac. 2.1.1.1). **Irrigation systems use within Siwa Oasis is still very limited, especially in relation to its potential. The most intensive uses of irrigation are still very local and cover limited areas. This is due to initial investment costs being out of reach for most of the population. The project will promote and enhance the irrigation infrastructure systems around 500 acres as well as procure equipment for irrigation as a means to provide equitable and more resilient water access among the communities in the target area thereby reducing crop and livestock losses.**

Activity 1.2.1.2: Establish solar powered small-scale irrigation system.

62. Following the identification and validation of water solutions (ac.1.2.2.1), the project will establish the proposed infrastructure on-site to be identified using a consultative process in cooperation with local communities, relevant stakeholders and farmers in the project area. Local service providers including masons will be contracted as needed and where applicable, dormant infrastructure from previous government or NGO-led projects will also be reactivated taking into account location and feasibility of resources.

Activity 1.2.1.3: Capacity build the farmers on the management of the irrigation network.

63. Community Based Management (CBM) has been envisaged as a panacea to sustainability challenges faced during management of water resources. This will be addressed by strategically placing the farmers in-charge of water management so as to achieve efficient and sustainable water systems as well as to increase water consumption and derived productivity. Capacity development for the farmers will play a major role in the positive performance and sustainability of the irrigation networks.

Activity 1.2.1.4: Promote the use of low salinity agricultural wastewater.

64. The use of low saline wastewater has immense benefits and the project will explore with the Oasis community the possibility to grow fodder crops. Among the targeted fodder crops are *Beta vulgaris* L known as sugar beet and *Medicago sativa* commonly known as alfalfa, which have shown the ability to thrive well in low saline soils. This will improve food security and reduce animal mortality rates by enhancing the availability of fodder for livestock (ac. 2.2.1.3) with very minimal impact on the already scarce fresh water supplies. Further research and the use of the fodder crops by the Desert Research Center will be taken into consideration.

Output 1.2.2 Potable water access among target community (40% women) is increased.

65. The project will assess and share the most viable water solutions and develop model collection systems for rainwater in water tanks at public sites, such as schools and Climate Adaptation and Innovation Centers (CAICs). These models will serve the communities as well as serve to showcase the solutions provided. Attention will be paid to sensitization around water demand and water use.

Activity 1.2.2.1: Assess/Identify the most viable water solutions.

66. The project under this activity aims to strengthen the provision of water access for production, addressing CC induced impacts. The most viable solutions for water provision will be location-specific, and the most viable solutions will be identified through a participatory process. Taking into account resource availability and stability, legal frameworks and environmental implications will also be considered. Local farmers, Water Users Associations' (WUA) representatives, project staff, government water experts and service providers will be involved in identifying which water infrastructure is most effective and efficient in each area.

Activity 1.2.2.2: Establish/update models for water collection for human consumption and potability (communal wells and boreholes).

67. Women and young children are greatly affected by the lack of fresh potable water. They often walk a distance to the nearby water points which tend to be overcrowded and are used by livestock as well. The project will renovate/upgrade the community water collection points and set up model collection systems for water (water tanks...) at public sites, such as schools and social centers. The CAICs (ac 2.1.1.1), will mainly showcase for individual households (HH) the various types and techniques for water collection to be adopted. Furthermore, watering troughs will be rehabilitated/constructed to reduce on the spread of diseases amongst the livestock and the communities.

Activity 1.2.2.3: Develop and Implement well-management systems.

68. The farmers in the Siwa oasis mainly use flood irrigation, where half of the water is lost to evapotranspiration and runoff, while the other half is causing a rise in soil water level and soil salinity leading to decreased agricultural production. To help control this problem the project and community will develop and implement simple and more

efficient well management systems to reduce the water problem, which would lead to increase of agricultural productivity.

Component 2 : Improved resilience of ecosystems and livelihoods to climate change and variability.

69. The desert ecosystem that is characterized by heat and drought has negative impacts on Siwa ecosystem making it more vulnerable to shocks of climate change. Rising populations and increased aridity are exerting pressure on the already fragile oasis ecosystem. To ensure its existence and capacity to sustain the increasing communities' requirements, there is necessity to adapt more sustainable management practices of the land, diversification into new livelihood strategies to enhance their resilience to the impacts of climate change.

Outcome 2.1: Sustainable Land Management Practices promoted

70. Sustainable Land Management (SLM) opens up major opportunities for both the environment and the people who depend on it. SLM enables farmers to intensify existing land resources more sustainably as well as enhancing productivity without degrading the soil. It also ensures improved management of agro-ecosystem services across production systems, reduces pressure on natural resources and helps improve and sustain economic productivity and environmental sustainability.

Output 2.1.1 Climate resilient Agricultural practices are adopted.

71. The Project area, Siwa Oasis, was been chosen as it is representative of some of the most fragile ecosystems that are under threat of disappearing. It suffers from prolonged drought, land degradation, desertification and loss of agricultural biodiversity. This situation represents enormous challenges to achieve food security and eradication of poverty. In addition to the natural constraints represented by high temperature, wind erosion and sand dune movement, such regions are subjected to high-power costs, non-efficient water management and agriculture practices, that are leading to soil deterioration and lowering of crop productivity and income. This output aims to propose and innovate new approaches in order to enhance the adaptive capacity of the local communities to these effects through the establishment of Climate Adaptation and Innovation Centers CAICs and the promotion of agrosilvopastoral practices.

Activity 2.1.1.1: Establish Climate Adaptation and Innovation Centers.

72. The Climate Adaptation and Innovation Centers (CAIC) will serve as a gathering venue for the communities to understand and learn about the evolving climate. Where feasible, the project will use existing infrastructure for establishing the CAICs using local materials and local community hand force. **Informed by and not limited to other experiences and lessons learned from other initiatives in the region and related to the thematics of the CCAILSO Project,** the communities will explore synergies of science, business, and be capacity built on how to cultivate new crop varieties, introduce and practice new types of irrigation and water drainage **systems in these CAICs.** They will also be capacitated on filtration and purification for potable water, production of organic fertilizer and pesticides, fodder production, seed and grain storing methods among others as part of Climate Resilient Agriculture (CRA) and Sustainable Land Management (SLM) practices. The innovation side will offer opportunities to develop techniques that may enhance adaptation and assist in desirable social outcomes such as sustainable food and energy systems, outcomes that can both improve resilience to climate change. **CAICs will serve as venues for climate and environment related activities by local governments and other stakeholders such as NGOs, development partners and CBOs, within and beyond the scope of the project. Towards sustainability of the project outcomes, the facilities will be rented out to a variety of sector-relevant actors and initiatives for meetings and gatherings and the revenue collected will be used to support the Operation and Maintenance (O&M) of the centers. A variety of agricultural products processing equipment will also be acquired and installed in the CAICs thus serving the communities within and beyond the project lifespan. During the designing of the CAICs, green energy production and consumption will be taken into consideration in order to ensure energy-independence of the infrastructure.**

Activity 2.1.1.2: Develop Community Adaptation Action Plans (CAAPs)

73. Participatory analysis of vulnerability and adaptation to CC, will be conducted in collaboration with all stakeholders, (local community, line ministries, agricultural extension services, CBOs, local government, and local NGOs) where applicable, in the development of the CAAPs and linked to activity 2.1.1.1. The CAAPs will empower the Siwa oasis communities to make their own collective decisions on priority actions to better adapt to CC. The communities will be supported to identify issues and problems and their respective root causes in the various thematic areas, and suggest solutions to these problems taking into account local knowledge and incorporating it with technological advancements as part of the CRA and SLM practices. These CAAPs will further be used to guide the communities in decision making processes and actions related to CC impacts and how to adapt accordingly.

Activity 2.1.1.3: Identify/establish farmers clubs.

74. The Farmers' Clubs (FC) approach will be applied to organize small-scale farmers in groups of around 50 members for knowledge sharing as well as resources. Through memberships to these FCs, they will benefit from access to services and resources necessary to adapt to the changing climate. The clubs act as sources of information, learning platforms, and social support that farmers can rely on when dealing with climate change impacts. The farmers in the Oasis will be organized to create community structures, which will assist them to maximize their returns on labour investments (O. 2.2.2) and other inputs and ultimately improve their living conditions.

Activity 2.1.1.4: Set up, procure inputs and manage demonstration plots.

75. Demonstration plots are aimed at offering and sharing field practical experience to farmers, extension workers, agri-businesses, and other stakeholders. The project proposes to develop demonstration plots and to cooperate and support others who wish to establish and share knowledge, skills, and innovative technologies related to CRA and Sustainable Land and Water Management (SLWM) practices (ac. 1.2.1.2, 2.1.1.5). The demonstration plots, will contribute to the dissemination of information and stimulate farmers to observe, experience, experiment with, and adapt new and innovative ideas, practices, and technologies that can improve and increase their farm outputs and income. Some of the plots will be set up at community level and others at the CAICs (ac. 2.1.1.1). The plots will further be linked to FCs who will later manage them with the purposes of learning and cooperation. Various inputs will be procured to equip the plots and the FCs to undertake CRA and SLWM practices so as to be conducive and adequate in structuring.

Activity 2.1.1.5: Promote agro-silvo-pastoral practices (integration of Trees and crops with livestock production)

76. This will include promotion and dissemination of best agricultural practices by the extension services and relevant personnel. It will comprise activities related to land preparation techniques like reduced tillage, intercropping, effective water management practices, afforestation of indigenous woody tree species, enhanced animal genetics, and fodder through use of low saline water. The practices will further be introduced and further cascaded through the FCs in the Siwa Oasis.

Activity 2.1.1.6: Promote production and use of bio compost and bio pesticide.

77. The Siwa Oasis area has a lot of waste vegetation from the farms. The farmers will thus be trained on how to harness and produce compost biologically using the readily available materials. This activity will be undertaken at the CAICs (ac. 2.1.1.1) and will save farmers income whilst enhancing the ecosystem conservation.

Output 2.1.2. Green belts are developed and sustained

78. This output will work on strengthening the capacities of the community committee members and local communities regarding promoting the adoption of climate-resilient practices. It aims to support community committee members establish green belts for the stabilization of the sand dune movements (mechanical and biological). The green belts will be a barrier saviour of community, agricultural land and from the sand dune movement, that will serve the development of better SLM and CRA practices.

Activity 2.1.2.1: Conduct Baseline and Capacity needs assessment of all actors.

79. During the first two quarters of implementation, the project will conduct a baseline survey and detailed capacity needs' assessment of all actors in the project, including farmers, communities, and stakeholders. The data gathered hereby, will inform activities all throughout the project, and will allow for measuring change of the project. The baseline will be the reference for the M&E system to be established and will allow a deeper analysis and understanding of some problematics that can't be assessed at this stage.

Activity 2.1.2.2: Establish community nurseries.

80. The project will enable the communities to establish nurseries of selected plant and tree species to the Siwa Oasis at communally selected areas and at the CAICs (ac 2.1.1.1). This will make the populations self-reliant to produce quality planting materials for use at the household and community level and assist in mitigating the climate change impact. These nurseries will supply the seedlings (selected Trees/shrubs) in order to establish the green belts (ac. 2.1.2.2).

Activity 2.1.2.3: Establish green belts for the stabilization of the Sand Dune Movements (mechanical and biological).

81. The project seeks to create green belts in areas where sand dunes movements are rampant. A study will be carried out to identify the most affected zones by the SDM to enable strategic locations of the green belts. Sand dune

stabilization using a community approach integrating local indigenous knowledge with modern technologies will be undertaken to prevent erosion of sand dunes into the agriculture land. This activity will involve planting of vegetation (selected Trees/shrubs) (ac.2.1.2.2) to reduce the erosive impact of wind and water. The project will in partnership with relevant authorities establish/ improve green belts in earlier determined zones.

Outcome 2.2 Climate resilient livelihoods are enhanced.

82. The project seeks to diversify livelihood practices as a strategy to build more resilience of the communities in Siwa oasis to CC impacts. This would diversify sources of income for women and youth who are already impacted by the lack of local employment opportunities as well, due to culture, they cannot move to look for other opportunities outside their homes.

Output 2.2.1 livestock production practices are improved and adopted.

83. Livestock production is an important livelihood for the farmers in the Oasis. It is a source of food, as well as a source of income. However, livestock productivity in the oasis is challenging due to increasing temperatures, poor genetics, inadequate nutrition, poor reproductive management and animal diseases. This output seeks to address this situation by executing practical applications for improving livestock production through the activities listed below.
84. In semi-arid regions, where social and climate vulnerability tends to be widespread, minor changes in the environment may have harmful impacts on water supply and local food security. Through this current climate change impacts, farmers have no choice other than adapting to new environmental conditions through climate resilient agriculture (op 2.1.1). This could be achieved through promoting production of short-cycle livestock and adaptation measures for Livestock and Pasture Management.

Activity 2.2.1.1: Support access to veterinary services for farmers and communities.

85. The project will seek to enable access to veterinary services for livestock farmers in the region, as most farmers currently lack access to these services. Recent CC projections of frequent droughts have shown that this could increase the frequency and magnitude of cattle diseases. This will further be supported by enhancing the extension services and related to the CAAP (ac. 2.1.1.2).

Activity 2.2.1.2: Promote production of short-cycle livestock.

86. Aligned with the diversification of production and income to increase resilience, the Siwa project will promote and provide inputs for the production of small short-cycle livestock. The project will focus on the scaling up of small animal production, namely poultry, goats, rabbits which are already being reared but can be enhanced with better quality breeds (ac 2.1.1.5). This activity will reach the farmers through the FCs (ac 2.1.1.3), and will be facilitated by extension workers (ac. 2.1.1.1).

Activity 2.2.1.3: Enhance Livestock and Pasture Management Systems (breeding, fodder, etc.).

87. To complement and strengthen the livestock production activities including but not limited to sufficient distribution of nutrients (manure) and decreasing the use of supplementary nutrition (silage and hay) under an identified pasture management system, the project will further promote fast-growing tree and shrub species that can serve as fodder especially using the low saline water (ac. 1.2.1.4). This will target especially women farmers to allow them generate more income (o. 2.2.2) and promote Siwa Oasis ecosystem.

Output 2.2.2: Enhanced community livelihoods resilience through adoption of IGAs.

88. The most important aspect of diversification, will be the development of non-agricultural sources of income such as handicrafts and other productions that may be considered which will include: beauty products from the Siwa Salt, processing, palm tree leaves products, etc. Trainings in these topics will be provided by specialists, extension workers and project staff on demand and where possible, preference will be given to women and youth interested to develop small enterprises.
89. It is thus critical that adaptation strategies targeting diversification of climate-resilient livelihoods be strengthened and diversified to increase resilience. Developing non-agricultural economic activities will assist to increase the resilience of the Siwa communities as well as improve their livelihoods and economic bargaining power.

Activity 2.2.2.1: Support Business planning for alternative Income Generating Activities (IGAs) (40% women) (oasis products' value addition/Bee keeping/ Ecotourism/Hand crafts...)

90. To enhance the capacities of beneficiaries to sustainably engage in alternative IGAs, they will be supported in the Selection, Planning, and Management (SPM) of Income Generating Activities. The potential IGAs will be from activities where the beneficiaries (women and youth) can use and enhance skills they already possess with the emphasis of orientating them from the social welfare approach and towards the provision of business services. Further to the SPM, the communities will be supported with inputs, simple tools for the identified and IGAs including (value addition of oasis products, art crafts, beekeeping and community tourism).

Activity 2.2.2.2: Establish revolving fund schemes with a gender focus (40%women)

91. The project seeks to encourage the rural women of Siwa Oasis to be more entrepreneurial by facilitating them to access credit to support their business ideas (ac. 2.2.2.1). They will also be trained on production and Business Modelling Canvas (BMC) to enable them build up financial capital that will enhance their resilience.

Activity 2.2.2.3: Establish and support savings and credit co-operative society (SACCO) for Eco tourism ventures(40% women).

92. SACCOs are voluntary associations where by members regularly pool their savings, and subsequently obtain loans which they use for different purposes. This allows them to reduce poverty by improving the members' economic and social conditions. The project will encourage the women and youth in Siwa who have developed artistic skills and craftsmanship to form cooperatives who will pool their resources together and further use their collective funds as seed capital to access funds (ac. 2.2.2.2) for the production of traditional arts. Under this activity the project seeks to strengthen their capacity by establishing a cooperative that will help them market their products more sustainably.

Activity 2.2.2.4: Develop/upscale value chain market linkages for communities with key stakeholders and private sector.

93. The project will develop linkages with the investment sector stakeholders to have greater awareness about environmental issues and facilitate any activities to reduce environmental degradation whilst creating opportunities for livelihood. The linkages will be used to enable the beneficiaries of the project access the market and also get subsidies towards upscaling and replicating their business and products. It will also be an avenue to make the products competitive and visible in the greater market.

Component 3: Strengthened knowledge and capacity to adapt to climate change and variability

94. This Component aims to raise awareness and build the capacities of the various stakeholders in terms of adaptation to climate change. Awareness-raising and technical capacity-building activities will contribute to the creation of a solid information framework and network that integrates adaptation to climate change. Capacity building will facilitate the development and transfer of skills and abilities that will allow the communities to take decisions and actions for themselves. The lessons learned and best practices that will come from the implementation of this project will be an essential aspect and deserve to be documented, combining policy-making and public engagement, as well as disseminated at the national and international levels.

Outcome 3.1 Knowledge and awareness of CC impacts at national and international levels promoted.

95. At the project start-up, a knowledge management strategy aiming to build on available climate-related information will be used to facilitate information sharing between stakeholders and disseminate project results. Knowledge materials will be developed and made available and accessible, responding to the demand and need of different stakeholders. Knowledge sharing/interaction and best practices exchanging in the regional, national and global events through (Conference, symposia, workshops and meetings) will also be facilitated.

Output 3.1.1 Improved understanding of stakeholders to integrate CC into Planning Processes

96. Climate change introduces greater uncertainty into development pathways and requires more flexibility than business-as-usual. Stakeholder participation is a critical mean of ensuring ownership and quality of decision-making for climate change adaptation. Methodological tools for integrating climate change issues into development, planning, programming, budgeting and monitoring-evaluation actions will be transferred to stakeholders to enhance the long-term sustainability and ownership of the CC adaptation interventions introduced.

Activity 3.1.1.1: Conduct Knowledge Attitude and Practices (KAP) Surveys.

97. Aligned with the baseline (ac 2.1.2.1) and final report, the project will conduct KAP surveys that reveal misconceptions or misunderstandings that may represent obstacles to the activities the project would like to implement and identify the potential barriers to behavior change. This will also be an opportunity to measure the extent of the communities' and

stakeholders' initial expectations and understanding taking into account the situation, enhance the knowledge, attitude, and practices.

Activity 3.1.1.2: Capacity build the extension services on CC adaptation planning

98. The frontline agricultural extension workers are expected to be among the principal stakeholders to educate the farmers how to cope with CC impacts. Consequently, there will be a need to develop appropriate teaching packages related to activity 1.1.2.2 for the training of the frontline agricultural extension workers to effectively and efficiently facilitate agriculture and livestock capacity building to advance CRA and SLWM practices in the Oasis (oc.1.1, oc.1.2 and oc.2.1).

Activity 3.1.1.3: Disseminate project results and share lessons learned with national and international stakeholders, mainstreaming new approaches in local and regional planning.

99. The project will develop a strategy for dissemination and communication of the project activities and lessons learned to regional and National stakeholders. Approaches related to newsletters, posters that will display in a concise manner information from the project reports will be encouraged. A user-friendly online tool that will allow primary and secondary audiences to easily access lessons learned will be developed.

Activity 3.1.1.4: Design and develop communication strategy supported by the necessary materials (leaflets, posters, flyers).

100. During the start-up phase of the project, a communication strategy will be developed by the project to allow easy flow of communication and the dissemination of results and lessons learned to key stakeholders and the wider public using appropriate mediums.

Output 3.1.2. Raised community awareness.

101. This output aims to raise awareness and build the capacities of the communities in terms of adaptation to climate change. The proposed activities will contribute to the creation of a solid information framework that integrates adaptation to climate change. The community needs to be made aware of the risks, acquire knowledge about the options that are available for a response, and be empowered to take their own actions. Effective public engagement is therefore key to success in planning for climate change.

Activity 3.1.2.1: Develop training materials to support Community-Based Trainers (CBT).

102. Informed by the baseline (ac. 2.1.2.1), by the project document and building on existing evidence, a detailed training plan for the project will be developed. The training plan will include plans and modules for all trainings and capacity building related to all project activities, including crop farming, small livestock rearing, water management based on outcomes of activity 2.1.1.3.

Activity 3.1.2.2: Enhance the institutional capacities to manage the CAICs.

103. CAICs will be the prime responsibility of the EEs. The CAICs will constitute a community meeting place, and will serve for capacity building of local authorities, coordinating CC awareness campaigns in communities and for leading local participatory Climate Vulnerability Assessments (CVAs) and adaptation planning.

Activity 3.1.2.3: Train community beneficiaries and CSOs on climate resilient livelihood practices.

104. Community driven resilience planning engages the vulnerable and impacted communities and therefore delivers better solutions to their problems. The project plans to hold training sessions for the community members and stakeholders on how to climate proof their lives and community to enhance their resilience related (o. 2.1.1).

Activity 3.1.2.4: Conduct community campaigns on CC/water/health.

105. The project seeks to enhance knowledge and awareness of the impacts of CC to human/animal health particularly to spur more climate resilient behavior patterns in the community based on the assessments undertaken and the KAP survey.

Activity 3.1.2.5: Conduct inclusive planning and capacity building for community-based Ecotourism.

106. Eco/community-based tourism is a viable pathway to achieve economic empowerment through employment generation. The project will map existing innovative community-based solutions in the tourism sector of Siwa, facilitate capacity building trainings and skill development training among the community, selecting women and youth to train them in crafts based on the biodiversity of the Oasis area (tablecloths, handbags, key rings, handkerchiefs, vanity bags, etc.) which they can sell to tourists.

B. Economic, Social and Environmental Benefits

107. The various planned project activities will have economic, social and environmental, benefits at local and national level with special gender consideration within the project area. The project with its activities will enhance the adaptive capacities of the communities and the resilience ecosystem in Siwa oasis, as well as implement community-based resources management systems that will ensure the sustainability and the project outputs. The project will provide several economic, social and environmental benefits for the Siwan community, which represents the fragile or weak environment par excellence. Efficiency of irrigation canals and drainage network, pest control, support for biodiversity, support for NGOs, raises the efficiency of rural women, and encourages of Bedouin products, which will ultimately lead to a better environment and improve the economic and social condition of the population.

Economic Benefits

108. The project's main aim is to increase the per capita income of many poor farmers in the oasis which represents more than 80% (appx.30,260) of the total population in the oasis. Of these, the beneficiaries will surmount to about 15,934 (52.7%) males and 14,326 (47.3%) females. The project activities seek to build their livelihood resilience through improved farm productivity for the Siwa Community by ensuring an increased access to water for agricultural and domestic use.

109. The project through (Component 1), seeks to increase access to water for farming and to implement efficient irrigation system which will allow for an increase in agricultural production. This coupled with reduced operating costs with the use of solar pumps in (activity 1.1.1.4), which is an ecological and sustainable system, will further diminish the energy costs related to irrigation and curb emissions. The saved cost from the solar energy may be used by the farmers to diversify and invest into other economic activities enabling them to be more resilient and profitable. Time and labour that is usually spent to irrigate crops or to get water for domestic use will be shortened by activities under (outputs 1.1.1 and 1.1.2) and the time saved could be used to engage in other income-generating activities. Also, compost production and training in its commercial production will improve soil properties and increase income for many individuals.

110. The second Component 2, aims at improving the resilience of ecosystems and livelihoods to climate change variability, through four outputs 2.1.1, 2.1.2, 2.2.1 and 2.2.2 where resilient household incomes will be enhanced by promoting the climate resilient agriculture practices, the implementation of economic activities associated with the ecological, cultural and environmental services of the oasis. This will improve the gross income of the community taken into account the gender balance to enable them live better-quality lives.

111. The project will help in establishing communities' cooperatives for the agricultural and handicraft products and small industries the sustainable marketing. This is due to the livelihoods of smallholder farmers that are constrained by poor access to markets and limited entrepreneurial skills. The cooperative approach is expected to be a strong driver of income generation. By increasing the scale of their combined outputs, the social-cooperative model will maximize their bargaining power and gain better access to markets and credit.

Social Benefits:

112. The social benefits from this project are multifield and are mostly related to economic empowerment. The project aspires to improve water systems through (component 1) and food security through (component 2). This is envisaged to alleviate any challenges at household and community levels due to water scarcity and food insecurity. The project will mitigate the negative socio-economic impacts of drought such as water shortages, food shortages and loss of income by ensuring sustainable access to reliable domestic water supply as well as access to water for productive uses.

113. The improved livelihoods of the community will also be achieved through investments in building organizational and technical capacities of farmers and stakeholders through (output 3.1.2). It is expected that the communities' production systems will become more climate resilient through (outcomes 1.1, 2.1 and 2.2) where the access to water for irrigation, and introduction of alternative or additional livelihood options through diversification of production and opportunities in the ecosystem in a sustainable manner.

114. The project will strengthen any weakness of community organizations by strengthening the technical and organizational capacities of community and help in institutionalization of community groups. The social skills and learning shared between community members and others who may gain skills and capacities from the project to enhance their own resilience and those of their households.

115. The project will ensure that communities themselves are part of the climate change adaptation solutions and that any activity is adapted to their needs, culture and traditions, and is accepted. The project seeks to ensure the communities take ownership of the climate change issue and equip them to respond adequately.

Gender consideration:

116. The project will be gender sensitive and responsive, in compliance with the AF's Gender Policy and Action Plan. Taking concrete measures for the participation of women to decision-making, and the access for their knowledge, training, inputs and all project activities, will strengthen the position of women in the community and the society. The Environmental and Social risk screening process (in line with AF ESS) will be incorporated during project implementation and a social and environmental risk management plan will be prepared during the full proposal development phase.

117. During the implementation of project activities, a focus on gender balance with at least 40% of women and youth participation in order to uplift them economically and socially through involvement in the income generating activities will be observed.

118. Furthermore, the project through its activities is proposing to establish and support a savings and credit co-operative societies related to the economic benefits as well as a revolving fund scheme with a gender focus in order to support communities and small business and to enhance their resilience to CC impacts.

119. Specific benefits to local women: The local community culture and traditions are very conservative towards women and to remedy this situation the project will be gender sensitive and responsive. Women's home activities will be supported by providing tools, technical support through a specialized women's team, and marketing services. It will promote opportunities for women to participate in the different project activities and their technical capacities. Most of the income generation approaches and technologies focus on women beneficiaries. From a gender perspective, as women will be involved and empowered, they will make this change more stable and long-lasting and will break the intergenerational cycle of poverty in these villages. The analytical and operating implications of the gender perspective upon interventions will be considered. Some gender considerations as may be a part of the analysis are included herein below by way of example:

- The transfer of tools and technologies aimed at improving the response and adaptation capacity in the face of the project area, among other hydrometeorological phenomena, is strictly subordinated to training for the correct use and maintenance thereof. Under such circumstances, the project provides that percent of the time devoted to training will have a gender perspective so that producers, both men and women, may incorporate such perspective into their day-to-day.
- Consultation and disclosure activities to be conducted during all stages of project preparation and implementation will take into account the adoption of this perspective's call and development procedures and methodologies related to the specific needs identified and potential that may be raised in order to promote gender equality participation within the project activities
- Amongst other factors, the design of the activities is considering:
 - a) Women's productive roles, in order to widen the economic opportunities, including improvement in productivity and competitiveness.
 - b) The diversity of family and household structures of the beneficiary population, paying special attention to de facto marriages, women as head of the household, and the presence of subsidized households composed of only a mother or only a father.
 - c) Motherhood and fatherhood, adapt the projects to the specific needs of parents in their access to the benefit thereof in those cases where there might be any obstacle to gain such access.

120. Avoiding or mitigating negative impacts: The following measures will ensure that project activities are designed and implemented in a way that does not cause negative social or environmental impacts: Inclusive and representative community involvement in planning and implementing the project, including monitoring project activities. Consultation and engagement with beneficiary communities, including separate focus groups with women and indigenous(traditional) groups (FPIC).

121. Strong collaboration will be maintained with all relevant ministries, both in activity design and implementation. All technical support will be sourced from the experts in the field particularly in irrigation and ecosystem management.

122. All activities' implementation will be in accordance with national standards and safeguards articulated in various strategies and guidance documents. The project will institute a complaints and feedback mechanism to get feedback from communities on the project and with established protocols for the resolution of any complaints filed.

Environmental Benefits:

123. The Siwa faces serious environmental changes and challenges, which are exacerbated by the impacts of CC. These include soil salinity due to the expansion of the surface lakes generated by the excessive uncontrolled groundwater. To irrigation and potable water for the communities. The water resource management will improve the hydraulic balance in the oasis and maintain the ecological ecosystem particularly during dry years through the application of efficient water use techniques and capacity building. The various project activities will assist to improve the environmental situation within the oasis by controlling water consumption, curbing excess water in the agricultural soil, increasing biological diversity and increasing environmental awareness which will reduce the spread of epidemics, diseases and improve the general health of the population. The project will enhance sustainable water management through the outcome 1.2 related to an enhanced access
124. The Siwa Oasis is exposed to the problem of sand dune encroachment. These shifting sands cause tangible damages to agricultural lands and plots, population centers and other infrastructures. To face and address this environmental degradation, the project will promote sustainable land management practices under outcome 2.1 by establishing community tree nurseries, which will be used to implement the green belts in areas where sand dune movement is prevalent. This will curb the material and socio- economic damage the community would have suffered from. These interventions will improve the ability of the ecosystems to be more robust to climatic variation and to provide the necessary provisioning services to people and their livelihoods.
125. Capacity building and awareness raising activities through (outcome 3.1.2) will contribute to a sustainable management of the Siwa Oasis and help in furthering the discourse on CC and its impact on the Oasis ecosystem. The benefits from this project will go beyond the area and country level and may be a benchmark for other projects with similar ecology.

C. Cost-effectiveness of the proposed project

126. The proposed project is developed on bottom-up approach that ensure community-based decision making toward the planned activities in order to establish an enhanced resilience to climate variability within the communities of Siwa Oasis. By enhancing soil and water management systems, enhancing agricultural outputs, and promoting ecotourism, this project's overarching goal is to make the Siwa Oasis ecosystem more resilient to the climate change impacts while also diversifying community livelihoods. The Siwa Oasis is an illustration of a delicate marginal desert environment that is influenced by climate variability and will be more severely affected according to the climate predictions. Rising populations and increased aridity are exerting pressure on the already fragile oasis ecosystem. To ensure its existence and capacity to sustain the increasing communities' requirements, there is a necessity to adapt more sustainable land management practices, diversification into new livelihood strategies (IGAs) to enhance their resilience to the impacts of climate change. It is also worth noting that the project proposes the diversification of community activities, as a new adaptive approach through the development of non-agricultural sources of income such as handcrafts and other productions that may be considered which will include: beauty products from the Siwa Salt, processing, palm tree leaves products, etc. Trainings in these topics will be provided by specialists, extension workers and project staff on demand and where possible, preference will be given to youth and women interested to develop small enterprises. Comparing taking no action and actually undertaking the proposed project interventions basically leads to positive cost-benefit ratios, probably with varying magnitudes.
127. The project will therefore use a portion of Project funds to address this under *Components 1 and 2*, which together are allocated about US\$ 6 million. It is essential for the Oasis to establish a sustainable water resources management system in order to ensure the water availability for an enhanced food security and community resilient capacity toward climate change impacts.
128. By ensuring the institutional and communities enhanced capabilities to manage the water resources: *Component 1* aims to assure both the efficiency and equality of water distribution within the communities, for both agricultural and domestic usage.
129. As for *Component 2*, it aims to increase the resilience of ecosystems by the promotion of SLM and CRA techniques and diversifying livelihoods practices. This will ensure enhanced capabilities of resilience among the local communities towards climate variability impacts.
130. *Component 3* of the project will focus on enhancing knowledge management and communication. This will entail developing and putting into practice creative methods for involving the public sector, the private sector, and the

community in order to assist them in developing their capacities through access to best practices as well as through networking and information sharing.

131. Agriculture, as a pillar sector of the economy is particularly vulnerable to climate variability, stands to benefit from adaptive measures, it is more cost-effective to prevent soil salinity than trying to reverse it. In general, the project will create an enhanced community-based models of water resources management that is more climate resilient. By boosting local knowledge on CC and enhancing the adaptative capacity of the Siwa oasis ecosystem towards the climate variability, the project will be more cost-effective while also empowering the institutional and stakeholders planning capacity.

132. Based on the above, as a general first synthesis of the CCAILSO Project, the initial Cost effectiveness will ensure the full cost of adaptation is realised and it will be further developed during the full proposal stage.

D. Consistency with development strategies

133. Egypt ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994, the Kyoto Protocol in 2005, the Paris Agreement on climate in 2017, and the Doha Amendment in February 2020. The project also aligns with various pillars and objectives identified in Egypt's sustainable development strategies as summarized in the table below.

Strategy	Project's Consistency with the Pillars and Objectives of Egypt's Framework Documents
Sustainable Development Strategy (SDS): Egypt Vision 2030	The project is in line with the priority of ensuring access to food and nutrition in Egypt's Vision 2030. Specifically, the activities proposed under this phase contribute directly to the following objectives stipulated by the strategy for the achievement of this priority: - Development of agricultural areas - Development of short-cycle animal husbandry (outcome 2.1) - Rationalization of water use and development of water resources (outcome 1.1) - Combating climate change as well as protection of settlements.
National Strategy for Adaptation to Climate Change & Disaster Risk Reduction (2011)	The Project addresses the strategy pillars focused on applying enhanced irrigation systems and climate-resilient agriculture practices to improve irrigation techniques, increase water-use efficiency, and continuously improve agricultural productivity (including through enhanced soil management practices), while also addressing the climate-change-adaptation capacity needs of local farmers.
Third National Communication (NC) under the UNFCCC (published in 2016)	The Project components address the pillars of the 3rd NC that focus on building capacity to adapt to climate change by constructing enhanced irrigation infrastructure systems and techniques, and applying dissemination of climate resilient agricultural and sustainable land management practices to conserve and optimize the use of water, and reducing water loss and wastage.
National Strategy for Mainstreaming Gender in Climate Change in Egypt (published in 2011)	The Project addresses the strategy pillars focused on enhancing the capacity of women and men in local communities to manage and efficiently use agricultural water. The Project will conduct awareness campaigns on the impact of climate change, improve the conditions of agricultural work through training and empowerment, and introduce other livelihood opportunities for the community.
Water for the Future (NWRP) (published in 2017))	The Project addresses the plan pillars focused on improving the performance of the water resources system and promoting the coordinated development and management of water, land, and resources to maximize welfare in an equitable and sustainable manner.
Egypt's Intended Nationally Determined Contribution (NDC) (published in 2016)	The Project addresses the NDC pillars by improving irrigation, increasing the efficiency of irrigation water while maintaining crop productivity and protecting land from degradation, raising awareness on the need to rationalize water use, and supporting rural communities to adapt to the expected climate-induced-changes on crops and livestock
Egypt's National Climate Change Strategy 2050	The project is aligned with the Egyptian National Climate Change Strategy pillars, as follow: <ol style="list-style-type: none"> 1. The strategy's first pillar is to achieve sustainable economic growth and low-emissions development in various sectors, the project sees to introduce use of solar pumps, also targets lowering greenhouse gas emissions in agricultural activities in addition to focusing on recycling agricultural waste to make fertilizer 2. The second pillar aims to build resilience and adaptability to climate change, with a focus on mitigating the negative effects of the global phenomenon. The project aims to protect natural resources and ecological systems from climate change, improve adaptation capabilities of the communities and promote adaptation methods. 3. The fourth pillar aims to improve infrastructure for financing climate activities and promoting domestic green banking and green credit lines, the environment minister pointed out. 4. The fifth pillar focuses on enhancing scientific research, technology transfer, knowledge management and awareness to combat, alleviate and adapt to climate change. The project will work to create awareness about climate change, especially among policy makers and the

	community of SIWA and share the knowledge learnt /produced with the rest of the country and region.
Egypt 2018/2019-2021/2022 plan	The Egyptian government's 2018/2019-2021/2022 plan has 5 strategic objectives, of which protecting Egypt's national security and foreign policy is the first. Food security is one of the main pillars of this strategic objective, and the various interventions proposed by this project related to improving agricultural techniques for climate change resilient production directly contribute to several objectives of this pillar, namely the objectives of: - Improving the crop irrigation system to increase farmers' income (component 1) - Increasing the production of crops, poultry, The project's agro-processing activities are in line with the plan's strategic objective of increasing employment rates, where diversification of rural income-generating activities, with emphasis on those related to agriculture, and encouragement of income-generating activities for women in rural areas are stipulated as key interventions for the achievement of this objective (component 2).
The National Sustainable Agricultural Development Strategy 2030	The "Egyptian National Strategy for Sustainable Agricultural Development to 2030" recognizes that building the resilience of smallholder farmers to climate change is a priority. To this end, it highlights vulnerability to rising temperatures as one of the most urgent issues that require an immediate response. Highlighting the expected negative impacts of rising temperatures on crop and livestock production, the strategy lists the following adaptation approaches: - compiling and analysing climate data to implement appropriate solutions, better soil management, improving irrigation systems, establishing strategic food stocks needed for livestock - supporting capacity building and relevant training programs; - supporting agricultural policies that encourage farmers to choose climate resilient crop and livestock varieties; and - supporting the livelihoods of small-scale farmers who are most vulnerable to CCs through income generating activities. Through its activities, and its implementation modalities, the Siwa project contributes directly to the recommendations outlined in the strategy aimed at strengthening the climate resilience of vulnerable rural communities through: - improved agricultural practices such as the installation of irrigation systems adapted to the region needs, the planting of heat, salinity and drought tolerant crops, etc. - improved soil quality through the promotion of compost and organic pesticides, - Reinforced farmers' resources thanks to the diversification and expansion of income-generating activities. - civil society role promoted as an important stakeholder in supporting smallholder farmers and agricultural development.
National Adaptation Plan	The project also addresses the following priority areas of the National Adaptation Plan issued in 2012 as well as its updated version developed in 2021: 1. Improvement of irrigation systems (component 1), 2. Introduce heat tolerant varieties, 3. Introduce simple agriculture technique to increase resilience (output 2.1.1), 4. Diversification of householder income through animal keeping activities (output 2.2.2), 6. Small land holding consolidation. 7. Community mobilization and awareness toward climate adaptation activities (component 3).
The National Water Resources Supply Management Vision	Through its interventions to improve irrigation efficiency, the project (component 1) responds directly to the National Water Resources Supply Management Vision for 2050. Issued by the Ministry of Water Resources and Irrigation, this vision would make the best agriculture, social and environmental use of the available water resources by means of irrigation improvement and changing crop patterns as one of its main pillars.

E. Alignment with national technical standards

134. The relevant national technical standards need to be identified, and compliance stated in a logical manner. These standards include Environmental Impact Assessments (EIAs), building codes, water quality regulations, and sector-specific regulations. Regarding EIAs, depending on the sector and the size of the project, the category of impact assessment or management strategy that the project is expected to trigger will have to be outlined. At this stage of concept note compliance with relevant technical standards are explained in detail. In the next stage during the full proposal development, further analysis of the technical standards will be undertaken,

Law / Decree /Regulation	Scope & Relevance to Project
Law No. 93 / 1962 (and amendments 1962, 1982, 1989)	Scope: Regulates the discharge to open streams and the discharge of liquid waste <ul style="list-style-type: none"> • Requires wastewater discharged to the sewerage network to comply with the standards stipulated in the regulations / decree 44/2000 Relevant to Components 1 (Outputs 1.1.1., 1.1.2.), and especially Activities 1.1.1.1, 1.1.1.2 and 1.2.2.3 focused on monitoring water quality. Relevant to AF Principles 1 and 12.
Law No. 12 / 1984, concerning the issue of the Law on Irrigation and Drainage, and Law No. 213/1994 (supplement) (MWRI)	Scope: Defines public properties for irrigation and drainage, the use and maintenance of private canals and field drains (e.g., main canals, drains and branches) and the arrangement to recover the costs of drainage works <ul style="list-style-type: none"> • Provides rules to allocate water • Regulates the construction of water intakes from the Nile and public canals and use of groundwater and drainage water

	<ul style="list-style-type: none"> • Requires consultation with landowners • Controls the development of New Lands and the price for irrigation and drainage • Sets measures for navigation, coastal protection, and protection against flooding • Stipulates penalties for violations and has provisions to settle disputes <p>Relevant to Component 1 (Output 1.1.1., 1.1.2), especially Activities 1.1.1.1, 1.1.1.2, 1.1.2.1, 1.1.2.2 and 1.1.2.3 related to canals, irrigation, water allocation, use of groundwater, and drainage. Relevant to AF Principles 1, 2, 3, 5, 12 and 15.</p>
<p>Law No 147 of October 2021 (replacing Law 121984) The executive regulations for Law 147 will be issued soon</p>	<p>Scope: Improves water management</p> <ul style="list-style-type: none"> • Requires well owners to install a control system to monitor groundwater use • Provides steeper penalties for non-compliance • Establishes a high-level committee / board to review applications to dig groundwater wells and to issue the groundwater license (Article 68) • Requires government to conduct technical studies on groundwater resources to regulate the use, and to protect and monitor groundwater quantity and quality • Forbids entities/individuals from digging underground wells without a license (Art. 70) <p>Relevant to Component 1 (Output 1.1.1., 1.1.2.), especially Activities 1.1.1.4, 1.1.1.5, and 1.1.2.1 related to using and monitoring groundwater. Relevant to AF Principles 1 and 12.</p>
<p>Law No. 213/1994, concerning Farmers' Participation MWRI</p>	<p>Scope: Establishes Water User Associations (WUAs) at mesqa level in New Lands and in Old Lands (1995 update)</p> <ul style="list-style-type: none"> • Provides a management transfer process to develop and maintain improved mesqas and to promote water protection • Discusses cost-sharing arrangements • Indicates the roles and responsibilities • Defines the election process, institutional set-up of the Board <p>Most relevant to Components 1 and 2 (Outputs 1.3.1, partly 2.2.1 and 2.3.1), especially the capacity development Activities 1.3.1.1., 1.3.1.2, partly 2.2.1.1, 2.3.1.1, 2.3.1.3. under given that the Project will strengthen the WUAs at the targeted sites and that the Project will improve the mesqas and protect the water resources. Relevant to AF Principles 1, 2, 3, and 5.</p>
<p>Ministerial Decree No. 33/2001 (MWRI)</p>	<p>Scope: Defines the mandate of the Water Boards</p> <p>Somewhat relevant to Component 1, especially the capacity development Activities under Output 1.2.2 for the WUAs. Of note, the Project will work with WUAs. Relevant to AF Principle 1 to 3 and 5.</p>
<p>Egyptian Code for Water Resources and Irrigation Works of 2003</p>	<p>Scope: Supports the design, implementation and monitoring process of irrigation projects.</p> <ul style="list-style-type: none"> • Chapter 1 has provisions on engineering alignment of irrigation network at different levels, estimation of supply (discharge) and demand, water quality requirement, preparation of operation and maintenance documentation, training requirements. • Chapter 2 has provisions on canal linings (pipes), distribution and auxiliary infrastructure, assessment of the status of groundwater, set the maximum limit of groundwater extraction, design and construction of wells, operation and maintenance of wells. • Chapter 3 has provisions on mechanical works related to pump selection, auxiliary equipment, installation of pump, operation and maintenance of pumps, performance test. • Chapter 4 has provisions on electrical works related to electric motor selection, speed control, operation and maintenance, electric protection and earthing of AC systems, control circuits and devices. <p>Most relevant to Components 1 (Outputs 1.1.1. and 1.1.2), especially Activities 1.1.1.1, 1.1.1.2, 1.1.2.3, on irrigation infrastructure improvement, monitoring of well and drain and modernized demonstration farm system.</p>
<p>Law No. 14 of 2019 Amending some provisions of Law No. 38 (1976) (MALR)</p>	<p>Scope: Supports modern field irrigation methods & works to improve, maintain, and develop farm-level field irrigation</p> <ul style="list-style-type: none"> • Establishes a network of open field drains and requires MALR to estimate the cost of the irrigation improvement at field level, based on the actual cost per acre • Article 3 requires landowners to clean the open field drains and maintain the irrigation works on their lands <p>Relevant to Component 1, especially Outputs 1.1.1 and 1.1.2 and the corresponding activities, focused on irrigation management and sustainable use of water resources. Relevant to AF Principles 1, 2, 3, and 8.</p>
<p>Climate Change Laws and Regulations, Prime Minister's Decision No. 1129/2019 Article 12 of the Kyoto Protocol (CDM)</p>	<p>Scope: Establishes Egypt's state's policies for climate change</p> <ul style="list-style-type: none"> • Provides the framework to develop and update the national and sectoral strategies and plans for climate change, considering international agreements, national interests, and links to the sustainable development strategy • Raises the awareness of officials, decision makers, and the public on climate change

	<ul style="list-style-type: none"> Integrates climate change into the education sector Assists Annex 1 Parties to comply with their quantified emission limits and reduction commitments (Article 3) Relevant to all Components and Outputs, as the Project supports implementation of Egypt’s climate change policy framework. Relevant to AF Principles 1 and 11.
Electricity and Renewable Energy Regulations in Egypt	<p>Scope :Requires state-owned projects to apply competitive bidding for engineering, procurement, and construction (EPC) contracts and competitive bidding for build-own-operate contracts; provides for feed-in tariffs; provides a merchant scheme which allows independent power producers to enter bilateral contracts to sell power directly to consumers using the national grid against wheeling and grid-access charges payable to the grid operator</p> <p>Relevant to Component 1 (Output 1.1.1.), Activity 1.1.1.2, focused on the procurement of solar panels. Relevant to AF Principles 1, 2, 11, 12, and 13.</p>
Decree No. 230/2016 of the Minister of Electricity and Renewable Energy	<p>Scope: Encourages energy efficiency and the generation of electricity from renewable sources; provides for the independence of the activities of generation, distribution, and transmission of electricity to achieve a liberalized and competitive electricity market</p> <p>Relevant to Component 1 (Output 1.1.1.), Activity 1.1.1.2, given the use of solar water pumps. Relevant to AF Principles 1,2, 11, 12, and 13.</p>
The Renewable Energy Law No. 203/2014	<p>Scope: Encourages the private sector to produce electricity from renewable energy sources; allows a shift away from state- administered to privately-financed projects; provides mechanisms and incentives to develop renewable energy projects; supports the creation of a favourable economic environment to increase investment in renewable energy’ defines renewable energy resources as ‘natural sources of energy, which are non-depletable and can be used to produce electricity’</p> <p>Relevant to Component 1 (Output 1.1.1.), Activity 1.1.1.2, given the use of solar water pumps. Relevant to AF Principles 1, 2, 11, 12, and 13.</p>
PMD 2906/1995 Ministerial and Decree No. 589 of the year 2010	<p>Scope: Regulates the management and usage of land allocated to the General Organization for Urbanization and Agricultural Development Projects</p> <p>Intellectual property and plant variety protection: use of varieties and hybrids that are nationally registered by certification of the concerned government authority</p> <p>Relevant to Component 2 (Output 2.1.1.) Activity 2.1.1.3 The establishment of model plots the promotion of climate-resilient agricultural practices and inputs (Activities 2.1.1.4, 2.1.1.5) and the promotion of short-cycle livestock production and their fodder (Activities 2.2.1.2 and 2.2.1.3) are subject to the regulations on livestock breeds and crop varieties, (ensuring that the varieties plants or animals meet Egyptian National Standards)</p>

F. Project duplication with other funding sources

135. There is **No duplication** but **complementarity** from the Siwa Project with other development projects that support smallholders’ farmers and vulnerable communities in strengthening their livelihood’s resilience in a changing climate. During the conceptualization phase of the project the lessons learned from previous and ongoing initiatives are taken into consideration. Furthermore, a participatory approach including consultations with all stakeholders within the project area will be a continuous process will be organized during the development of the full proposal stage as well as during the implementation of the activities that will assist in emphasizing synergies, benefits from the lessons learned during implementation.

136. The projects listed below represent a complementarity with the proposed project with cross-cutting factors and Results-Based Management (RBM) across different areas of Egypt

Project	Objectives	Synergies (duplication/complementarity)
<p>“Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt” (Funded by GCF, implemented by UNDP, 2017-2025, \$US 73,807,000)</p>	<p>Targeting 5 coastal governorates of Port Said, Damietta, Beheira, Dakhalia, and Kafr ElSheikh in the Nile Delta, this project aims to reduce coastal flooding risks in Egypt’s North Coast in the Lower Egypt area.</p>	<p>Complementarity</p> <p>Both projects cover climate vulnerability yet different areas/zones of Egypt and different objectives. The complementarity under this would be where the lessons learnt from sand dune movement control (ac. 2.1.2.3) would be replicated for better management of flood control.</p>
<p>“GCF-EBRD Egypt Renewable Energy Financing Framework” (Funded by GCF, implemented by European Bank, 2017-2022, \$US 852,300,000)</p>	<p>The project objective is to scale up renewable energy in Egypt through renewable energy integration and leveraged investments. The project is composed of two components: The first is a comprehensive technical assistance programme to enhance renewable energy integration, policies, and planning. The second component is</p>	<p>Complementarity</p> <p>Both projects cover climate vulnerability yet different areas/zones where the lessons learned and experiences will ensure tangible results. This will be done when establishing the solar powered infrastructure (ac1.2.1.2) and establishment of the revolving fund under output 2.2.2.</p>

	to scale up investments to support the development and construction of renewable energy projects.	
<p>“Building Resilient Food Security Systems to Benefit the Southern Egypt Region “(Funded by Adaptation Fund, implemented by UN World Food Programme 2013-2017, US\$ 6,904,318)</p>	<p>This project aims to improve the adaptive capacity of the South of Egypt in the face of anticipated reductions in food production due to climate change, through the introduction and use of water-efficient irrigation and other adaptive techniques; the establishment of greenhouses and agroforestry plots with subsurface irrigation, including nurseries for growing trees and new varieties; and the development of livestock and poultry breeding centers for the selection and reproduction of new heat-resistant varieties.</p>	<p>Complementarity Both projects cover climate vulnerability yet different areas/zones hence replicability/upscaling and lessons learned of the interventions will be supported to ensure maximum efficiency in CCAILSO ac 2.1.2.2, O 2.2.1,O 1.2.1</p>
<p>“Building Resilient Food Security Systems to Benefit the Southern Egypt Region-Phase 2” (Funded by Adaptation Fund, implemented by UN World Food Programme 2021-2024, US\$ 3,094,962)</p>	<p>The overall objective of this project is to build resilience of Southern Egypt farming communities in the face of climate change and variability risks to food security. The project will help vulnerable communities to increase their adaptive capacity by promoting solutions to 1) increase productivity of their staple crops such as wheat and maize; 2) diversify their production through intercropping, animal and fish production and agro-processing; 3) increase production through protected agriculture; 4) support the management of their water resources through low-cost water saving techniques and 5) loss reduction in extreme weather events through early warning.</p>	<p>Complementarity Both projects cover climate vulnerability yet different areas/zones of Egypt.</p> <p>Synergies will be sought in the form of experience sharing specially in the agricultural field (agropastoral activities, short cycle livestock, agricultural technics adapted to CC) (ac 2.1.1.5)as well as collaboration in raising awareness about climate change impacts and adaptation benefits.</p>
<p>GRID Connected Small-Scale Photovoltaic Systems (PVS) (Funded by GCF, implemented by United Nations Development Programme – UNDP, 2017-2022, US\$ 33,796,364)</p>	<p>The objective of the project is to improve the energy efficiency of end-use equipment, specifically building appliances and lighting systems manufactured, marketed and used in Egypt. This is envisaged to be achieved through a combination of regulatory tools such as minimum energy performance standards and information labels, enhanced public awareness, capacity building and innovative and attractive financing mechanisms.</p>	<p>Complementarity Both projects cover climate vulnerability yet different areas/zones where the solar powered interventions related to water abstraction to be more efficient and O&M friendly (ac 1.2.1.2) which will seek experiences on the type and quality of solar PV as well as its use in the CAICs ac 2.1.1.1</p>
<p>“Enhancing Climate Resilience of Smallholders in Middle Egypt” (Funded by GCF, implemented by World Food Program, will start in 2025)</p>	<p>Through this project, WFP extends its partnership with the Ministry of Agriculture and Land Reclamation to extend resilience to smallholders’ communities in the old lands of Middle Egypt.</p>	<p>Complementarity: Both projects cover climate vulnerability yet been executed in different areas/zones and the lessons and experience learned will support the CCAILSO Project in SLM practices suited to the area (O 2.1.1) identifying the setup of the to enhance inclusiveness and effectiveness of its response to climate change.</p>

G. Learning and knowledge management.

137. The project will develop a knowledge management system from its inception. This strategy will detail processes for generating, capturing, sharing and disseminating learnings. The strategy will comprise of three main aspects namely knowledge generation, use and dissemination. It will aim to fully integrate the participatory, collaborative ‘monitoring

and evaluation (M&E) system' into an 'adaptive management / planning to ensure that lessons learnt, best practices, and/or new needs are met in an ongoing and evolving manner during implementation.

138. The aspect of knowledge management will thus be integrated into the logical framework and will have corresponding activities, outputs, and progress indicators within each component and at Project level. In support of knowledge management, learning, and sharing/exchanging experiences, the Project's M&E system and adaptive work- planning system will routinely monitor/evaluate project progress at component level and at overall project level by comparing actual outputs and outcomes to the planned and expected targets;
139. Allow each type of stakeholder (e.g., beneficiaries, Executing Entities, the Implementing Entity, Project Management unit, and Oversight Entities) to provide input to monitoring, evaluation, and work-planning processes, resulting in work plans that reflect field evidence, actual progress and challenges, The project will keep abreast with external events, including active participation in fora and partner workshops to share/exchange experiences and to keep abreast of the successes and challenges within other climate change adaptation projects.
140. The Project as well will host workshops/ meetings/ seminars/ field missions at various levels from local to national level in advance of or in conjunction with its monitoring and evaluation and planning procedures. Project meetings (e.g., presentations to Steering committees; presentations to local stakeholders), project-related workshops (e.g., local, district, Governorate, or national level workshops). Other forums and external workshops (presentations at workshops conducted under other projects and at international conferences or workshops) and audio-visual products will also be made comprising; video trainings/demonstrations; photographs; posters; voice recordings; radio episodes; and media interviews. Other knowledge exchange outreach activities and events using other tools (e.g., internal and external mailing lists, partner websites with knowledge portal among others.
141. Possible knowledge products that will be generated by the project include Component-specific guidelines and manuals to cover Components 1 to 2 outputs: including manuals on Climate Resilient Agricultural practices, Business planning, Case Studies documenting climate-resilient livelihoods, Flyers, brochures, and pamphlets to summarize or explain the Project interventions, Newspaper articles Project progress reports: Annual Monitoring and Evaluation reports and workplans; Other reports and presentations (e.g., workshop reports; PowerPoint presentations); Project write-ups and reports, including sector-specific technical reports or field results on innovative technologies.
142. The aim of those events and activities will be capacity building of the various stakeholders (e.g., decision-makers, government staff, community organizations) to capture, analyse, use, and share recent knowledge and lessons learned.

H. Consultative process

143. The Siwa project idea was born from community stakeholder forums in the Siwa, which were exploring ways to bring social and economic benefits to the community while preserving the delicate environmental and cultural balance of the Siwa ecosystem. It seeks to build the ecosystems resilience and markets the area's unique biodiversity, historical, and cultural heritage in a sustainable way.
144. At this concept development stage, numerous stakeholder exchanges were conducted where the ideas were then concretized by the Desert Research Centre (DRC) and this led to a series of well-planned and organized consultations, workshops and stakeholder engagements in the course of April to June 2022, with the broad objective to build on the idea and explore its development. The needs identified and discussed were linked to the local, regional and national priorities on enhancing sustainable agriculture and climate issues, how they affect the livelihoods of the farming communities of the oasis and possible solutions. The consulted stakeholders included: (i) Local communities, who were involved in project design particularly in identifying the problems, specific needs related to resilience to climate change, sites for project implementation and the role they play in project implementation; (ii) Local and regional Government Authorities and (iii) Government Ministries and Institutions who included among others the Desert Research Center, the Ministry of Agriculture and Land Reclamation, the Ministry of Environment, the Ministry of Public Works and Water Resources.
145. Initial meetings were held with the local regional and traditional leaders and communities which involved engaging the regional stakeholders consisting of the relevant members from the region (Matrouh governorate) of implementation on 1/6/2022, the Local community stakeholder engagements conference, and a consolidation workshop (all executive departments, stakeholders, and the local community).

146. Further this, a full situational assessment was held by the DRC and relevant stakeholders to provide specific information on different topics including food security, rural development agricultural, irrigation, and livestock production and related institutional management. Both men and women were consulted collectively and individually, as well as youth, to fully capture respective needs and priorities on climate change adaptation, community resilience and livelihood diversification. The main recommendations resulting from the consultations included: (i) the need to rehabilitate the degraded lands and enhance the agricultural practices (ii) reduce the impacts resulting from ground water level rising and soil salinization (iii) encourage and support the transition to a modern irrigation systems (iv) support women and youth in the adaptation to climate variability impacts.
147. The results of this assessment were presented at The University of Matrouh at the Faculty of Desert Agriculture and Environment on the 2/6/2022 to share with stakeholders comprising community, academia, local NGOs and other regional government structures. This was followed by other consultative meetings with The Centre For Sustainable Development of Matrouh and The Apply research center, affiliated to the Desert Research Center to facilitate the integration of inputs by stakeholders and ultimately develop the ideas into a viable concept.
148. The process culminated with DRC organizing a national stakeholder workshop to seek endorsement from the national and local authorities toward the development of this project concept note. A comprehensive summary of these consultations as well as all the other stakeholders' engagements are found in annex 2.
149. During the development of the full proposal, a comprehensive, gender-responsive consultative process will be undertaken and shall involve all stakeholders in the project area, including vulnerable groups. With about 47% of the local population being women, this ratio will be taken into consideration so that it is representative of the role of women in the project area. A large communication process involving chief of villages, local and religious leaders, CBOs, as well as the local government will be sensitized prior to the consultative process start and the DRC gender officer will be a key staff in undertaking these consultations and will ensure that a feedback mechanism is set up to collect grievances and implement corrective actions. A particular attention will be given to minority groups, marginalized and vulnerable groups, and indigenous people in the project target areas taking into account the AF's Gender Policy, 15 principles and FPIC process. This will be conducted post funding proposal approval to further ensure inclusivity as per the Environmental and Social Management plan and Gender Assessment and Action Plan to be elaborated and implemented. The selection criteria will be further elaborated and a robust stakeholder mapping will be undertaken to ensure the bottom-up and top bottom approach towards the consultations.
150. Various avenues such as field meetings, boardroom meetings as well as virtual meetings where necessary will be the avenues and methods undertaken to ensure the consultations are covering the proposed project areas and are extensive.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning

151. Egypt has a population of about 102 million people and according to current projections, Egypt's population is expected to double by 2078. The population is currently growing at a rate of 1.94%, a rate that adds about 2 million people to the population every year. This will no doubt put pressure on the available water and food resources. Meanwhile, rising temperatures and falling rainfall mean crops which consume 86% of Egypt's water supply will require more irrigation to survive. Without additional climate adaptation measures, crop yields in Egypt could fall 10% on average by 2050, the Project targets building adaptive capacity and enhancing climate resilience of local communities through implementing concrete adaptation actions. Egypt is facing financial difficulties in meeting public investments and does not have the financial ability to undertake all its CC adaptation actions alone and so to address the immediate challenge of CC, it is imperative for it to seek the support from climate financing institutions such as the Adaptation Fund (AF) to as well as support the capacity building requirements to strengthen better their cause towards climate change adaptation.
152. Although Egypt is categorized as a middle-income country, there are several financial challenges that limit its ability to allocate funds to support smallholders in adapting to climate change. Among these is increasing pressures on importing food and non- food commodities, especially after the flotation of the Egyptian pound in November 2016, a fiscal deficit of US\$17.7 billion, and external debt of US\$ 67.3 billion and an internal debt of US\$166 billion. In light of such a financial situation, the government was able to allocate only US\$298 million dollars to the agricultural sector in the 2017-2018 budget of this, 96.6% is already directed to the purchase of staple crops namely wheat, sugar cane and maize from farmers. The remaining 3.4% is pegged to land reclamation, research, extension and vet services. Due to

the narrow fiscal space, there is no capacity to support additional programmes, including those related to climate adaptation.

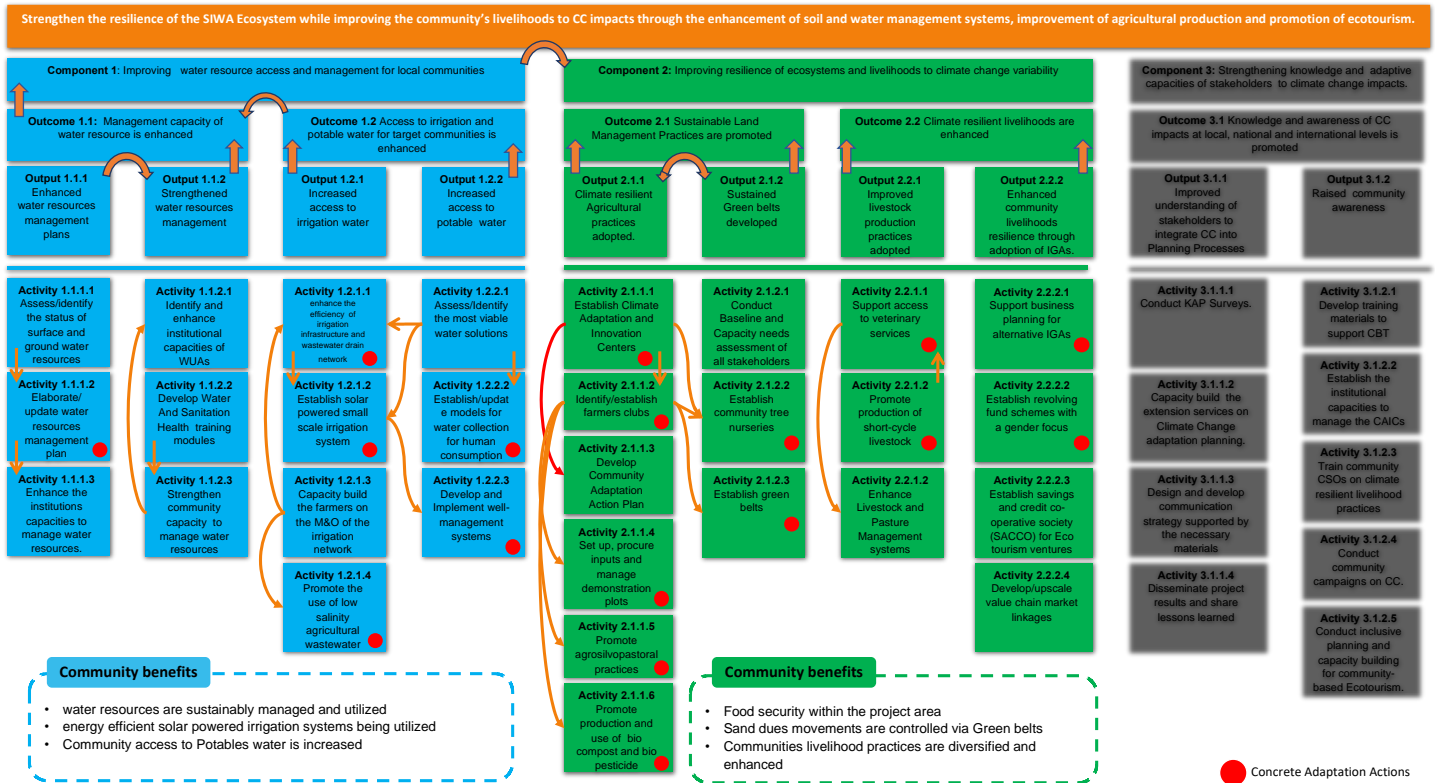
153. The Siwa oasis suffers from serious environmental problems resulting from agricultural expansion that did not take in consideration the environmental impact on the fragile oasis ecosystem. This has resulted in a severe deterioration of the ecosystem in the oasis which may turn into an environmental catastrophe. This project is timely as it seeks to save, rehabilitate and protect the ecosystem of the oasis, in addition to the development of natural resources, particularly land and water resources and provide the community with other livelihood strategies which will lessen the pressure on the water resources but enhance their lives economically and socially. This would lead to increase of agricultural productivity and reduce the rate of migration from the oasis, in addition to improvement of living conditions and protect its ecosystem from a certain environmental catastrophe. The project will contribute to furthering the implementation of adaptation strategies and measures to address climate change taking as main beneficiaries small-scale family producers with the greatest vulnerability of the entire Siwa Oasis.

154. The main issues to be addressed is drought risk management, sustainable and integrated land and water resources management. At the end of the project, it is expected that new innovative solutions will be identified and implemented to respond effectively and sustainably to the challenges related to these issues at the basin level. If no action is taken, the threats and negative impacts related to the above-mentioned climate risks will continue and intensify in the oasis and consequently increase the vulnerability of the populations and ecosystems. As a result, failure to implement the project will inevitably increase the adaptation costs of vulnerable communities considerably exposed to climate hazards.

155. The following table provides an analysis of the scenarios without the interventions in this project and a justification of the full cost of adaptation.

	Baseline: Without any support from the Adaptation Fund	Impacts of the proposed project: with the Adaptation Fund support
Component 1	The Siwa oasis is located in a depression and with water flowing from underground as springs and many drilled wells the water which is the lifeline of the Siwa is causing its death. without the support of the Adaptation Fund the situation may deteriorate, given the urgency of effective management, the poor irrigation infrastructure and lack of integrated planning and management of the water resource the sustainability and the existence of the Siwa Oasis is threatened.	With the Adaptation Fund support, the following impacts could be achieved: <ul style="list-style-type: none"> - Sustainable management of water resources by ensuring the local community capacity to manage the water resource is strengthened - Better water access and management will lead to better socioeconomic livelihoods for the community through increased productivity and incomes. irrigation infrastructure systems and wastewater drain network. - The enhanced institutional capacities will ensure both the efficiency and the equity of water to the community supporting the resilience of the different national authorities and local communities to avoid the possible fresh water deficit of the Oasis.
Component 2	The increasing temperatures will drive more water demand for irrigation, in an oasis that is particularly arid and is dependent on the intensive use of water for irrigation. It will also intensify sand dune movement. Without the AF funding, the problem of soil salinity and waterlogging will continue, further deteriorating the soil making it impossible to carry out agriculture, the main livelihood of the community. The sand dune movements will a negative impact on the agricultural production and related the socio-economic linkages. From this perspective, the local community exposure is very high making them extremely vulnerable as their livelihood depend on the water combined with limited adaptive capacity and recurrent food crisis and water shortages.	With the Adaptation Fund support, the following impacts could be achieved: <ul style="list-style-type: none"> - Improved adapting practices that must involve reducing the vulnerability of community and the ecosystem. Through Sustainable Land Management Practices. - Strengthening the climate vulnerable communities' resilience through the implementation of various concrete adaptation actions (on the water and land resources - Livelihoods strengthening and diversification for the most vulnerable through Climate resilient practices and IGAs
Component 3	The local communities and various stakeholders in the oasis lack the capacities and capabilities to strengthen the resilience of the ecosystem and of their livelihoods in a changing climate	The following improvements are possible through the implementation of the current project: <ul style="list-style-type: none"> - institutional capacity and systems which are a vital aspect in the fight against CC will be developed for information exchange; training and learning; - Appropriate communication materials will be developed for the various target groups including vulnerable communities, women, youth, smallholder farmers, pastoralists, artisans. - Local communities' awareness of the impacts of climate change (land degradation, desertification, etc.) and adaptation solutions will be strengthened, enabling them to facilitate the implementation of adaptation actions leading to enhanced resilience.

156. Presented in figure below is the Theory Of Change (TOC) highlighting the project intervention and philosophy towards concrete adaptation actions.



J. Sustainability of the project outcomes

157. The project under its activities is considering diversified sustainable benefits, including technical capacities, knowledge and awareness, increased production and more climate resilient agricultural practices and water resources management, enhanced organisational and institutional capacities at community and national level. The sustainability of these benefits is considered from the onset of the project idea and the identification of the concept. The bottom-up approach is being exercised to ensure inclusivity and needs of the beneficiary communities. The element of sustainability of the project results was taken into account as a general philosophy of the project, through conducting initial targeted consultations including all institutions and actors working in the oasis as well as representatives from ministries and governmental authorities and tribal leaders in cooperation with the head of the Siwa City Council, and the governor, the meeting has concluded that the projects outputs will be considered under the annual budget of the DRC and under its management which will ensure the long-term sustainability of the outcomes after its lifespan.

158. In addition, the DRC owns a research station in the oasis that provides various services to the community for more than 20 years. To complement the activities (CAICs, FC, WUAs..) being implemented and adding to their energy independence and internal management capability, the cooperation developed will be considered under the annual budget of the DRC and under its management which will ensure the long-term sustainability of the project outputs.

159. Emphasis of the Project is the active participation of the target community members in the implementation and management of project interventions. This integrated approach ensures that the community will be at the center of the project and that each activity will be directly beneficial to them, ultimately contribute to increasing their knowledge on climate change enhancing their understanding and guiding them to make better decisions, and they take ownership of the project's adaptation activities because they are the driving force behind them. As a result, resilient climate activities are sustainable over time beyond the project's life.

160. The project will develop concrete initiatives in the community that will continue to provide results beyond the year of implementation. As an example, the restoration and improvement of irrigation water systems and infrastructures, have long-term lifespan and the establishment of the CAICs as highlighted above. However, those initiatives require regular maintenance after the implementation. The participation of local organizations, community administrations, NGOs and specially the commitment of local beneficiaries (individuals and organizations) make possible to preserve and even continuously improve the initiatives.

161. Likewise, Operation and Maintenance of the water interventions will be continued under the Water Users' Associations - WUAs, which will be established under the local NGOs. The project will create strong linkages with stakeholders through coordinating committees, from the central level to the grassroots level, including representatives from many ministries and governmental authorities. Such linkages will work to create ownership, enhancing potentials for sustainability.
162. ii) Strengthening institutional and technical capacity at national and community levels to ensure stakeholders have adequate knowledge and skills to maintain the benefits of the project interventions; iii) training communities extensively on climate-resilient agricultural techniques. locally appropriate climate independent livelihood options; and iv) raising awareness on climate change among local community, sub-national and national levels.
163. The project will further be executed through already existing government structures at national, catchment, and local levels. The structures and personnel will ensure sustainability of the project results beyond project lifecycle because institutions are permanent. It will facilitate and support the leadership at community level as well as garner political support from the local/traditional leadership to make the community members see the value of project interventions and this is will make them have ownership and sustain the project.
164. The livelihoods, assets and agricultural lands of Siwa are vulnerable to: i) increasing temperatures; ii) more erratic rainfall; and iii) more frequent extreme weather events, which are threatening their agricultural land and livestock. The local population relies almost exclusively on agriculture for their livelihoods and the project has taken this into consideration and seeks to increase the agricultural productivity and farmer incomes through: i) training on the use of climate-resilient agricultural practices; ii) the implementation of improved (Solar) irrigation systems, which will support agricultural production during the (dry season, limit saline intrusion and periods of water stress).
165. By encouraging a shift of the community livelihoods to more climate resilient options, there will be improved food security. For the women and the youth, it will provide them alternative livelihood options, which will enhance their self-sufficiency in the local communities, increasing their income and ultimately their autonomy and empowerment to make decisions in the households. Once these are initiated and the community starts reaping the benefits it is predicted that the knowledge will diffuse and thus become sustained even after project closure.
166. Environmental sustainability: The project through component 1 proposes actions aimed at enhancing the management of water resources in the oasis. This will be done by reducing water logging, enhancing soil fertility, developing climate-resilient agriculture and promoting silvo-pastoral practices. All these actions should result in the protection of people and properties, the preservation of land, soil, and environment, and the improvement of people's living conditions through the provision of many indirect services (health, schooling, increased income, etc.). These actions are predicted to contribute to the strengthening of the project environmental sustainability.
167. Sustainability will be further supported through mainstreaming and cross-sectoral, multi stakeholder recognition of the project objectives. this will include, but not limited to, increasing public awareness and knowledge to farmers, community leaders, relevant district and provincial officers on climate change and alternate adaptation measures in agriculture and water management can play in addressing many of the development challenges
168. And at project end the project will develop a participatory plan to hand over of the different assets and knowledge materials after the completion of the project. The recipients will vary from one activity/asset to the other. This will enable continued activity that will further develop the resilience of the community.

K. Environmental and social impacts and risks identified as being relevant to the project.

169. At the design stage of the proposed project, a preliminary E&S impacts and risks assessment was conducted in order to ensure that the project complies with the 15 principles of the AF's Environmental and Social Policy (ESP). The AF ESP requires that projects comply and respect the laws, people's rights, gender equity, heritage, biodiversity and environment management.
170. At the Full Proposal development stage, the identification of Risks and Impacts will be conducted while ensuring the following points: (i) the formalization of USP approach; (ii) a comprehensive risks identification and impact assessment; (iii) the compliance with the ESP and GP for implementation of the project, taking into account the regional dimension; (iv) the adequate allocation of resources for mitigation measures; (v) the project management structure includes an external oversight/advisory component on environmental and social safeguarding. The initial results of screening are presented in the table below.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law		<p style="text-align: center;">X</p> <p>(Further consultations and detailed assessments will be done during the development of Environmental and social impact framework (ESMF) for the Project at full proposal stage. The final project design will be compliant with all relevant regional and national laws after extensive consultations with national and regional stakeholders as well as development of the detailed EMSF for the project)</p>
Access and Equity		<p style="text-align: center;">X</p> <p>(During the full proposal development an E&S assessment will be done as well as identification of selection criteria of target beneficiaries. The project activities will be accessed equally and equitably by the target communities without discrimination.)</p>
Marginalized and Vulnerable Groups		<p style="text-align: center;">X</p> <p>(During the project full proposal development, the E&S assessment and the consultations with the communities discussion will be conducted to identify the best approach to reach the marginalized and vulnerable groups especially; women, youth, orphans, disabled, female and child headed HHs, and HIV affected groups to make sure they will be targeted by the project activities.)</p>
Human Rights	<p style="text-align: center;">X</p> <p>(The project activities are not discriminatory by tribe, age and gender, level of education. The project design relied on the consultative approach involving various stakeholders. No activities are identified whose execution is not in line with the established international human rights. Project objectives promote basic human rights for fair and equitable access to resources to enhance their resilience to climate change in the beneficiary countries.)</p>	
Gender Equity and Women's Empowerment		<p style="text-align: center;">X</p> <p>(Further detailed gender analysis will be done at full proposal level to ensure that all gender aspects are fully incorporated into the proposal. The project has a special focus on women and youth groups especially for capacity building, leadership in FCs and WUA committees to ensure that they fully participate and benefit from the project. Also, Participation of women will be encouraged in the field as well as in access to micro-credits other enterprises development.)</p>
Core Labour Rights		<p style="text-align: center;">X</p> <p>(The Project will ensure that Labor laws are considered in activity implementation especially during development and maintenance of water solutions, installation of small-scale irrigation systems and other concrete adaptation actions under component 1 of the proposed project. During the E&S assessment a special focus on National labor laws in force will be ensured. The country laws and regulations will be followed and children's work will be forbidden as well as remuneration inequity between men and women.)</p>
Indigenous Peoples		<p style="text-align: center;">X</p> <p>(The presence of indigenous peoples is not noted. At full proposal development stage, a wide and targeted stakeholder consultation will be undertaken to elicit the participation and inclusion of all peoples in the project.)</p>

Involuntary Resettlement	X (The project will work with communities in their locations and on voluntary basis. Therefore, no resettlements or displacement to new locations is expected. Also, during the consultation process the local authorities has expressed their willingness to provide some community lands for demonstration plots)	
Protection of Natural Habitats		X (Further assessment to identify the project risks on natural habitat is required, though a E&S assessment will be conducted in the full proposal development stage.
Conservation of Biological Diversity		X (Further consultations and assessments will be required during the development of Environmental and social impact framework (ESMF) for the proposed project. At full proposal design stage, deliberate efforts taken to ensure that interventions are compliant with all relevant national and international laws on conservation of biological diversity. It is important to highlight that no invasive plant species will be planted.)
Climate Change	X (No further assessment required Project activities proposed are aimed to enhance the resilience of ecosystems and populations to Climate)	
Pollution Prevention and Resource Efficiency		X (Minor risks related to potential water contamination of water reservoir through introduction of impurities, wastewater and solid waste is possible. Accordingly, a further assessment is required and an ESMF will be developed with the necessary mitigation measures and monitoring mechanism. Project activities will not generate pollution and loss of resources. It will contribute to sustainable land management, efficient water uses and prevention of water pollution.)
Public Health	X (The project interventions will among others also focus on sensitization campaigns in all targeted communities on safe water use and hygiene. This will include information dissemination on water demand management and hygiene to avoid incidences of epidemics hence contributing to public health)	
Physical and Cultural Heritage		X (Further detailed E&S and gender analysis will be done at full project proposal development stage in order to incorporate gender aspects including culture and other heritage within the cross-border area. The project will promote local knowledge and train communities to handle the new technologies without affecting cultural heritage. As regards to physical heritage the project will not implement activities that will target specific physical assets in the project sites.)
Lands, Soil and Conservation		X (Further assessment on soil and land will be ensured during the full proposal. No damages to soil, vegetation and land resources are expected to occur from the project activities.)

PART III: IMPLEMENTATION ARRANGEMENTS

A. Alignment with the Results Framework of the Adaptation Fund

Project Objective(s)	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Objective: To strengthen the resilience of the SIWA Ecosystem while improving the community's livelihoods to climate change impacts through the enhancement of soil and water management systems, improvement of agricultural production and promotion of ecotourism	Improved ecosystem services for the benefit of the communities	<u>Outcome 5:</u> Increased ecosystem resilience in response to climate change and variability-induced stress	5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress	
	Number of beneficiary communities of adaptation measures	<u>Outcome 4:</u> Increased adaptive capacity within relevant development sector services and infrastructure assets	4.1. Responsiveness of development sector services to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	
		<u>Outcome 6:</u> Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.1 Percentage of households and communities having more secure access to livelihood assets 6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods	
	Number of communities sensitized and aware of predicted adverse impacts of climate change	<u>Outcome 3:</u> Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods	
Project Objective(s)	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Component 1: Improved water resources access and management for local communities.				
Outcome 1.1: Management capacity of water resource is enhanced.	Number of staff in targeted institutions with enhanced capacity in water management	<u>Outcome 2:</u> Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	750,000
Outcome 1.2. Access to irrigation and potable water for target communities is enhanced	number of communities with access to water	<u>Output 4:</u> Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	2,280,000
Component 2: Improved resilience of ecosystems and livelihoods to climate change and variability.				
Outcome 2.1. Sustainable Land Management Practices Promoted	Percentage of farmers undertaking drought adaptation actions	<u>Output 4:</u> Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1.1. No. and type of health or social infrastructure developed or modified to respond to new conditions resulting from climate variability and change (by type) 4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting	1,820,000

			from climate variability and change (by asset types)	
Outcome 2.2. Climate resilient livelihood Enhanced	Percentage increase in crop and livestock production	<u>Output 5:</u> Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability	5.1. No. of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale)	1,285,000
	Number of households undertaking IGAs	<u>Output 6:</u> Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.2.1. Type of income sources for households generated under climate change scenario	
Component 3: Strengthened knowledge, awareness and capacities to adapt to climate change and variability impacts.				
Outcome 3.1. Knowledge and awareness of CC impacts at national and international levels sustained	Number of TOTs conducted Number of trainers trained	<u>Output 3.2:</u> Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	3.2.1 No. of technical committees/associations formed to ensure transfer of knowledge 3.2.2 No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders	605,000

¹ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government

Eng. Sherif Abdel Rehim, Head of the Central Department for Climate Change Egyptian Environmental Affairs Agency Ministry of Environment	Date: <i>October 24th 2021</i>
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B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans of the Government of Egypt and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project.	
Mr. Nabil BEN KHATRA - Executive Secretary of The Sahara and Sahel Observatory (OSS) as the Implementing Entity Coordinator	
Date: January 9 th , 2023	Tel: (+216) 71 206 633 Email: boc@oss.org.tn
Project Contact Person: Mrs. Khaoula JAOUI	
Tel. and Email: (+216) 71 206 633; Khaoula.jaoui@oss.org.tn	

5. Annex1 Letter of Endorsement



ADAPTATION FUND

Letter of Endorsement by Government

[of Egypt]

[24/10/2021]

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: afbsec@adaptation-fund.org
Fax: 202 522 3240/5

Subject: Endorsement for (Climate Change Adaptation to improve livelihoods in Siwa Oasis, (CCAILSO))

In my capacity as designated authority for the Adaptation Fund in [Egypt], I confirm that (Climate Change Adaptation to improve livelihoods in Siwa Oasis, (CCAILSO)) project's proposal is in accordance with the government's national climate change adaptation strategy and Egypt vision for sustainable development 2030, priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Siwa Oasis in Egypt. The estimated cost of the mentioned project is (8 million USD).

Accordingly, I am pleased to endorse the above - mentioned project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the accredited Entity [Sahara and Sahel Observatory (OSS)] and executed by Ministry of Agriculture and Land Reclamation (Desert Research Center, Ministry of Environment).

Sincerely,

A handwritten signature in blue ink, appearing to read 'Sherif Abdel Rehim', with a date '24/10/2021' written below it.

Mr. Sherif Abdel Rehim
Head of the Central Department for Climate Change
Egyptian Environmental Affairs Agency
Ministry of Environment

6. [Annex2 : consultantion report](#)

CCAILSO Project
CLIMATE CHANGE ADAPTATION TO IMPROVE
LIVELIHOODS IN SIWA OASIS

Consultancy Report
Consultation on Stakeholder engagement

Dr. Amany Nabih
Dr. Nessrien Mahmoud

June 2022

Consultation on Stakeholder engagement Report

1) Context and Objective of the project

Siwa Oasis is the largest oasis in Egypt, located in a natural depression at Matrouh Governorate in the Western Desert, which constitutes about 66% of the total area of Egypt. It represents one of the most obvious fragile ecosystems suffering from prolonged drought, soil degradation and salinization, drainage water problem, deterioration of cultural & natural resources, decreased productivity of plant and animal wealth, desertification, and loss of agricultural biodiversity. This situation represents an enormous challenge to achieving food security and eradication of poverty in this marginal region, in addition to the natural constraints represented by high temperature, wind erosion, and sand dune movement,

The present project will tackle issues mainly concerning adaptation to climate change in the marginal ecosystems through the mobilization and application of adaptive capacity, the resilience of all ecosystems, and livelihood-oriented policies/practices to SIWA economy. In this sense, particular efforts will be devoted to capacity-building initiatives, in cooperation with national and foreign universities.

The project is in line with updating Egypt's National Sustainable Strategy 2030 which mentions good governance and sustainable natural resource management to support the economy as one of its main pillars. The project is also a direct contribution to the implementation of Egypt's National Adaptation Strategy in the Agriculture Sector. In particular, it responds directly to building smallholder's resilience against climate change. The Ministry considers it a second phase of the implementation of its strategy to address climate change impacts in the whole of Egypt's desert land.

The **CCAILSO** project aims to adapt Siwa's environment to cope with the escalating climate changes in Siwa Oasis, and try to coexist with them and reduce their effects and damages on the oasis environmentally, socially, and economically in order to improve livelihoods and raise the income of the final beneficiaries of the oasis.

More specifically, the **CCAILSO** project has set three specific objectives of:

- Improved water resources access and management for local Oasis communities;
- Strengthened resilient livelihoods and Sustainable land Management practices and;
- Promoting Eco-tourism, cultural heritage valorisation and sustainable niche tourism

To achieve these specific objectives, the **CCAILSO** project will be based on three integrated main components:

The current project works to improve livelihoods for one of the most important marginal environments in the Egyptian country, Siwa Oasis, by applying a set of good practices in the fields of water and land, biodiversity, and ecotourism to support the environment's adaptation to climate changes. The project fully aligns with the strategic vision for sustainable development launched by Egypt in March 2016 "Egypt Vision 2030".

Siwa is considered one of the seven major depressions in the Western Desert (Siwa - Qattara- Fayoum - Bahariya - Farafra - Dakhla - Kharga) and is located in the north western part of the Western Desert south of The Mediterranean Sea is about 350 km and east of the Libyan border is about 50 km. The surface features of the oasis show that the Siwa depression is divided into four sub-depressions: Al-Maraki, Siwa, Aghurmi, and Al-Zaytoun. Each depression is characterized by a natural drainage lake that receives agricultural drainage water.

2) Purpose of the Consultations

The overall objective of the consultation process will be to collect the views and needs of all participants but also to explain several relevant points, thus allowing the project manager to integrate the proposals and recommendations from the discussions towards the project design. The consultations will also be an opportunity for the participants to know about the scope of the project, the risks and objectives related thereto during the execution of the activities.

The specific objectives of the consultations are to:

- Identify priority intervention sites in Siwa Oasis;
- Conduct stakeholder mapping to identify the relevant stakeholders and levels of engagement necessary;
- Gather needs and expectations expressed by stakeholders for consideration into the project design;
- Identify and explain the role of the local communities, governments and private sector towards design and implementation of the project;

- Clarify the proposed activities both at the regional and national levels;
- Propose approaches for the implementation of the different activities according to the laws of the countries, the community traditions;
- Gather, identify and adapt to risks of proposed interventions and their mitigation measures;
- Strengthen the culture of dialogue and inclusiveness in the Climate Change adaptation process;
- Improve the participation opportunities for CSOs, local communities, academia and research institutions in the project; and
- Build knowledge and expertise on stakeholders' engagement and participation in the CCAILSO Project.

3) Scope of work

Preliminary consultations were undertaken with several diversified stakeholder's groups to seek views on the need for the project, viable interventions, the potential for replication and up-scaling of the interventions, potential risks and mitigation measures, and mechanisms for sustainability.

The DRC is a key project partner at the national level. It DRCs is mandated by the government to support the implementation of the UNCCD in Egypt. Under the overall supervision of OSS,

This will be done by undertaking consultations at 3 levels:

- **National stakeholder conference, and workshop:** *This will involve engaging with Ministries, departments and agencies as well as local governments to share the findings of the local engagements*
- **Regional stakeholder conference, and workshop:** *This will involve engaging the regional stakeholders that will consist of the relevant members from the countries of implementation.*
- **Local community stakeholder engagements and workshop:** *This will involve engaging local communities in the project sites in different level (local NGO: Local Siwian communities, End-User, Siwa City Council, All executive department, Private sectors)*

4) Consultation methodology:

As part of a participatory and consultative approach, OSS with the local partner undertake to comply with the requirements and good practices for setting up projects. To cope with the exceptional COVID-19 pandemic situation and for safety reasons, the consultations will be organized using the various engagement platforms as below:

Conducting (conference, workshops, seminars, training courses, etc.)

Adopting a program for capacity building Conducting (conference, workshops, seminars, training courses, etc.) for beneficiaries to raise awareness of sound agricultural practices to increase the awareness of the local community to enhance the process of adaptation to climate changes by addressing the negative effects of those changes

Documentation, dissemination and sharing results of lessons learned, and best practices using knowledge products. CD, Flyers and Print materials such as brochures and writings, that give summary information about implementation approaches, best practice and key lessons learned will be produced. to Regional and National stakeholders and mainstreaming new approaches in local and regional planning.

Face to face consultations

The use of face-to-face engagements especially with Government and Public sector representatives will be employed considering COVID 19 rules and regulations of the countries

Public and targeted controlled gatherings

Controlled gatherings especially for community groups as well as identified vulnerable groups, women, youth, secondary agriculture school and indigenous groups will be

Issuing of questionnaires

The issuance of project specific questionnaires to participants to receive information related to the project will be issued to targeted groups (secondary agriculture school, Matrouh university, Siwan women, men, youth, and indigenous persons), stakeholders and other relevant informants.

5) Consultancy Report on Stakeholder engagement

As the consultant's assignment to the proposed work commenced, the consultant undertook initial consultations with several diverse stakeholder groups to obtain opinions on the need for the project, viable interventions, potential for replication and scaling up of the interventions, potential risks and mitigation measures, and sustainability mechanisms.

I. National stakeholder conference/ workshop at DRC with the project committee's unit .Held on 5/6/2022.

a) **The objective of the conference:**

The meeting aims to raise awareness and gather information on the proposed project and the impacts of the planned activities on both environment and social components.

Specifically, the conference objectives were to:

- Gather needs and expectations expressed by participants for consideration into the project activities;
- Suggest activities that meet the specificities of the intervention areas and the needs of the beneficiaries;
- Validate the project's logical framework based on components, outcomes and outputs;
- Validate the distribution/allocation of the project budget;
- Identify the roles and responsibilities of the various stakeholders especially at national and local levels that will be involved in project implementation;
- Identify risks of proposed interventions and their mitigation measures;
- Consider the findings of the conference to finalize the drafting of the project concept note.

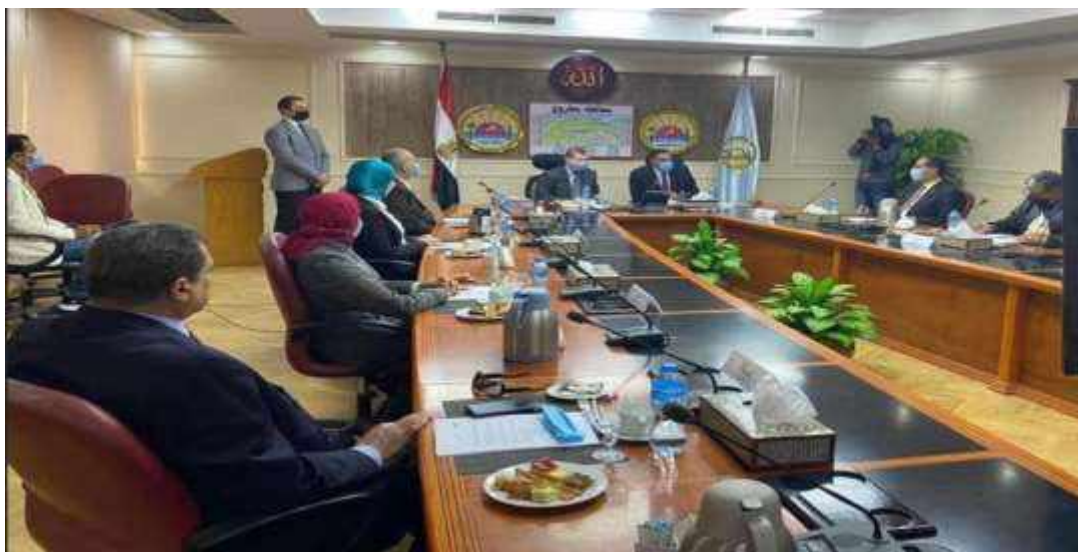


**The First Preparation Conference of the CCAILSO,
5/6/2022, Cairo, Egypt**

b) **Discussions and Recommendation**

- Identify priority intervention sites and end-users in Siwa Oasis
- endorse measures to adapt to the risks of the proposed interventions and measures to mitigate them;
- Emphasis on the necessity of compatibility with the methods of implementing the various activities in accordance to the laws of the countries, the community traditions.
- Support distribution/allocation of project budget between the different project components.
- Approval of an institutional arrangement for the best implementation of the project.
- Build knowledge and expertise on stakeholders' engagement and participation in the CCAILSO Project.

II. Meeting with H. E Khaled Shouap Governor of the Matrouh Governorate. Held on 1/6/2022.



a) Discussions and Recommendations

- The need for the final beneficiaries, popular and executive leaders to participate in the activities of the project to ensure its success
- A place importance on a role Improving livelihoods for those affected by climate change
- Presenting the project results first to the governorate leaders to follow up on the project and the extent of its success in achieving its goals
- Emphasis on the necessity of compatibility with the methods of implementing the various activities in accordance with the laws of the countries, the community traditions.
- Supporting the role of women and youth in mitigating the impact of climate change.
- The need to pay attention to integration with similar projects in the region.

III. Meeting at the university of Matrouh at the Faculty of Desert Agriculture and Environment. Held on 2/6/2022.

b) The objective of the conference

The university's participation in the project's activities by introducing techniques and curricula to confront climate changes in the educational curricula of university students, as well as participating in the courses to be implemented during the project's activities, especially the College of Desert and Environmental Agriculture

c) Discussions and Recommendations

- Raising capacities and enhancing their skills in the areas of addressing climate changes and mitigating their impact, especially considering the negative impact of climate changes on all sectors, especially agriculture.
- Participation in the project activities in relation to the development of the study curricula and participation in training courses is welcome.

IV. Meeting with CENTER FOR SUSTAINABLE DEVELOPMENT OF MATROUH RESOURCES Matrouh Governorate. Held on 2/6/2022.

a) The objective of the meeting

The objective was to enhance cooperation between the project and the center of the sustainable development in transferring expertise between the center, the project, and the advisory committee, as the center has great experiences in the region and distinguished relations with the local population.



b) Discussions and Recommendations

- Improving the livelihood and preserving natural resources from deterioration due to Climate change.
- Introducing and disseminating rational ways of using water to expand the areas of cultivation of vegetables, medicinal and aromatic plants and to produce seedlings locally adapted to climatic changes through special laboratories. The Applied Research Center to support the project.
- Activating agricultural industrialization and marketing processes to achieve added value from desert agricultural production.
- Raising capacity and raising awareness of the negative effects of climate change and ways to address them
- Activating agricultural industrialization and marketing processes to achieve added value from agricultural production in the context of the addressing adaptation to Climate change
- Production and dissemination of modern technologies suitable for agricultural systems adapted to climatic changes to maximize the return on agricultural production.

V. Local community stakeholder engagements conference, and workshop (all executive departments, stakeholders, and the local community): Held on 18/06/2022

a) The objective of the conference:

The meeting aimed at coordinating the conference scheduled to be held on the third day, where the project management stressed the need to attend all officials of Siwa administrations, civil society associations, local community leaders, tribal elders and beneficiaries to participate in the activities, goals and outputs of the project.

b) Discussions and Recommendations

- Inviting all the actors in Siwa Oasis to attend the meeting
- Activating the role of women and providing them with support in cooperation with civil society organizations
- Adoption and documentation of recommendations the preparatory conference from the Chairman of Siwa City Council as a commitment from all attendees to participate effectively in the activities of the project and a commitment from the project management to take the recommendations of the conference into account when preparing the final concept note.



VI. Preparatory Conference of the project entitled “Climate Change Adaptation to Improve livelihoods in Siwa Oasis (CCAILSO)”

a) **The objective of the conference:**

- Validate the priority intervention sites in Siwa Oasis;
- Gather needs and expectations expressed by participants for consideration in the project activities;
- Suggest new activities that meet the specificities of the intervention areas and the needs of the beneficiaries;
- Validate the project logical framework based on components, outcomes and outputs in the pre-concept note;
- Validate the distribution/allocation of the project budget;
- Identify the roles and responsibilities of the various stakeholders, especially at national and local levels that will be involved in project implementation
- Identify risks of proposed interventions and their mitigation measures.



*Expanded meeting with Mr. Mohamed Bakr Youssef,
Chairman of Siwa City Council,*

b) **Discussions and Recommendations**

- The outcomes of this consultation conference were the following:
- Validation of the priority intervention sites of the Project activities;
- Integration of the recommendations and comments related to the different sections of the project concept note;

- A common understanding of the project's expectations and the measures to be implemented to adapt to climate change impacts in the region;
- Distribution/allocation of project budget between the different project components.
- Definition of an effective institutional arrangement for the best execution of the project;
- Presentation of the difficulties likely to slow down the project implementation;
- the attendees affirmed their full readiness to cooperate with the project management to achieve the ambitious goals that were put forward and discussed at the meeting.
- Preliminary identification of the environmental and social project-related risks and their classification according to the AF standards;
- Full consideration of the importance of gender equity.

VII. Local community stakeholder engagements workshop at Siwa Oasis Research center. Held on 19/06/2022.

a) Workshop Objectives:

The workshop aimed to explore the opinion of the various parties participating in the activities of the workshop on the project and the possibility of cooperation for the success of the project, as well as welcoming any addition to the project that would increase the value of the project and its role in improving livelihoods in the oasis.

b) Discussions and Recommendations

- Encouraging and supporting the transition to modern irrigation systems.
- Supporting and disseminating the use of solar energy in water production.
- Reuse of agricultural wastewater in the oasis
- Expansion of the application of agricultural drainage networks
- The necessity of paying attention to the technical problems related to the crop of date palms and olives through activating good agricultural practices and providing technical and logistical support to overcome that problem.
- The problem of salinization of agricultural land and ways to confront it.
- Implementation of typical extension farms for the services provided.
- Supporting female breadwinners by supporting small and craft projects that depend on local materials, providing vocational training, raising awareness and developing marketing methods
- The need to rehabilitate degraded agricultural lands as a result of rising ground water levels and soil salinization.
- Contribute to the development of ecotourism as a leading tourism while preserving the cultural and social heritage and providing job opportunities for the weak and marginalized groups.
- Raising the capacities of local communities, beneficiaries and civil society organizations through workshops and seminars.
- The practices of enriching biodiversity in the agricultural environment, which contributes to reducing the economic losses of pest.

VIII. Workshop & Consultation with women on the challenges of climate change in Siwa Oasis: Held on 20/06/2022

a) Workshop Objectives:

The main objective of the workshop is to support the involvement of Bedouin women in climate change adaptation measures to improve livelihoods in the oasis, to enable Siwa women to integrate into society.



b) Result and Recommendations:

- Training and raising the capabilities of women through cooperation with pioneering women and civil society in small industries
- Sending convoys of women to train desert Bedouin women on some housework and to train them in handicrafts, agriculture, fertilization, and food industries
- Involving Bedouin women in the oasis in all project activities
- Special support for the injured and people of determination and their integration into society
- Training women on how to optimally use and benefit from household waste and turn it into a safe and highly efficient organic fertilizer rich in nutrients for use in the cultivation of vegetables, crops and medicinal and aromatic plants needed by the house.
- Manufacture the surplus from agricultural production, as the food preservation industry is one of the technologies of agricultural food processing, which can be used under the conditions of desert areas to raise the standard of living and improve livelihoods, especially if this technology is applied on the scale of micro-industries or on the scale of the village or on the scale of productive families or on a family scale.
- Training women on agriculture in the simplest ways and with the least capabilities and benefiting from it with small projects that they can, through the cultivation of greenhouses and rooftops, earn from and achieve their goals.
- The necessity of establishing marketing associations to help Asian women in marketing their products from environmental industries.
- Suggesting new methods of marketing to ensure an increase in its income, the necessity of providing agricultural extension workers to work with and train Siwa women, providing the necessary funding to help Asian women produce environmental industries.

6) Summary Conclusion.

Based on the questionnaires and the meetings that took place, it was clear that climate change has greatly affected the oasis in all economic, social and environmental aspects.

The CCAILSO Project is in great agreement with the aspirations and needs of all actors at the national level and the final beneficiaries based on meetings, interviews, and questionnaires

It is clear that all beneficiaries participated in the drafting of the concept note for the CCAILSO project and participated in the formulation of the problem, objectives and project outputs.

All stakeholders realise that the Siwa Oasis environment a very fragile environment that has been affected

7. Annex 3 Gender analysis

Egypt's Gender Development Index (GDI) stands at 0.882 and Gender Inequality Index (GII) at 0.449¹⁸. In brief, gender inequalities are still common, especially in rural areas. Women face limited access to land resources, extension programs, financial credit and women generally have longer work hours, a large share of it is unpaid work. Women are underrepresented in decision-making positions and in government, especially local government and climate change could increase the existing gender gaps.

Egypt was ranked no 129 of 156 countries in 2021 in the Global Gender Gap Index (GGGI) of the World Economic Forum, Egypt scores high in sub-indices for 'educational attainment' and 'health and survival' specifically, but women in Egypt can be considered significantly behind men in the 'economic' and 'political empowerment' sub-indices, being underrepresented in the (formal) labour force and in political decision-making positions¹⁹.

Egypt ranks #146 (with a score of 0.421) in the sub-category of employment and participation in economy of It was noted that only 6 million Egyptian women (20%) participate in the formal labour force, compared to 22 million men (75%). Women have a higher unemployment rate (22% vs. 7% for men) and women are more often employed on a part-time basis (21% vs.12% for men). However, men make up a larger share of the workers in the informal sector (66%) compared to women (53% of women participate in the informal sector).²⁰

Women's entitlements and access to land

According to FAO, only 2 percent of Egyptian women own land and only 5.2 percent of the total agricultural land is owned by women²¹. Depriving women of land ownership and of productive assets puts them at a disadvantage in terms of accessing economic opportunities and securing their livelihoods. Limited access to assets reduces women's bargaining power, and their access to better employment opportunities. Women's lack of access to land is largely due to ownership, which prevail in most of Egypt. These include cultural and normative reasons which discourage the transfer of land outside the family when the woman gets married.

Women participate in a significant manner in various agriculture activities related to cropping; disposing of agricultural waste; harvesting crops; raising birds, rabbits, and poultry for household; manufacturing dairy and selling agricultural products and other manufactured goods at the market. Women are responsible for all aspects of animal husbandry, except herding and marketing²². The activities in which women do not participate are land preparation and land service. Notable that women are not allowed to take role in irrigation management due to the current system configuration as such physical works would require the clothes rolled up, which is culturally not acceptable. Closely related to the limited role in physical operation of the irrigation system, women are less represented in WUAs. This disproportion is well recognized and will be mitigated in the project through the constitution of a mixed-gender WUA.

Gender and climate change

The impact of climate change on farm yields, including crop losses and reduced livestock productivity, is significant. The impact of climate change on small farmers is significant and is gender-differentiated. The ability of women farmers to adapt and respond to the impacts of climate change is limited compared to men, and as a result, women tend to opt for short-term coping strategies that have long-term negative implications for their own well-being and health and that of their households and communities. Despite this disadvantage, Egypt's National Strategy for Adaptation to Climate Change makes limited reference to women and their role in climate change adaptation, and there are no resources allocated for activities specifically targeting women.

All activities related to this project will maintain fair gender balance. To ensure women's participation in the project, monitoring mechanism will be set up. The full proposal will include a full Gender Assessment and Gender Action Plan for the Siwa Oasis.

18 World Economic Forum. 2021. Global Gender Gap Report (GGRI). See: http://www3.weforum.org/docs/WEF_GGGR_2021.pdf

19 World Economic Forum. 2021. Global Gender Gap Report (GGRI). See: http://www3.weforum.org/docs/WEF_GGGR_2021.pdf

20 World Economic Forum. 2021. Global Gender Gap Report (GGRI). See: http://www3.weforum.org/docs/WEF_GGGR_2021.pdf

21 FAO. 2022. Gender, water and agriculture – Assessing the nexus in Egypt. Cairo.

22 FAO. 2022. Gender, water and agriculture – Assessing the nexus in Egypt. Cairo.