



ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Project
Country:	Egypt
Title of Project/Programme:	Building Resilient Food Security Systems to Benefit the Southern Egypt Region- Phase 2
Type of Implementing Entity:	MULTILATERAL IMPLEMENTING ENTITY
Implementing Entity:	United Nations World Food Programme
Executing Entity:	Ministry of Agriculture and Land Reclamation
Amount of Financing Requested:	US\$ 3,095,000

Project / Programme Background and Context:

I.A. National Background:

The Arab Republic of Egypt has an area of 1,001,450 km², extending 1,572 km SE–NW and 1,196 km NE–SW. It has a population of 92.2 million and a population growth rate of 2.4% in 2017. Due to its large desert regions, the country's population is concentrated along the Nile Valley and Delta and along its coasts with only about 3% of the territory inhabited.¹

Despite being classified as a middle-income country, Egypt ranks 111 on the Human Development Index with an income poverty rate of 28 percent and extreme poverty rate of 5.3 percent². According to the national Household Income, Expenditure and Consumption Survey (HIECS), 15.9 percent of the population have poor access to food, while the Food Security Index of the Economist Intelligence Unit (EIU) shows that Egypt is moderately food secure.

To address the structural and financial imbalances and promote sustainable growth out of an economic slowdown that followed the January Revolution of 2011, the government launched a series of bold policy reforms in 2016³. Among the reforms was the floatation of the Egyptian Pound in November 2016,

¹ <http://www.nationsonline.org/oneworld/egypt.htm#Business>

² Household Income Expenditure and Consumption Survey, Central Agency for Public Mobilization and Statistics (CAPMAS), Jan-Dec 2015.

³ The Financial Monthly Bulletin, Ministry of Finance in Egypt, February 2017.

resulting in increasing inflationary pressures on food and non-food prices. Inflation in the overall Consumer Price Index reached 29.6 percent at the beginning of 2017, while inflation in the Food Price Index reached a historic peak of 38.6 percent, all leading to increasing pressures on households to meet their basic needs of food and non-food items⁴. Additionally, unemployment rates remain persistently high at 12.5 percent⁵.

In line with the 2030 Agenda, in March 2016, Egypt launched its strategy for sustainable development, “Egypt’s Vision 2030”. Built on economic, social, and environmental dimensions, this strategy aims to achieve sustainable development that would enable Egypt to possess a competitive, balanced and diversified economy that is dependent on innovation and knowledge. Justice, social integrity, participation are key guiding principles of the strategy, while the right to secure access to food and nutrition is a priority in the strategy⁶.

In spite of its ambitious SDS 2030 Vision, Egypt still faces significant challenges that impede sustainable development in all three dimensions, social, economic, and environmental. At the national level, the high population growth rate of 2.4 percent significantly increases levels of malnutrition and food, water and energy insecurity, and of increased urban migration within Egypt. In addition, it poses a burden on job creation efforts, leading to high unemployment rates, especially among youth and women. Other issues related to mitigation and adaptation to climate change, such as water shortages, soil salination, extreme weather events – particularly temperature changes - also present a critical challenge that must be addressed⁷.

In line with the Constitution, the Government has launched the National Strategy for Women’s Empowerment under the leadership of the National Council for Women (NCW) as a pioneer strategy globally for women’s empowerment. This Egyptian Women’s Strategy is devised to enact women’s constitutional rights that foster principles of equality and non-discrimination, economic empowerment, and protection. The Government recognizes that social justice and inclusive growth will only be realized when women are enabled to benefit and contribute as equal citizens to Egypt’s sustainable development. Moreover, the developed Women Empowerment Strategy aims to respond to the real needs of the Egyptian women particularly those living in rural areas in Upper Egypt, the poor, female-headed households, the elderly and disabled women. There are however still barriers, such as access to education and independent sources of income, which impede women and girls from realizing their potential as powerful agents of social and economic progress.

The Egyptian economy relies heavily on the agricultural sector for food, feed, fiber and other products. It provides livelihood for about 55% and employs around 26% of the labour force, contributes approximately 12% of the GDP and 20% of all foreign exchange earnings⁸. To further promote large-scale production, the Government of Egypt has lately offered financial incentives to attract investments in the sector. As a result, around USD 520 million were invested in agriculture in 2016/2017, making up to

⁴ Quarterly Labour Survey, CAPMAS.

⁵ Quarterly Labour Survey, CAPMAS.

⁶ WFP Draft Country Strategic Review, 2017

⁷ Government of Egypt. Voluntary Review. Sustainable Development Goals, July 2016.

⁸ FAO Statistical Yearbook-Egypt, 2017

25.4% of the total private sector investments in the country.⁹ There are also various governmental projects attempting to address the widening food gap in the country through production at scale. Among these is the national 1.5 Million Feddans¹⁰ project that aims at reclamation of 1.5 million feddans in the desert areas of 17 Governorates and the Ghalyoun Pond Project for Aquaculture on an area of 3500 feddans in the Nile Delta.

In spite of the sector's prominence, along with the government's commitment to achieve food security and attract private sector investments, productivity of the agricultural sector has not kept pace with the country's growing population. Egypt is thus suffering from an acute food deficit, estimated at around 60% of its strategic food needs. It is barely self-sufficient in fruit, vegetables, potatoes and eggs, and it has to import 70 per cent of its needs in wheat and fava beans, 32% of its sugar needs, all its food oil, lentils and yellow corn feed needs, 25% of its fish and 60% of its needs of red meat, butter and powdered milk.

Being one of the highest per capita wheat consumption rates in the world, Egypt has topped the list of the world's major wheat importers since 2005. Imports are foreseen to further increase to cater for increasing needs that are attributable to the population growth. According to US Department of Agriculture, Egypt's wheat production for 2018-19 is estimated at 8.45 million tonnes, the same as the previous year, while imports are projected at 12.5 million tonnes, up from 12.3 million tonnes in 2017-2018. Likewise, Egypt's import of corn in 2018-2019 are estimated at 9.5 million tonnes, up 1 percent from the previous year, ranking it the fourth largest yellow corn feed importer¹¹. It is also the seventh largest food oil importer, at the rate of three million tons per year. This reliance on wheat and cereal imports to feed an ever-growing population makes Egypt especially vulnerable to international price volatility and supply shocks.

A large portion of Egypt's food gap is connected to the country's shortage of water resources and the agricultural land needed to expand food production. As it has no effective rainfall except in a narrow band along the northern coast, Egypt's agricultural sector relies almost completely on irrigation from the Nile. The Nile accounts for more than 97% of water resources in Egypt, of which 85% is used in agriculture. With only 62 billion m³ per year of fresh water resources, Egypt is classified among the countries suffering from "water scarcity". The per capita share of these resources has fallen below the minimal level of water needs, estimated at 1,000 m³ per year, to 680 m³. Further, and according to Sustainable Agricultural Development Strategy Towards 2030 (SADS, 2009) the per capita fresh water is expected to decline from 711.0 m³ in 2008 to 550 m³ in 2030. With regard to land, only 3.5% of Egypt land area is arable with the total cultivated land reported as 8 million acres of "old" land in the Nile Valley and 2 million acres of reclaimed land¹². At the same time, this is exacerbated by supply chain losses as high as 50% for fruits and vegetables and about 30% for wheat. All are factors contributing to increasing risks of shortages in food availability in the country.

The most common crops that are cultivated in Egypt include wheat, maize, rice, sugar cane, sugar beet, tomatoes, potatoes, aborigines, onions, green pepper, and green haricot beans. Agriculture yields increased rapidly between 1980 and 2007 but, in the past decade, for the majority of crops, rates have stagnated. The majority (around 70%) of Egyptian farmers are smallholders. They rely mainly on traditional practices that do not comply with internationally recognized standards. For example, farmers tend to overuse and misuse agricultural chemicals and use outdated technologies and tools for land preparation, irrigation, and harvesting. As a result, farmers experience increased production costs, reduced yields, decreased soil fertility, and limited marketing opportunities. They are further constrained by lack of cold storage infrastructure, transportation systems, and market information.

⁹ Speech of Minister of Agriculture and Land Reclamation in Egypt's World Food Day Celebration, October 2018.

¹⁰ A Feddan is An Egyptian unit of land equivalent to 0.42 hectares

¹¹ Global Agriculture Information report for the U.S. Department of Agriculture, September 2018.

¹² Ministry of Agriculture. National Strategy for Climate Adaptation in Agriculture. August 2010.

Egypt is one of the world's most exposed countries to the risks of climate change. Besides an anticipated sea level rise in the Northern region, the country is also vulnerable to climate change due to the sensitivity of the Nile River and crop yields to temperature and precipitation changes. The number of extreme weather events is already on the rise, with smallholder farmers being particularly hit by the sudden changes in temperature. It is estimated that climate change can decrease the national food production anywhere from 8.32 percent to a maximum of 47 percent¹³.

In light of persistence of the scarcity and fragmentation of arable land, the dwindling share of Nile water, rapid population growth and climate change, enhancing the productivity of key crops, improving their resilience to shortages in water and climate change, and reducing supply chain losses remain priorities that require direct intervention as highlighted in several national strategies and plans such as the Sustainable Agricultural Development Strategy 2030, The National Adaptation Strategy in Agriculture, and the National Adaptation Plan.

Within Egypt, Upper Egypt¹⁴ is the most vulnerable. It is home to 37 percent of Egypt's population and 45 percent of the country's rural population¹⁵. Forty percent of the Egyptian poor, and 66 per cent of the country's extreme poor live in Upper Egypt. With a poverty incidence of 41.2 per cent in Upper Egypt, almost the double of national average, Upper Egypt is the poorest region in the country. Within Upper Egypt, the percentage of poor and near poor in the rural areas is 75% against 49% for Rural Lower Egypt¹⁶.

Similar to poverty indicators, food security analysis indicates that Upper Egypt is the most food and nutrition insecure region in Egypt. According to 2016 calculations by the World Food Programme¹⁷, 31.7% of the households of Upper Egypt has poor access to food. This is almost double the national rate of 15.9%. The situation is particularly worse in the rural areas of Upper Egypt, where the recorded figure is 38.7%. Regarding nutrition, Upper Egypt is home to 56.2% of the country's households with poor dietary diversity and 64.8% of the households with deficiency in calorie consumption.

Upper Egypt relies predominantly on agriculture. It accounts for 63% of the zone's employment and contribute 40% of its rural income. While it is a source of income for 85% of the zone's rural households, it is a sole source of income for 60% of its rural households. Overall, it secures 40% of the food needs of the zone¹⁸. Around 90% of Upper Egypt farmers are smallholders living off the little they get from land holdings of less than 3 acres. Barriers between the land plots represent a major cause of land loss and makes any new productivity enhancing intervention difficult.

Due to its foreseen impacts on food production in the area, climate change will further increase Upper Egypt's vulnerability¹⁹.

I.B. Background in Southern Egypt

Southern Egypt (see Figure 1) is the Southern- most part of Upper Egypt. It is comprised of five Governorates, namely, Assiut, Sohag, Qena, Luxor and Aswan and has a population of 15.7 million, of which almost 11.7 million live in rural communities. It has a cultivated area of 1.13 million acres, constituting 14% of the county's agricultural land. It is home to 16 percent of Egypt's population and 21

¹³ WFP Draft Country Strategic Review, 2017

¹⁴ In this proposal, Upper Egypt refers to an area Southern of Cairo and comprised of Middle Egypt (the Governorates of Giza, Beni Suef, Fayoum and Menia) and Southern Egypt (the Governorates of Assuit, Sohag, Qena, Luxor and Aswan)

¹⁵ Egyptian National Agricultural Adaptation Strategy, May 2010

Egypt Human Development Report (2010). Ministry of Planning and UNDP

¹⁶ Egypt Country Analysis Report (2016). The United Nations.

¹⁷ Calculations made by the Vulnerability Assessment and Mapping Unit, World Food Programme-Egypt Country office in 2016 based on data from the bi-annual National Household Income, Expenditure and Consumption Survey of 2015.

¹⁸ Upper Egypt—Challenges and Priorities for Rural Development, World Bank Policy Note, 2006

¹⁹ WFP Analysis based on anticipated impacts of Climate Change on food production.

percent of the country’s rural population²⁰. With 45.8% of households living under the national poverty line, more than twice the rate elsewhere, and 15.6% of its population designated extreme poor, Southern Egypt region is the poorest region in the country²¹.



Figure 1: Southern Egypt

Agriculture of Southern Egypt is dominated by smallholdings of less than 0.75 of an acre. Smallholders of Southern Egypt’s rural communities are vulnerable for many reasons. Firstly, they live off the little they produce in areas of less than 0.4 hectares. Secondly, they are challenged by significant water scarcity and diminishing land tenure, where irrigation water decreased from 41.0 billion m³ in 2006 to 36.8 billion m³ in 2015 and the total agricultural land in rural areas decreased by two hundred million acres, a 3.1 percent decrease in 2015 comparing to 2001. As a result, they are increasingly having to over-exploit water and increase fertilizer usage to enhance their productivity and safeguard their livelihoods in the face of land quality deterioration. This drags them into a vicious cycle, where on one hand they are attempting to increase their income, while on the other they are irreversibly impacting the sustainability of their resource-based livelihoods in a way that will pull them deeper into poverty.

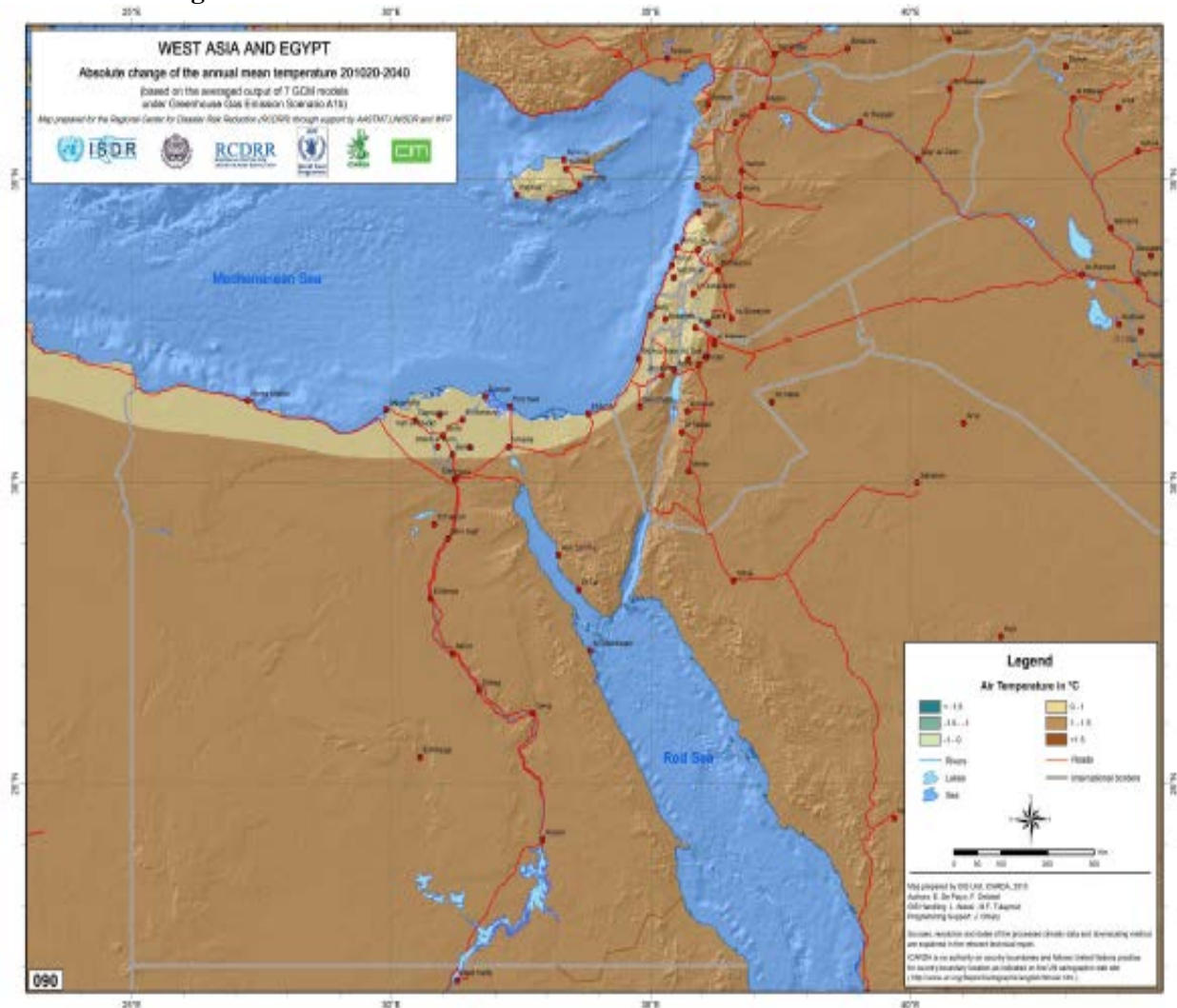
I.C Impacts of climate change on food security in Southern Egypt

²⁰ Egypt in Figures, CAPMAS, March 2019

²¹ Egypt Human Development Report (2010). Ministry of Planning and UNDP.

Egypt is one of the world's most vulnerable countries to the potential impacts of climate change²², with Upper Egypt (including Southern and Middle Egypt) being particularly vulnerable. Studies²³ conclude that this whole region will be subject to a temperature rise of 1.5-2 degrees by 2040. On the other, there is an evident increase in intensity and frequency of extreme weather events²⁴. Heat waves and chill waves as well as strong wind episodes are the most common.

Figure 2 below shows Egypt's vulnerability to temperature rise by 2040, with Upper Egypt expected to witness the highest rise.



Southern Egypt's vulnerability to climate change will impact food production and livelihoods in the region in several ways, reducing crop productivity, increasing water stress, inflicting losses from extreme weather events, and increase infestation resulting in reduced productive capacities of communities of the region and further increasing their vulnerability.

Reduced crop productivity

²² Egypt Third National Communication Under the United Nations Framework Convention on Climate Change, March 2016.
²³ Climate: Observations, projections and impacts, UK Met office, 2011 and Potential Impacts of Climate Change on the Egyptian Economy, UNDP, 2013.
²⁴ The Future of Upper Egypt under Climate Change Conditions, Tahtawy, H., 2017; Hassan, M.S. Adaptation to Negative Climate Change Impacts on Agricultural Production in South of the Valley, Qena University, 2018.

As table 2 shows, climate change is expected to significantly reduce the productivity of the main crops of Southern Egypt²⁵. This will affect the incomes of the labor force engaged in agriculture, and the millions more – especially women - engaged in micro-enterprises that depend on agriculture. Similar conclusions were announced in a study issued by the Egyptian Central Agency for Public Mobilization and Statistics in January 2017²⁶.

Table 2- expected change in Crop Yield by 2060

Crop	% change in yield in 2060 due to projected temperature rise
Wheat	-19.2
Maize	-15.2
Clover	-15.2
Vegetables	-28

Stress in water resources

Climate change is expected to increase stress on water resources in Southern Egypt's. Projected temperature rise is likely to increase crop-water requirements and decrease crop water use efficiency. In this regard, crop water requirements of strategic crops of the area are expected to increase from 6 to16 percent at temperatures increases of 2 and 4 degrees respectively²⁷. As depicted in the map below (Figure 4), Southern Egypt is also prone to more (200-400 mm) evapo-transpiration than elsewhere in the country by 2040, posing more demand for water resources in the zone.

Furrow irrigation is the most practiced means of irrigation in Southern Egypt, which leads to increased water stress. Average water use per acre is 50 cu. m. per day, which is high. Furthermore, most farmers engaged in the consultations done for this project indicated that they experienced problems in water management, leading to insufficiency of water resources that affects crop productivity. Farmers downstream the irrigation canals are particularly affected, finding increasing difficulties with regards to water availability.

²⁵ Potential Impacts of Climate Change on the Egyptian Economy, UNDP, 2013.

²⁶ <http://agri.ahram.org.eg/News/58652.aspx>²⁷ Egypt National Environmental, Economic and Development Studies (NEEDS) for Climate Change. Under UN Convention on Climate Change, April 2010 and Egypt Second National Communication, May 2010.

²⁷ Egypt National Environmental, Economic and Development Studies (NEEDS) for Climate Change. Under UN Convention on Climate Change, April 2010 and Egypt Second National Communication, May 2010.

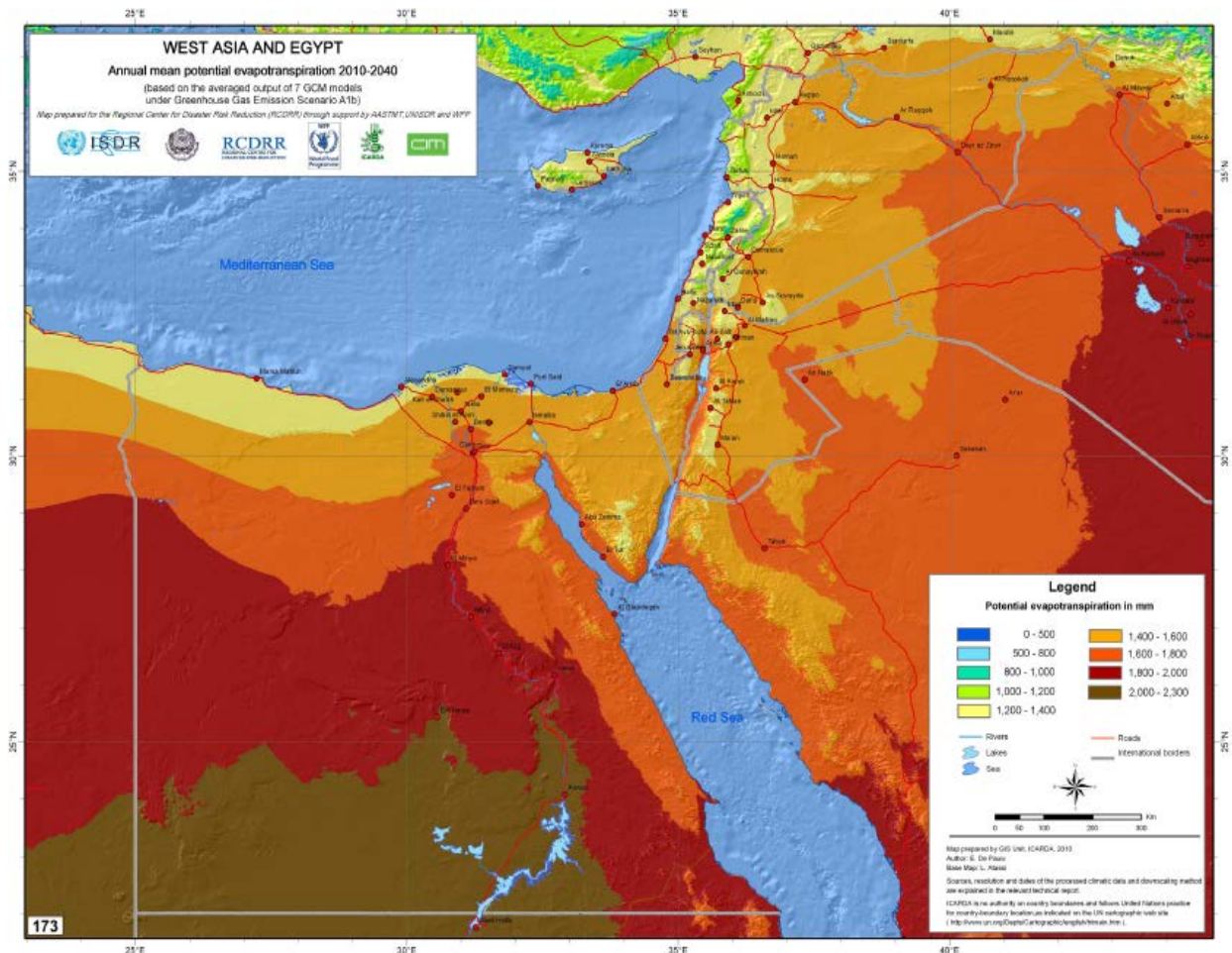


Figure 4: Evapotranspiration Rates (2010-2040)

(Source: W. Göbel and E. De Pauw. 2010. Climate and Drought Atlas for Parts of the Near East A baseline dataset for planning adaptation. Report by the International Centre for Agricultural Research in Dry Areas (ICARDA)

Rising crop pests and disease levels:

Higher temperature results in rising crop pest levels that negatively affect crop productivity.²⁸ During consultations, farmers reported that *Tuta absoluta*²⁹ appeared in recent years. This is supported by research on this topic, indicating that the spread of *Tuta absoluta* is linked closely to temperature rise, where the incidence of this infestation is expected to be higher in warmer months compared to relatively cooler months³⁰.

Downy mildew infestation was also reported to be more severe by the farmers in focus groups. Wheat leaf rust and stripe rust disease are also increasing due to rising temperature.³¹

²⁸ Egypt Second National Communication (2010)

²⁹ Tuta Absoluta is a moth species in the *Gelechiidae* family, commonly known as the 'tomato leaf miner'. It is well known as a serious pest of tomato crops in Europe and the Mediterranean region.

³⁰ Abolmaaty S.M; M.K. Hassanein; *A.A. Khalil and A.F Abou-Hadid. Impact of Climatic Changes in Egypt on Degree Day's Units and Generation Number for Tomato Leaf miner Moth *Tuta absoluta*, (Meyrick) (Lepidoptera gelechiidae). Nature and Science, 2010;8(11)

³¹ Abdel Zahe,N. The Impacts of Climate Change on Egypt, Assuit Journal For Environmental Studies, Volume 41, January 2015

Reduced livestock productivity

Blue Tongue disease and Rift Valley fever, have increased in Southern Egypt, with links made to climate temperature³². The International Union For Conservation Of Nature – Regional Office For West Asia reported similar findings, attributing harmful stress impacts on animals' productivity to temperature increases. In the field, farmers engaged in the consultations mentioned that "fever outbreaks in cattle spread recently in their villages'. Likewise, studies indicate that high temperatures increase mortality rates of laying hens, while reducing the number and quality of their eggs. Increases of 1-2 degrees have also been reported to reduce metabolic and growth rates as well as evidently reducing birds' reproduction rates due to semen characteristics and retardation of testicular development³³.

Fodder availability is expected to be negatively affected due to adverse impacts of extreme weather events. On this, Farmers expressed their dissatisfaction due to stunted growth of clover subjected to cold waves at early stages.

Increasing intensity and frequency of Extreme Weather Events

Studies correlate an increase in intensity and frequency of extreme weather spells events to climate change. Heat waves and chill waves as well as strong wind episodes are the most common.

Farmers engaged in the consultations for this project indicated they are already witnessing such extreme weather events. During the winter seasons of 2016/2017 and 2017/2018 the temperature rose unexpectedly, leading to a reduction in wheat productivity by about 40%. Likewise, in 2013/2014 and 2015/2016 seasons, a sudden rise of 5-7oC inflicted losses of 25-30% in maize³⁴. Similarly, women engaged in the consultations indicated that mortality rates of poultry chicks increase dramatically in heat waves.

In conclusion, increases in temperatures subjects Southern Egypt to a minimum of 30 percent reduction in its food production by 2040 as a result of climate change impacts, including losses due to extreme weather events, reduced crop and livestock productivity, increasing crop-water demand and reduced water use efficiency, increase in pest and disease infestations, etc. This will compound its already economically stressed and food –insecure state of the vulnerable smallholders of the area and their households.

While farmers in Southern Egypt are already hit by climate change and are in need for techniques that would help them to adapt, there are several barriers that limit their adaptive capacity. Smallholders of have limited access to means such as diversified livelihood opportunities, financial and technical support and knowhow of loss reduction, where their losses in main crops such as wheat are recorded to reach up to 15%³⁵. Further, they have limited access to value addition techniques and market links that can improve their income generating capacity³⁶. They are also prone to external factors such as sharp rises in prices of agricultural inputs, decline in prices of their produce. Limited technical support and financial resources challenge their ability to improve their traditional furrow irrigation system for enhanced efficiency.

There are other institutional barriers that currently impede wide spread of adaptation within Southern Egypt. Among those is the limited capacity of civil society organizations at local level. While these organizations have a very important role in anchoring and sustaining adaptation interventions within communities, capacities of these organizations in most cases is not strong enough for them to undertake the responsibilities of this role.

³² Dr. Ayman Farid Abou Hadid, Presentation to the 1st Meeting on the National Adaptation Plan, Cairo, 2017.

³³ Hassan, I.I. et al, Effect of Siliuim Sources and Levels and Vitamin E on Productive and Reproductive Performance of Matrouh Layers Under Egyptian Summer Conditions, 5TH International Poultry Conference, TABA, Egypt, 2009; ³³ The Future of Upper Egypt under Climate Change Conditions, Tahtawy, H., 2017.

³⁵ Meeting with Prof Mories Twaflos, Head of Wheat Sector, Egyptian Agriculture Research Center, November 2017

³⁵ Meeting with Prof Mories Twaflos, Head of Wheat Sector, Egyptian Agriculture Research Center, November 2017

³⁶ National Agriculture Strategy 2030

I.C Climate Adaptation in Southern Egypt

The Ministry of Agriculture and Land Reclamation (MALR) started its response to climate impacts on agriculture and livelihoods of Upper Egypt in 2013 through the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt Region’ Project. Funded by the Adaptation Fund, this project is implemented by the Government of Egypt in collaboration with the World Food Programme and aims to improve the adaptive capacity of the Southern zone (5 governorates) in the face of climate-induced reduction in food production. This project is to be completed in April 2020.

The project proved to be a highly successful model for the support of vulnerable villages in Upper Egypt. On one hand, it is considered by the Government of Egypt as a major contribution to its efforts to build smallholders resilience to climate change. The Government is also integrating the project interventions as key pillars of the updated National Climate Change Adaptation Plan that is currently being developed. On the other, the project external mid-term evaluation ranked it as ‘Highly Satisfactory’.

Adoption by farmers was another indicator of success. At the onset of the project in 2013, farmers were reluctant to participate in the different activities. This resistance to change was transformed into keenness to participate when farmers witnessed the concrete and substantial results achieved. This eventually led to a rapid surge in numbers of farmers requesting to be engaged in project activities.

The Adaptation Fund recognized the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt Region’ project as one of its groundbreaking efforts in building climate resilience of vulnerable groups worldwide. In April 2017, the Fund fielded a portfolio monitoring mission to the project. The Fund’s decision to select this project for the mission came for a number of reasons including that it would:

- help learn from a number of adaptation options in response to climate threats affecting water management and agricultural production in drylands;
- help learn from successful awareness raising strategies, participatory approaches to adaptation and community ownership;
- allow drawing lessons from the project’s approach to gender-related issues

Further, and in recognition of the project as one of its successful models, the Adaptation Fund featured an article about the project in its 10th Anniversary publication.

Within WFP, the project is recognized as a model from which several best practices and lessons learnt were drawn to guide design and implementation of climate resilience activities globally. For example, the project’s model of stakeholders engagement and ownership building was documented by WFP through the global initiative C-ADAPT, focusing on identifying best practices of climate adaptation in the food security and agriculture sector. Success stories from the project beneficiaries and activities were also featured on WFP knowledge platforms, while the Egypt Country office was invited to share experiences from the project and, guide other Country offices and provide inputs in corporate knowledge products and strategies on resilience building on several occasions.

Despite this Governmental recognition and demands among farmers for replication, financial constraints currently impede the wide dissemination of several of the interventions by the Government throughout Southern Egypt. Following the floating of the Egyptian pound in 2016, the Government’s ability to allocate funds to support smallholders in adapting to climate change is limited by increasing pressures on importing food and non-food commodities and substantial internal and external debts. Project interventions are replicated by farmers that see the positive results. Replication to neighboring villages is

already happening spontaneously but is naturally limited to those villages that are in the immediate proximity of project sites.

Project / Programme Objectives:

In order to address the barriers mentioned above, 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 transfer of technology on plausible and proven techniques that help vulnerable smallholder communities to adapt to climate impacts on their production and building institutional capacity for upscaling and suitability.

Building on the success of the project 'Building Resilient Food Security Systems to Benefit the Southern Egypt Region', this proposal come as a second phase that will further promote measures for increased climate resilience among vulnerable smallholders' communities in the region. In this regards it will replicate interventions that have proven successful in building climate resilience in 15 new villages throughout the Governorates of Southern Egypt, namely Assuit, Sohag, Qena, Luxor and Aswan. The target villages will be selected in districts not covered by Phase 1, to widen the outreach and allow for further replication increasing the impact potential of the intervention.

The project will also leverage the trust and capacities that phase one has managed to introduce new adaptation interventions that would widen the scope of resilience and contribute to strengthened adaptive capacity within the zone. These include intensifying production through greenhouses and diversifying production through introduction of aquaculture. These techniques will be introduced in the new villages of this Phase 2 as well as the villages of Phase 1.

In parallel, the project would generate knowledge, document lessons learnt and best practices on climate resilience building and enhancing food security of vulnerable communities in the face of climate threats. It will capacitate governmental officials engaged in agricultural areas in the new districts covered by Phase 2 and will also introduce new adaptation techniques in the local universities to widen the scope of their adaptation trainings. This will further sustain replication in the region and ensure sustainability of the intervention in the long run.

Overall, the project is expected to reach 143,000 men and 60,000 women beneficiaries.

To fulfil the objectives, the project will have two components as follows:

Component 1. Enhancing Resilience of Southern Egypt Communities

Through this component, the project aims to enhance the adaptive capacity of communities in Southern Egypt through technology transfer. Activities under this component will include replication of proven interventions and introduction of new interventions that would further enhance climate resilience.

Component 2. Building institutional capacity for replication

Through this component the project aims to build institutional capacities of the diversified stakeholders engaged in climate resilience building to upscale and sustain the different activities introduced under component 1.

Project / Programme Components and Financing:

TABLE 1 Project components and financing

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
1. Enhancing Resilience of Southern Egypt Communities	Output 1.1. Community level mobilization and climate adaptation planning	Enhanced resilience of target rural communities in Southern Egypt in the face of anticipated climate-impacts on food production through knowledge and technology transfer	135,000.00
	Output 1.2. Establishment of early warning system for loss reduction		100,000.00
	Output 1.3. Introduction and use of water saving irrigation		587,000.00
	Output 1.4. Adaptation in cultivation and crop diversification promoted		817,786.00
	Output 1.5. Building resilience through livestock and poultry production		225,000.00
	Output 1.6. Introduction of greenhouses for intensifying production		205,000.00
	Output 1.7. Introduction of aquaculture production		417,786.00
2. Building institutional capacity for replication	2.1 Capacity building of governmental staff and local academic institutions	Climate adaptation institutionalised in government and non-governmental stakeholders' practices	75,000.00
	2.2. Lessons learned, and best practices documented and disseminated.		43,000.00
6. Project/Programme Execution cost			247,086.26
7. Total Project/Programme Cost			2,852,658.26
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			242,475.95
Amount of Financing Requested			3,095,134.21

Projected Calendar:

Milestones	Expected Dates
Start of Project/Programme Implementation	Jan 2020

Mid-term Review (if planned)	N/A
Project/Programme Closing	Jan 2023
Terminal Evaluation	April 2023

Table 2 Project Milestones

PART II: PROJECT / PROGRAMME JUSTIFICATION

- A.** Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

The proposed project will enhance climate resilience in the Southern governorates of Aswan, Luxor, Sohag, Assuit and Qena. Building on the success achieved by the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt Region’ project, the proposed initiative will upscale interventions that have proven successful in building climate resilience in additional 15 villages throughout the five governorates. It will also leverage the trust and capacities that the current project has managed to build over time to introduce new adaptation interventions that would widen the scope of resilience and contribute to strengthened adaptive capacity within the zone. Within these districts, the villages will be identified based on economic vulnerability³⁷. In parallel, it would generate knowledge, document lessons learnt and best practices on climate resilience building and enhancing food security of vulnerable communities in the face of climate threats.

Component 1. Enhancing Resilience of Southern Egypt Communities

Interventions to be implemented under Component 1 are **1)** a replication of successful adaptation interventions undertaken under Phase 1 of the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt Region’ in new communities. and **2)** introduction of new techniques that would widen the scope of resilience in the region.

Component 1 shall have the following outputs:

Output 1.1 Community level mobilization and climate adaptation planning

This output aims to mobilize communities and raise awareness about the project and climate change as an issue that can be adapted to. In villages of Phase 1 of the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt’ project, it will be attracting beneficiaries to new interventions introduced under this project. In new villages, it will raise awareness about climate change and how interventions that proved successful under the ‘Building Resilient Food Security Systems in Southern Egypt’ project could help them also adapt to climate-induced impacts on their production and livelihoods. As of the second year for the project in each village, when enough trust in these interventions has been built, new interventions that have not been introduced under the ‘Building Resilient Food Security Systems in

³⁷ Data on climate is available only at the Governorate level, thus climate vulnerability cannot be used as criteria for selection at sub-governorate levels (districts or villages). Income Poverty data from the 2015 National Household Income, Expenditure and Consumption Survey and 2017 National Census shall be used to identify the poorest three villages in each district. Viability of operating in the village will be validated by visits and if needed, a village will be changed with the next ranking village on the poverty list.

Southern Egypt' project will also be introduced. These interventions will also be preceded with community mobilization to raise awareness of their expected results. Activities undertaken under this output will be implemented in partnership with local partner Non-Governmental Organizations (NGOs)³⁸.

Activities under this output will include:

Activity 1.1.1 Inception and annual project workshops. An inauguration workshop will be organized at the startup of the project. Similar gatherings will be organized annually thereafter. These events will add representatives from the new phase villages to the network of practitioners comprised of community members, partner NGO representatives, governmental officials and technical experts created under the 'Building Resilient Food Security Systems to Benefit the Southern Egypt Region' project. Such a network has been and will continue to be a good platform for sharing experiences across the governorates as well as discussing challenges, highlighting success stories and providing technical and managerial support as needed. Its discussions will shape the project interventions in the upcoming year. Equally important, it will create sustainable working relationships that would help these key players maintain and further develop the activities in the future. For a gender balance, women will be particularly encouraged to participate.

Activity 1.1.2. Awareness raising sessions. The project shall organize awareness sessions in the different new villages, with an average audience of 35 persons per session. As women in rural areas tend to shy away from mingling with males, only 20-30% of the participants in mixed sessions are expected to be females. To encourage further participation, several of these sessions will be designated only for females. Experts will be invited to talk about climate change, how it impacts livelihoods and possible solutions for adaptation. Farmers from Phase 1 of the project will also share their experiences with the different adaptation solutions they have practiced, highlighting how they have concretely benefitted from these solutions. In addition, the project will be introduced and its objective, expected outputs, activities, and modus operandi explained.

Activity 1.1.3. Home visits. To maximize outreach, particularly among women, home visits shall be conducted. The visits will focus on discussions on how climate change is affecting the household income, present project adaptation solutions and explain how these solutions contribute to resilience building. The project objectives, activities, expected outcomes and target beneficiaries will be explained. The visits will be undertaken by female volunteers under the oversight of the local partner NGOs to ease access to houses and encourage beneficiaries to talk openly.

Activity 1.1.4. Contests. Contests of art, poetry and story writing will be organized to target, primarily, youth members of the community. As means to raise awareness, these contests will be around climate change as a global phenomenon, its impacts on agriculture and livelihoods of small farmers, adaptation solutions and how they contribute to resilience building, etc.

Activity 1.1.5 Deployment of Volunteers. Volunteers from each project location will be selected and trained to, under the partner NGO, raise awareness about climate change and variability and impacts on agriculture, and education of communities on potential preparedness techniques in agriculture and livestock.

³⁸ Local NGOs (also referred to as CDAs) are small-scale local organizations established by community members to develop their communities. They are registered and supervised by the Ministry of Social Solidarity in accordance to the National law for NGOs.

Output 1.2 Establishment of early warning system for loss reduction This output will build on the expertise of Phase 1 of the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt Region’ project to extend climate information centers to new villages. As in the villages of Phase 1, these centers will give information on climate impacts on agriculture, adaptation techniques, provide resource materials and link the farmers and women to technical expertise. They will also provide early warning messages to help farmers reduce losses in cases of foreseen extreme weather spells. To do so activities of output 1.2 are:

Activity 1.2.1 Establishing and equipping climate information centers in local partner NGOs. Climate information Centers will be established in space allocated by the partner NGOs in the project villages. Such space would usually be one-two rooms of average area 12-15 m² each within the NGO premises. Once allocated, the project provides furniture and IT equipment for operationalization. The project will provide knowledge products such as publications, audiovisual materials, best practices etc. for populating a resources section. Such material will be compiled from different research centers, academic institutions, as well as material compiled and/or generated by Phase 1. Such materials are developed in the styles preferred by the different beneficiary groups.

Activity 1.2.2 Training NGO staff/Volunteers to operate the Centers. In each NGO, the project will train two staff members/volunteers on how to operate the early warning online system to be developed under activity 1.2.3 mentioned below. They will also be trained in communication skills to enhance their ability to receive and communicate messages from and to the farmers and other project stakeholders. They will be connected to technical experts in the different Cairo-based research institutions so as to enable linkages between the farmers and such resources persons as needed. Engagement of women as members will be encouraged.

Activity 1.2.3 Use of Early warning system. An online system to provide 5 days weather forecasts with recommendations of what to do to reduce losses in cases of foreseen extreme weather events for the main crops of the area was developed in collaboration with the Egyptian Metrology Authority under Phase 1. It has been very successful in supporting farmers of Southern Egypt reduce losses of 6 crops, namely wheat, maize, sorghum, grapes, sugar cane and tomatoes. Additional crops will be added to the system in Phase 2, in particular, major fruits and vegetables that will be identified under activity 1.2.1. Under the proposed Phase 2, use of the online-system and its android version will be introduced in the new villages.

Dissemination of the messages will be done by local NGO partners through various techniques that have proved very successful, including:

- 1) loud speakers installed on the climate information centers or on mobile tricycles and use of the microphones in the mosque and churches of the villages for mass verbal relay of the messages,
- 2) sign boards to be hung out in visible areas in the villages, and
- 3) issuance of an android version of the system, enabling farmers and extension workers to access it through smart phones at no cost.

MALR, in collaboration with the Egyptian Metrological Authority, is to maintain and operate the system after the project end.

Output 1.3. Introduction and use of water saving irrigation. This output aims to extend enhanced efficiency of irrigation water usage to new villages. It is comprised of a set of hard as well as soft interventions that helped farmers of Phase 1 of the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt Region’ Project to reduce their water consumption in irrigating their crops. Activities of this output include:

Activity 1.3.1.: Establishment of Water Users Associations. Farmers sharing the same Mesqa and Merwa (small-scale on-farm tertiary earth irrigation canals with 50-60 cm width, 40-70 cm height and 20-40 meters length) will be organized to create a water user association that would allow them to collectively manage their water. With an average composition of 70 farmers, 15 associations will be established, serving an area of 50 acres each. For a legal status, they will be established as committees in the local partner NGOs. As proven by Phase 1, this set-up will also allow them to benefit from the supervision and support of their host NGOs, which sustainably enhances their ability to support the farmers in enhancing irrigation efficiency.

Activity 1.3.2 Introduction of low-cost irrigation improvement techniques. Physical techniques such as laser leveling of the soil will be introduced, serving 2000 acres and around 4,000 participants in 15 new communities. This technique increases irrigation efficiency by smoothing irregularities that clog water in the soil surface. Leveling machinery will be rented by the hour from local service providers. Canal lining and sloping will also be introduced, where the mud mesqa or merwa will be lined with a smooth-surfaced cement lining to reduce side seepage and water consuming weeds growth. This also smoothens water flow, reducing pumping hours and associated diesel costs and facilitating better access of downstream plots of land to the water. Solar pumps will also be introduced to reduce the costs (around L.E 5 per cubic meter pumped water) and environmental implications of the currently used diesel-operated pumping. For maintenance, the local NGOs contract local maintenance companies who undertake regular maintenance as well as trouble shooting and fixing of malfunctions. Each WUA will establish and manage a fund to collect a fee from its farmers against their water usage. This fee will be L.E. 2-3/ cubic meter (equivalent to USD 0.12-0.18 per cubic meter). The collected fee amount will be used to cover maintenance expenditures. Soft techniques will also be promoted, where new irrigation schedules will be introduced and managed by the farmers who share the same mesqas.

Output 1.4 Adaptation in cultivation and crop diversification promoted

This output aims to support climate adaptation in crop production. It introduces more tolerant varieties, intercropping to spread risk among multiple crops, improved agricultural techniques to optimize resource use, value addition and better linkages to markets for enhancing incomes from land cultivation. Activities of this output include:

Activity 1.4.1. Introduction of heat tolerant varieties. Use of heat tolerant varieties of the main crops of Southern Egypt, namely wheat, maize, and tomatoes will be extended to new villages. The seeds used are domestically developed through cross breeding programmes of the Agricultural Research Center and certified by the Ministry of Agriculture.

Activity 1.4.2. Introduction of improved agriculture techniques. New agricultural techniques will be introduced to help 4000 farmers increase their productivity and reduce their production costs. Among these are:

- the changing of the sowing dates, where for example a delay of 10 days in sowing of wheat will decrease the probability of exposure to extreme weather spells during early stages of plant growth, when it is highly weak.
- raised bed cultivation that has proven to reduce seed, water, and fertilizer usage by 25-30%, while increasing the productivity by 40% as compared to traditional cultivation.

- Scientifically guided intercropping will also be introduced to help farmers select two compatible crops and guide their simultaneous cultivation.
- Land Holding consolidation to overcome land fragmentation problems. Farmers consolidating their land under Phase 1 of the ‘Building Resilient Food Security Systems to benefit the Southern Egypt Region’ project reported increases of up to 30% in their incomes due to additional land being cultivated and economies of scale being realized when small farmers collaborate in procurement, cultivation, and marketing. Steps for land consolidation will include:
 - Marking borders of original plots of land
 - Conducting soil analysis to determine characteristics and productivity of each plot
 - Signing bilateral contracts between the farmers and the project.
 - Applying agricultural mechanization, procuring seeds, cultivating the same cropping pattern throughout the consolidated area, applying the same treatments.

The project will cover all costs in the first season. In the second season, farmers will cover 50% of implementation costs. In the third season farmers will cover 75% of farm production costs, and ultimately, in the fourth season, the farmers will bear all the costs.

The above techniques will be introduced through the establishment of demonstration fields, extension services and farm-to-farm visits.

Activity 1.4.3. Enhancing incomes from non-staple crops. Cultivation of non-staple high value crops with established demand and high selling (medicinal and aromatic plants) will be introduced through 1) intercropping with the traditionally grown staples or 2) cultivation in inter-seasonal periods. Simple agro-processing units, such as sun-bed drying units or peeling units will be provided and market linkages established to enhance the income generated from these crops. Women will be particularly targeted in the agro-processing parts of this activity, where their participation is culturally accepted.

Output 1.5 Building resilience through livestock and poultry production

This output aims to build smallholders resilience by supporting animal production as a means for diversifying livelihoods. For integrated support in this area, activities of this output will be:

Activity 1.5.1 Establishing schemes for revolving loans with a focus on women. As traditions in Southern Egypt allow for women to be the keepers of the household animals, women will be particularly targeted in this activity to ensure gender balance in the overall project beneficiaries. Animal revolving schemes will be established to provide an in-kind loan of goats, bee hives, or ducks to women beneficiaries. Based on previous experience from Phase 1, the loan size is expected to range from US\$ 60 (for ducks project) to UD\$ 450 (for goats loan). The schemes are to be managed by the local partner NGOs, upon establishment of a loan’s unit comprised of a loans’ coordinator and a loans accountant in each NGO. Agreements will be signed between the NGOs and beneficiaries mandating them to repay their loans with an interest rate of 5% in installments. By the end of each loan, the NGO would be able to establish a new loan to another beneficiary. Funds accrued from the interest will be used to cover the salaries of the lending unit staff and its operational costs. Newly hired staff of the lending units will be trained in microloans targeting, management and book keeping for efficient operations of the lending schemes. To cover for defaults, 2% of the accrued interest value is deposited in a risk fund managed by the NGO. In case the default is due to a force majeure, the defaulter is exempted for remaining repayments. If the default is a result of any liability of the beneficiary, the NGO takes legal action. Experience from Phase 1 proved this to be a very successful and highly desirable activity. Overall around 5% had some delays in their repayments, and legal action was needed with only 30 of the 18,000 women receiving loans.

Activity 1.5.2 Training and Technical Support To reduce default rates, potential beneficiaries will be trained on animal keeping including optimal fattening techniques and health care recommendations as well as project management, costing and revenue calculations. Technical support and backstopping will also be provided to the NGOs and beneficiaries through the Agriculture Research Center. As this complements the animal lending loans, women will be the primary target of this activity as well.

Activity 1.5.3 Production of alternative livestock fodder. One of the limiting factors in raising animals in Southern Egypt is the high cost of fodder. Traditionally, livestock feed is composed of clover to which hay and protein concentrate (in the form of maize, and minerals) is added, bringing the cost to L.E. 28.5 or USD 4.75 /cattle head/day. This is unattainable for smallholders in rural Upper Egypt. The project will use agricultural waste as a main constituent, upon supplementation with low-cost additives (molasses and bran) for improvement of its nutritional value in animal fodder. The cost of preparing the mix is estimated at L.E. 250/ton (equivalent to USD 14.7/ton) A daily intake of 2 kg will reduce an animal's need of traditional fodder by 30%, increase profitability for smallholders, reduce the demand for berseem and maize, consequently availing its cultivation land and water for other crops and contributing to relieving climate-induced pressures on resources. The technique will also utilize agricultural waste that would otherwise be disposed of by burning.

The project will train beneficiaries in order to disseminate the use of the new animal fodder among farmers in the project villages. Awareness material will be prepared, and awareness campaigns organized including demonstrations where farmers will be trained on how to prepare the fodder. **Output 1.6 Introduction of greenhouses for intensifying production.** Production of fruits and vegetables will be promoted through the introduction of protected agriculture (greenhouses). While farmers will continue to grow their staple crop in winter (wheat) as they use the bulk of it for subsistence, small-scale greenhouses will be introduced to grow additional crops such as cucumber, bell and chili peppers, eggplant, strawberries and tomatoes in small areas in parallel.

Activities under Output 1.6 include:

Activity 1.6.1 Provision of small-scale greenhouses Thirty small-scale green houses will be provided to support farmers increase their production and revenue from agriculture through cultivation of non-traditional cash crops that they normally do not grow. To maximize benefits, this will be done in parallel to their cultivation of traditional crops, where greenhouses with dimensions of 4m *20m will be provided for farmers to grow cash crops in small areas that they can feasibly allocate from the bulk of their lands - that they use for cultivation of traditional crops. As greenhouses will not be needed in the high temperatures of the summer season of Southern Egypt, the units provided will be removed to allow farmers to use them during the period October- May and remove them when not needed (between June and September).

Activity 1.6.2 Build capacity in protected production Farmers will be trained on how to operate and maintain greenhouses for optimal production. Trainings will cover the selection of crops to grow, fertilization and irrigation schedules, maintenance of the greenhouse structure and components, etc. It is customary that women participate in harvesting of vegetables among smallholders' households. Men and women will be trained on good agricultural practices in harvesting of vegetables.

Activity 1.6.3.3 Capacitating local partner NGOs to manage produce. Capacities of local partner NGOs will be built to manage the increased produce of the farmers from their greenhouses. As done in Phase 1, Phase 2 of the project will establish simple agro-processing units that will be operated by the partner NGOs, after receipt of necessary capacity building support. The units will include sun-bed drying to absorb produce such as tomatoes, pickling for pepper, aubergine, lemon and cucumber and preserving for strawberries, etc. The NGOs will also be capacitated in wholesale management, where they will

collect quantities in bulk from the farmers and manage its transfer and marketing in governorate wholesale markets and/or exporters on their behalf against a share in the profit.

Output 1.7 Introduction of aquaculture production

Farmers of Southern Egypt depend almost exclusively on crop production for a living. Phase 1 of the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt Region’ project has successfully reduced this dependence through animal production lending schemes that helped households to diversify their production and sources of income. Under these schemes, farmers’ production was widened to include goats, ducks and bee keeping. Phase 2 will build on this to further diversify farmers’ production to include fish. To this end, small-scale fish farming (aquaculture) will be introduced along with value addition through processing.

Activities of Output 1.7 will include:

Activity 1.7.1 Design and implementation of integrated pilots for aquaculture. Integrated small-scale pilots that supports the cultivation of tradition fresh-water fish as well as the introduction of salinity-tolerant low-cost species and their processing into palatable forms will be designed and implemented. The pilot will rent land plots of 2-5 feddans in village uncultivated fringes in each governorate to establish demonstration pilots, one in each governorate. In addition, small-scale units will be introduced for production at household level. These pilots will be used to disseminate the models among rural men and women in other parts of the Governorates through demonstration days. During these days, participants will be oriented with the benefits and means of operation and maintenance of fish farms. Five field days will be implemented each season (8 months period) in each of the demonstration pilots. Each day will bring 15 farmers and 5-10 local NGO members from all districts of the governorate. Moreover, the established pilots will double as aquaculture production and processing units that will be managed and maintained by the local NGO. Operation of these units will create employment opportunities for youth (men and women) in surrounding communities.

Activity 1.7.2 Building capacities of local partner NGOs and beneficiaries in aquaculture. The project shall build the capacities of local partner NGOs to establish and manage 1) village-wide aquacultures as community productive assets in the village fringes and 2) revolving fund portfolios that would offer in-kind loans for establishment of individual household fish farming units. In addition to the development of their skills in project and lending management, the project will train the NGOs on how to operate the units including how to purchase the fingerlings, recommendations for feeding and water quality control, temperature control, etc. for optimal production. Trainings on the use of technologies for the use of residual parts of the fish (bones, head and tail) in producing fish meals will also be undertaken. Potential Beneficiaries will also receive similar training. In addition, the project will facilitate continuous access to technical expertise and backstopping for the NGO and the beneficiaries for suitability.

Activity 1.7.3 Design of a revolving fund scheme for aquaculture. A scheme to provide loans for small-scale low-technology fish processing means for community members will be designed and operated. In addition, loans will be offered for small fish farming units at the household level. In areas where environmentally compliant water courses exist, loans will also be issued for low-cost aquaculture units. The loans are to be managed by the local NGOs whose capacity has been build. To maximize benefits at the household level, a gender-considerate portfolio will be generated through focus on women beneficiaries.

Component 2. Building institutional capacity for replication

Component 2 aims to build capacities and disseminate lessons learned and best practices generated from component 1 for upscaling and sustaining climate resilience in Southern Egypt. To do so, this component is composed of 3 outputs as follows:

Output 2.1. Capacity Building of governmental staff and local academic institutions This output is to build capacities of the government officials engaged in extension services in the villages covered under Phase 2 and local academic institutions to institutionalize the new climate adaptation techniques introduced by the project. Its activities are:

Activity 2.1.1 Building capacity of government officials. While under Phase 1 capacities of 800 governmental staff engaged in extension services in districts of this phase, capacity of **200** additional concerned staff of ministries of Agriculture, Social Solidarity, Education and the Egyptian Metrological Authority engaged in extension services in the new districts of phase 2 at local and sub-national level will be built in knowledge impacts of climate change and adaptation techniques, strategic planning, and effective communication skills. At local level, extension workers will be invited to participate in all the trainings delivered to the farmers and the local NGOs. In addition, they will be getting on-site training through the technical experts that will be visiting the project villages and participating in the different farm visits organized by the project. As part of their capacity strengthening, they will also receive Training of Trainers (TOT) packages that will enhance their ability to replicate the technical trainings they receive and cascade the new technical information they are exposed to. Gender balance in staff participation will be pursued.

Activity 2.1.2 Widening scope of climate adaptation solutions into university and agricultural secondary school curricula. This activity is to engage faculty members, teachers and students from the local universities and agricultural secondary schools in the project governorates in climate adaption and small holder farming enhancement. It will introduce new techniques that have not been introduced under phase one in these academic institutions, including building climate resilience in livestock production, use of early warning to reduce losses and improved irrigation, through:

- **Trainings and Field Visits.** Student trainings, particularly during summer vacations, and field visits will be organised to project villages. Training materials and lessons documented under Phase 1 will be used. In addition, materials generated from components 1 and 2 of Phase 2, including those on aquaculture, protected agriculture, animal raising, project and loans management, adaptation in agriculture and irrigation will be used.
- **Engagement in farm activities.** Students will be invited to participate in the extension trainings offered to the farmers in the project villages. They will also be involved in provision of extension services for farmers.
- **Engaging in design and delivery of trainings.** Universities and the research centres of relevance shall be contracted for design and delivery of trainings to be provided to beneficiaries
- **Sharing of knowledge and training materials.** Material generated by the project under component 1 including those on animal raising, loans and project management, adaptation in agriculture and irrigation will be shared with the universities for upgrading of their modules on climate change adaptation.

Output 2.2 Lessons learned, and best practices documented and disseminated.

This output will document and disseminate knowledge and lessons generated through different specialized media channels, with the aim of wide outreach to farmers and rural inhabitants. Its activities will be:

Activity 2.2.1 Production of knowledge products. Flyers and brochures that give summary information about implementation approaches, best practice and key lessons learned will be produced. The information will be easy to read and pictorial. The target group of these will be farmers, extension officers, local NGOs, and Government technical staff. Less detailed promotional material that provides a general overview of the project, its components and expected outcomes as well as success stories generated over time will be produced. This will be disseminated among partner agencies, and national local authorities, including local and national political representatives. Documentaries about the project will be produced and disseminated to concerned stakeholders including the governorates, NGOs, the Ministries of Agriculture, Environment, Irrigation, Social Solidarity, Planning and Finance at local and national levels, and members of the development partner group working in Egypt.

Activity 2.2.2. Sharing project results and lessons learned. Results and lessons learned generated by the different project activities will be shared to diversified stakeholders through several channels including:

- Dissemination through visibility events, use of social media, interviews in media, and presentations in relevant forums
- Visits to be organised by the project to bring relevant officials to the project sites
- Celebrative harvest days where quantification of the amounts produced by the project supported fields vis-a-vis fields not supported will be undertaken to widely disseminate the substantial increase induced by the project interventions among the villages Presentation of project activities in relevant conferences, networks, workshops, and forums on food security, climate adaptation, livelihoods support, agricultural development, etc., at national and sub-national levels
- Presentations to Ministers and senior government officials
- Events organised by the project to have beneficiaries present their experiences to other potential beneficiaries
- Annual workshops that join project actors from community, department, regional and national level to discuss opportunities and constraints, and share experience and learning.
- Integration of reports into ministry of Agriculture and Environment's on-line data base.
- Broadcast of the project documentary on the Egyptian Agricultural Satellite Channel of the Ministry of Agriculture

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The project will provide a full range of multiple economic, social and environmental benefits, including the following:

Economic benefits: As concluded from discussions with farmers during the consultations as well as follow-up missions undertaken by the project team and WFP during phase one implementation, the interventions implemented under Phase 1 have demonstrated very positive economic benefits for the farmers which will also be reaped for Phase 2 participants. Land consolidation recorded an increase in

the cultivated land by 25%, saved 25% in the water consumption, reduced use of inputs (seeds and fertilizers) by 25% and allowed for use of larger-scale machinery for tillage and land levelling. Overall, this increased beneficiaries' productivity by 50% and increased their income by 45%. Lined canals saved 55% in irrigation water consumption and provided water to downstream plots. In addition, diesel fuel and maintenance costs of canals were reduced by 50% and 70% respectively. With a current average irrigation cost of USD 140/acre/season, the project has helped them save a total of USD 44-52 /acre/season.

Intercropping has increased farmers' income by around 60% percent. It allowed farmers to maximize outputs per units of land and water, reducing their production costs and generating revenue from two instead of one crop.

Animal raising loans provided by the project generated a sustainable average household income of USD 29-38 every month. This represented approximately a 30-35% increase in its average monthly income. At the village-level, these loans were proved to have supported the local economy.

Value addition interventions increased the price of produce multi-fold. Sun-bed drying of tomato increased the price of a kilogram from USD 0.02 to 0.12, and peeling doubled the value of pomegranate (USD 88 to USD 176 per ton)³⁹. In addition, these units employed women, offering them a monthly income of USD 70.

One of the limiting factors in raising animals in Upper Egypt is the high cost and high-water requirements of fodder. Traditionally, livestock feed is composed of clover to which hay and protein concentrate (in the form of maize, and minerals) is added, bringing the cost to L.E. 28.5 or USD 4.75 /cattle head/day. One of the smallholders' support interventions used agricultural waste as a main constituent, upon supplementation with low-cost additives (molasses and bran) for improvement of its nutritional value in animal fodder. The cost of preparing the mix was in the range of USD 14.7 /ton and a daily intake of 2 kg reduced an animal's need of traditional fodder by some 30%. While this increased profitability for smallholders, it also reduced the demand for berseem (clover) and maize. This consequently reduced the demand for their cultivation water and land.

Overall, similar to Phase 1, the different solutions are expected to generate average increases of around 40% in the annual income on household income. For a household that lives off an annual income as little as USD 283 from agriculture (55% of the households in typical village in Upper Egypt), this increase is substantial.

In addition to the economic benefits that Phase 2 will generate through the replication of the above interventions, new interventions to be introduced under this phase which are also expected to have similar economic benefits. For example, cost benefit analysis indicate that household aquaculture units will increase household income by around 20%. Likewise, protected agriculture will allow for intensive production of cash crops that would increase income by some 60%.

Environmental Benefits:

Phase 1 of the project has contributed significantly towards enhanced and sustainable management of natural resources, namely land and water. Land consolidation removed barriers between fragmented land plots, increasing land available for cultivation by 20-25%. By simultaneously growing two or more crops, intercropping helped farmers economize the use of water, fertilizer, and pesticides,

³⁹ Interview with Eng. Othman El Shaikh, Project Manager of the 'Building Resilient Food Security Systems to Benefit the Southern Egypt Region' Project, November 2016

reducing the negative impacts of their activities on the environment. Without the project, farmers were over-exploiting water and increasing fertilizer usage to enhance productivity. The project's use of heat-tolerant varieties change of sowing date, and intercropping, reduced climate-induced productivity losses, reducing such practices where a 25-30% reduction in fertilizer and water usage was recorded. Likewise, irrigation rescheduling, and canal lining were recorded to induce a 25-30% reduction in water usage. Early warning reduced losses by 60%, supporting farmers to reduce their fertilizer usage to compensate for losses.

The proposed Phase 2 is expected to have similarly positive environmental benefits. On one hand, the replication of the activities under Phase 1 will result in the same positive environmental impacts. On the other hand, the new activities introduced under this phase will also have positive results on the environment. Similar to the different activities that increased production under Phase 1, the green houses will help the farmers to reduce their usage of fertilizers and seeds, with reductions of 50% in comparison with open field production. They will also economize on the use of land and water, with an estimated increase of production of 70% per unit of water and 100% per unit of land.

In the training that the farmers would receive on aquaculture, they will be exposed to how to use wastewater of their units in irrigating some of their crops such as sugarcane residues which is a main crop in the region. Besides relieving the pressure on their water resources, this practice will reduce their consumption of chemical fertilizers by making use of the nutrients excreted by the fish. They will also be trained to how to use their agricultural wastes, which they would normally burn, in feeding their fish. Besides the economic savings realized, this practice will reduce air pollution in the area.

Social Benefits:

Among the most prominent social benefits of the project's first phase was the change in the dynamics of collaboration among the farmers. Through the water users' associations, farmers were able to cooperate in managing their resources in an effective and sustainable manner that benefited all of them. By allowing water to reach downstream plots, the lined canals were reported to provide equitable access of farmers to water and reduced conflicts over access to water among them. Likewise, consolidation of land brought farmers together to jointly manage their lands, realizing common benefits among themselves. In cases where they had different opinions on operational issues such as the varieties to be used or the sowing dates, they democratically resolved such issues through voting.

In Phase 1, the additional income realized by the smallholders' households helped them in covering expenditures on key social sectors, namely health and education. It also provided a surplus that allowed for the purchase of food commodities that they normally could not afford namely, meat, poultry milk and eggs for their households. This helped some beneficiaries to fulfil other social obligations such as purchase of house appliances for marrying of their daughters or themselves. Others indicated that they used the savings they managed to have from these projects to start up other income generation projects such as cloth trading.

Women empowerment was also among the outstanding social benefits of this smallholders' support. Through the in-kind loans and work in the agro-processing units, women mentioned that they were able to generate income that gave them a sense of independence while also enhancing their roles in making decisions on household expenditures.

This project will ensure that activities and outputs are gender-sensitive. It will also undertake-gender-specific activities to enhance women's participation in decision making, project implementation, monitoring and evaluation as well as maximize their opportunities to benefit from the different activities in compliance with local customs and traditions. As outlined in the Gender Assessment and Action Plan annex, these activities will include home visits and women only sessions to enhance outreach to women, specifically targeting women in activities such as animal loans and agro-processing, encouraging women participation in the community volunteer's teams and the project support committees as well as the different project capacity building activities, among others.

Strengthened institutional systems for development and sustainability was among the results mentioned by the farmers in several discussions. The support improved farmer's adaptive capacity through training, demonstrations, technical support and farm-to farm visits. For sustainability, replication and mainstreaming of the different adaptation techniques that it is introducing, it built the capacity of the local partner NGOs as well as concerned government staff at the local level.

Strengthened access to financial and technical resources was also highlighted. The project provided a window for farmers to access financial and technical resources that allowed for expansion of their production and income generation capacity. At a higher level, this injection of resources stimulated their communities' local economy and enhanced their self-sufficiency.

The same benefits are expected to be provided in villages participating in the new phase of the project.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

The proposed Phase 2 of the 'Building Resilient Food Security Systems to Benefit the Southern Egypt Region' project leverages the cost effectiveness demonstrated by the different interventions under Phase 1. From the management perspective and in addition to adopting the same cost-effective implementation mechanisms of phase one, this phase will also utilize the capacities and trust build over the years by Phase 1 to further enhance the cost effectiveness of the adaptation solutions it offers and as well as their implementation mechanisms. The following describes the cost-effectiveness aspects of the interventions and the implementation mechanisms:

1. Overall, the project's approach to water saving is by far more cost-effective than other alternatives stipulated in the Egypt Water Resources Strategy 2030 that refers to the need to build more dams and reservoirs and/or increase the capacity of the High Dam to better manage water storage, and recommends the development of new water resources, particularly ground water. While such an approach is less sustainable from a natural resource standpoint, it is also costlier to carry out. Use of ground water would require wells, the costs of digging, operation and maintenance of which would vary between USD 900 to USD 1500 per acre, depending on the level of the ground water table. Other alternatives mentioned include subsurface irrigation and drainage pipes, which cost around USD 1000 on average, which is unaffordable for the average farmer in Southern Egypt
2. Instead of establishing an office in each of the project villages, Phase 2 will continue partnering with community organizations as the main implementing arm at the village level. This has proved to be a very cost-effective means that has saved around USD 300,000 needed for each village-level office, while significantly strengthening project presence and integration within the villages as well as the sustainability potentials of its different interventions.

3. As in Phase 1, Phase two will recruit community volunteers to assist in implementation and ensure sustainability. This approach effectively lowered the budget as it accommodated for minor expenses- mainly transport allowances of around USD64/month/volunteer- for these volunteers. Such amounts are significantly lower than salaries for paid employees that would have been otherwise hired at an average of USD 235/month/employee to undertake the different tasks of the volunteers.
4. The project's approach to pilot and then widely demonstrate the positive results of its interventions through different visibility and experience exchange vehicles proved an effective means to spread these interventions very efficiently. It broadened results beyond directly supported beneficiaries by dissemination and induced adoption by farmers, where in most cases this upscale was done at the cost of the farmers. This had a multiplier effect on the funds invested by the project in the different interventions, where for each farmer supported directly by the project to use new varieties or use raised bed cultivation, 2-3 farmers adopted at their own costs.
5. To encourage participation, the project introduced interventions such as the consolidation of lands and canal lining to attract farmers. As soon as the activities yielded positive results, these incentives were gradually reduced. This approach of gradual cost-sharing advanced cost-effectiveness as it allowed for reaching increasing numbers of beneficiaries over time.
6. As concluded by the mid-term evaluation of Phase 1 of the project, cost effectiveness was supported by the project being able to solicit fertilizers at lower than market price. Likewise, the project's model of rehabilitating veterinary units and improving mesqas through partner NGOs allowed for lower than market prices to be attained.
7. The project use of low-cost outreach techniques such as a website, a Facebook page, loudspeakers and sign boards in participating villages for early warning messaging, etc. enabled widespread messaging at minimal costs.
8. The project selected activities and inputs with low expenses, such as goat and duck raising, production of alternative fodder, use of domestically-bred varieties rather than imported ones. On average, a job opportunity created by these loans costs around USD 118. This is more cost efficient compared to the alternative of creating jobs through large ruminants (cows, camels or buffalos) which would be in the range of USD 1176 per job. It's also more cost efficient than the nationally announced cost of a job opportunity through small and medium enterprise lending schemes (USD 1176 to 1470).⁴⁰ Along those lines, the model of lining mesqas was also more cost-effective than alternatives such as gated pipes (the cost of which is around USD 1000/acre) because it on locally available materials while allowing for the farmers to contribute as labour in the unsophisticated steps of the lining. process.
9. The project use of revolving loans to provide animal projects proved highly cost-effective where recycling of the loan capital allows for extended outreach of beneficiaries through subsequent cycles.
10. Phase two will leverage these elements of cost-effectiveness from phase one. It will also leverage experiences acquired over time in phase one, making it more efficient from its onset. For

⁴⁰ Small and Medium Enterprise Development Agency Annual Report, 2018

example, it will build on experiences gained regarding the need to have the animal suppliers responsible for vaccination and veterinary care during transportation and having insurance effective immediately upon delivery -rather than after 48 hours which was the case at the beginning of phase 1 -to reduce risks and associated losses in the animal lending schemes.

- D.** Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The proposed Phase 2 of the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt Region’ Project is in line with the following national strategies and plans:

1. Egypt’s strategy for sustainable development, “Egypt’s Vision 2030”. The project is in line with the priority of securing access to food and nutrition of Egypt’s Vision 2030. More specifically, activities proposed under this phase are a direct contribution to the following pursuits stipulated by the strategy towards achievement of this priority:

- Developing agricultural areas and supporting agro-industry
- Developing livestock, poultry and fishery production
- Rationalization of water usage and water resources development
- Addressing climate change as well as coast and establishments protection

2. Egypt 2018/2019-2021/2022 plan. The 2018/2019-2021/2022 plan of the Government of Egypt has 5 strategic objectives, of which national security protection and Egypt foreign policy is the first. Food security is one of the key pillars of this Strategic Objective, and the different interventions proposed by this Phase 2 of the ‘Building Resilient Food Security Systems to Benefit the Southern Egypt Region’ Project contribute directly to several objectives of this pillar, namely the objectives of:

- 1) Increasing crops’ productivity to increase farmer’s income and food production;
 - Reducing post-harvest losses
 - Increasing production of crops, poultry, cattle and fisheries to achieve self-sustainability
 - Enhancing irrigation
 - Enhancing supply chain of crops

The project agro-processing activities and animal lending scheme are also in line with the plan’s Strategic Objective of increasing employment rates where diversifying rural income generating activities with focus of those based-on/related-to agriculture and agri-products and encouraging the income generating activities of women in rural areas are stipulated as key interventions towards the achievement of this objective.

3. The National Sustainable Agricultural Development Strategy 2030. Egypt’s *National Sustainable Agricultural Development Strategy 2030* recognises the building of smallholder’s resilience against climate change as a priority. To this end, it highlights vulnerability to rising temperatures as one of the most pressing issues that requires an immediate response.

Presenting the expected negative impacts of temperature increases on crop and animal production, the strategy lists the following complementary adaptation approaches:

- compiling and analyzing data related to climate, land use, irrigation, livestock, and strategic food stocks, needed for decision support
- supporting relevant scientific research and training programs;
- supporting agricultural policies that encourage farmers to select climate friendly crops and animal varieties; and
- supporting livelihoods of small farmers who are most vulnerable to shocks through improved technologies and approaches.

Through its activities and implementation modalities, the project is a direct contribution to the recommendations set out in the Strategy. In particular, it contributes to the following recommendations for enhanced climate adaptation capacity in vulnerable rural communities:

- the dissemination of new heat, salinity and drought tolerant crop and animal varieties for lessening losses in increased temperatures.
- The use of improved agricultural practices such as improved irrigation, plantation of high-value crops, the change of sowing dates, intercropping and improving the soil composition.
- the empowerment of farmers, diversification and augmentation of income generating activities.
- The promotion of the role of civil society as a prominent stakeholder in smallholders support as well as agricultural development

4. The National Adaptation Strategy in Agriculture. In line with Egypt's National Adaptation Strategy in the Agriculture Sector, the project contributes to the materialization of several of its priorities, namely:

- Develop systems, programs and policies to protect the rural community, and to promote its adaptation capacities to the anticipated change in land use, plant production, animal production and internal migration caused by changing indicators of climate.
- Study, characterization, and follow up the current status of the rural community, traditional knowledge and adaptation capacity (monitoring and evaluation programs for vulnerability and risk assessment facing different rural communities).
- Select programs to empower small farmers to adapt to climate change.
- Promote capacities of rural communities to manage their resources and outcomes, and to participate in relevant decision-making.
- Build capacities of rural communities to participate in development and implementation of national adaptation policies and disaster and crisis management.

5. The National Adaptation Strategy: The proposed project is in line with the *Egyptian National Adaptation Strategy that was issued* in May 2011. This strategy draws on other relevant strategies, in particular the above-mentioned Agricultural Climate Adaptation Strategy issued in 2010, and the Water Resources Strategy. It aims to help the country to adapt to climate change in the sectors mentioned in the Egypt second national communication, namely coastal zones, water resources, agriculture, tourism, health, population, housing and roads. In summary, the objectives of the Strategy are:

- Increased resilience of the Egyptian community to risks and disasters resulting from climatic changes and their effects on the above-mentioned sectors.

- Adequate capacities developed to respond to and contain risks and disasters resulting from climate change through plans and specialized programs aiming to respond to the needs of local communities in this area.
- Disaster risks reduced through early warning systems and support to concrete adaptation projects in the neediest locations.

The Strategy details climatic risks and potential disasters. The mentioned food-security related risks include temperature rise and heat shocks leading to increased evapotranspiration and crop water requirements; spread of pests; changes in agricultural plots as well as reduction in productivity; sea level rise leading to loss of land in the Delta. With scenarios predicting changes ranging from +20% to -90% losses, the strategy highlights reduced water resources as one of the major risks on food security in Egypt. Collectively, these risks also affect rural incomes, with the vulnerable groups of small farmers and agricultural labour affected the most.

6. 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 that is currently under development:

- Establishment of early warning system.
- Improvement of irrigation systems.
- Introduce heat tolerant varieties.
- Introduce simple agriculture technique to increase resilience.
- Diversification of householder income through animal keeping activities.
- Small land holding consolidation.
- Community mobilization and awareness toward climate adaptation activities.

7. The National Sustainable Development Strategy. The project is in line with the *Egypt's National Sustainable Development Strategy 2030 that mentions* good governance and sustainable natural resource management to support the economy as one of its main pillars.

8. The Third National Communication Report. The project addresses the issues and recommendations highlighted in Egypt's Third National Communication Report to the UNFCCC. Issued in April 2016, the report describes how impacts of climate change, such as increased droughts or more frequent strong storms threaten food security. In response, it highlights the growing need to promote resilience-building through climate change adaptation measures.

9. The 2004-2022 Poverty Reduction Strategy. The project's focus on Upper Egypt and proposed activities are a direct contribution to the fulfilment of the 2004-2022 poverty reduction strategy. In this strategy, the Ministry of Planning stipulates that because Upper Egypt is distinctly poorer than other parts of the country, its development is a core priority. The strategy also presents the development of the agriculture sector and the creation of micro and small enterprises as the key means for.

Besides its economic dimension, the project's in-kind loans for animal husbandry is expected to enhance gender equality in targeted communities. Targeting primarily female members of the households, these loans are a direct contribution to the strategies' objectives of women's advancement and the closing of the gender gap.

The strategy also acknowledged NGOs and civil society as partners in assisting and complementing its work. As stated in the strategy, NGOs will be expected to find ways and means to mobilize financial, human and material resources of the private sector as well as reduce the cost of certain services or provide

them in a more effective way. The flexibility of NGOs and their accessibility to the grassroots offer them advantages in rendering better public services. The projects' approach of building capacity through NGOs and CDAs supports the Government's strategy to entrust them as partners in development.

10. Decision Support Policy Briefs: The project is in line with policy-support recommendations of the Egypt Network for Integrated Development. In its Policy Brief number 15 of mid-2015, the network concludes that 'there is strong evidence that justifies targeting of rural Egypt and especially rural Upper Egypt for social protection and economic development. Discrimination in public spending in favour of the South is not only called for on account of differentials in poverty levels and deprivation but can be justified in terms of comparative advantage for job creation in labour intensive agriculture processing, manufacturing and tourism.

The brief further recommends that:

- Enhancing sustainable agricultural and rural development in Upper Egypt is crucial to reduce poverty and food insecurity
- Key research results point to the need to increase the production and marketing high value crops and livestock products since they represent priority growth opportunities.
- Traditional small holding livestock production continues to be a profitable activity in Upper Egypt and that the large part of the livestock GDP is earned by the landless and smallholder farmers that represent the poorest households⁴¹.

11. The National Water Resources Supply Management Vision. Through its interventions to improve irrigation efficiency, the project responds directly to the National Water Resources Supply Management Vision for 2050. Issued by the Ministry of Water Resources and Irrigation, this vision has making 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. Moreover, the project's establishment and empowerment of Water Users Associations contributes directly to the vision's direction to decentralize on-farm water management through local water user associations at the mesqa level.

10. The National Strategy for the Empowerment of Egyptian Women 2030. Implementation of the project's gender action plan shall support outreach to women and enhance women participation in decision making and access to resources. It is thus directly contributing to the fulfilment of The National Strategy for the Empowerment of Egyptian Women 2030 which sets women's political empowerment and leadership; women's economic empowerment; women's social empowerment; and women's protection as 4 key priorities for gender equality in Egypt.

E. Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

Several measures are in place to ensure compliance with national technical standards and legislative framework. Among these are:

- The solicitation of technical expertise from specialized institutes and departments in the Agriculture Research Center and universities for the delivery of trainings, provision of technical support, backstopping and follow-up of the different activities under the project.

⁴¹ http://enid.org.eg/uploads/Pdf/Pb15_povertyprofile_egypt.pdf

In line with the Ministerial Decree No. 589 issued by the Ministry of Agriculture on enforcement of intellectual property and plant variety protection in 2010, the use of varieties and hybrids that are nationally registered by certification of the concerned government authority, namely MALR. In doing so, the project will also be ensuring that the varieties and hybrids meet Egyptian National Standards for Breeding issued by the Ministry of Agriculture in 1967.

- The formation of a technical committee that is to be chaired by MALR and involves experts from different domains of crop and animal production. Meeting quarterly, this committee is to:
 - o Provide technical support for project management
 - o Finding practical solutions to technical obstacles facing the implementation of the project activities.
 - o Provide technical proposals that contribute to achieving the goals of the project.
 - o Ensure implementation of the different interventions is in compliance with national standards, laws and legislation and their acceptance in the project locations.

- The project complies with the national environmental law issued in law 4/1994, as well as national laws governing use of land and water resources. More specifically, the project mechanism of implementation through the Ministry of Agriculture and its different units is in compliance with Law 4/1994 article that stipulates that agencies and Ministries are to undertake, within their spheres of competence and through their stations and work units, interventions and monitor the components of the environment and relay their results and data to the competent authorities periodically.

- The project is relevant to one of the main themes of Egyptian National Water Policy for the year 2017 particularly: 1-optimal use of available water resources and 2- protection of water quality and pollution abatement.

As was the case in Phase 1, all irrigation interventions under this phase of the project will be undertaken in compliance with Law No. 12/1984 and its supplementary Law No. 213/1994, that are the legal basis for irrigation and drainage in Egypt. The laws define the use and management of public and private sector irrigation and drainage systems including main canals, feeders, and drains, and mesqas (small branches of irrigation channels irrigating one or less acres of land). In this regard, the project interventions will be in accordance with the following articles:

- Article 18, which specifies that land owners that utilize private mesqas shall be permitted to take water from it according to the ratio of the area that each one of them owns. Mesqa rotations for the lands that are subject to that system shall be formulated and that the Irrigation Department officials shall undertake the implementation of those rotations under their supervision.
- Article 19, which stipulates that those utilizing private mesqas and drains should purify them, remove Hyacinths plants, other plants and weeds obstructing the water current, and undertake maintenance and preservation of its watersides.
- Articles 20-25, which stipulate the legal procedures for management of mesqas in lands owned by several people.

F. Describe if there is duplication of project / programme with other funding sources, if any.

There is no duplication of funding. On the contrary, this Phase 2 will be complementing other projects in the project area and in the country.

The project will be complementary to the following initiatives focused on climate change adaptation:

- the *'Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt* (funded by GCF to be implemented by UNDP). 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. Complementarity between this project and the proposed project allow the GoE to enhance inclusiveness and effectiveness of its response to climate change, where its two at-risk regions are being supported.
- *IFAD's Sustainable Agriculture Investment and Livelihood (SAIL)* project that supports resilience in a newly reclaimed settlements in Middle and Lower Egypt. Synergies will be sought in the form of experience sharing and collaboration in raising awareness about climate change impacts and adaptation benefits.
- The **'Enhancing Climate Resilience of Smallholders in Middle Egypt'**. Through this 5- years project that is expected to start in 2020, WFP extends its partnership with MALR to extend resilience to smallholders' communities in the old lands of Middle Egypt through funding from the Green Climate Fund.

The project will also complement other projects that support smallholders or advance agricultural development in the areas of the project. In this regard, it will coordinate with the USAID funded EVAS project that is to start in 2019 and the IFAD STAR project that is currently under design. With both projects focusing on enhancing market access of smallholders through establishing connections to domestic and international markets, gaining access to financial resources, processing facilities, refrigeration trucks, and increasing adherence to international food and safety standards, the project will enhance its farmers marketing potentials through linking them to the markets and facilities created or supported under these projects.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Component 2 of the proposed project will capture and disseminate knowledge generated by the initiative. Such knowledge will include lessons learned, best practices and success stories that implementation of the different interventions will generate. To achieve its objectives, the component will be comprised of several activities for knowledge management including:

- Development of knowledge products including flyers, brochures and documentaries that present information in printed as well as audiovisual forms
- Featuring in specialized agricultural satellite TV channels such as the Agricultural Channels of the Egyptian Ministry of Agriculture and Nour El Donia private TV channel
- Dissemination of information through specialized programmes in local media channels such as El Saeed and TEEBA local TV channels as well as Ganoub El Wadi radio channel, all dedicated to cover the Southern Egypt zone.
- Dissemination through national TV and radio channels-e.g. Channels 1 and 2 on TV and the Public Program radio channels
- Presentation of project activities in different specialized forums such as food security, agricultural and irrigation national, regional or international conferences or workshops, etc.
- Organization of different events for dissemination of information at the local level. These include farm-to-farm visits, demonstration fields and celebrative harvest days where farmers get to tangibly see results of the different interventions, discuss and share experiences.

Table 3 below summarizes the project's knowledge management plan:

SN	Knowledge product/ outreach mechanism	Format/communication channel	Main content/Objectives	Target group	Mean of dissemination
1	Flyers	1-page flyer for each project theme (resilience agriculture, irrigation, early warning, animal production)	1. Climate context and the importance of community mobilization 2. Agriculture: new technologies and practices 3. irrigation: water saving techniques 4. early warning: roles and benefits 5. Animal Production: alternative source of income	Farmers, extension workers, NGOs, & other stakeholders	distribution points (NGOs offices, agricultural cooperatives, agricultural directorates)
2	Brochure	5-6 p brochure Arabic 5-6 p brochure English	The project integrated interventions, current achievements and future targets.	stakeholders (government officials, NGOs)	Mail-by hand
3	One pages pack	folder (CD+ 5 pages+ map+ double face 1p infographic)	Objectives and Success of the project in decreasing the negative impacts of CC	Governmental executives, Embassies and development agencies working in agriculture and environment	hand distribution in meetings and events
4	Facebook page	Facebook page	Details, results, challenges, lessons learnt, ect of Project interventions	Farmers, extension workers, NGOs, & other stakeholders	Facebook
5	Facebook group(s)	Facebook group(s)	Details, results, challenges, lessons learnt, ect of Project interventions. Discussions and answers to questions	Farmers, extension workers, NGOs, & other stakeholders	Facebook
6	YouTube	Video	Summary on project interventions+ success stories	Farmers, extension workers, NGOs, & other stakeholders	YouTube
8	Documentary	5 videos (10-15 min)	1. Community mobilization: importance of community mobilization 2. Agriculture: new technologies and practices 3. irrigation: water saving techniques 4. early warning: roles and benefits 5. Animal Production: alternative source of income	Farmers, extension workers, NGOs, & other stakeholders	YouTube, Farm-to-Farm visit, workshops
9	Events	workshop meetings	role of the project in decreasing the negative impacts of C. success stories, Updates on achievements and future targets.	Extension workers, NGOs, donors and other stakeholders	workshop meetings

10	Articles	Articles in printed and on-line newspapers	role of the project in decreasing the negative impacts of C. Success stories, updates on achievements and future targets	Extension workers, NGOs and other stakeholders	Mass media
11	Success stories	Write-ups on success stories on	Presentation of successful models or project interventions and their impacts	Extension workers, NGOs, donors and other stakeholders	Publication on websites (project and WFP websites) mail + distribution points (NGOs offices, agricultural cooperatives, agricultural directorates)
12	Radio and TV outreach	Interviews in specialized, local and national TV and radio channels	role of the project in decreasing the negative impacts of CC, best practices, lessons learnt	Farmers, Extension workers, NGOs,	Mass media

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

As detailed in Annex 1 The proposed Phase 2 was designed following extensive consultations with a wide range of stakeholders at all levels. The consultations were undertaken in the course of February -May 2019 and sought to get feedback on national priorities and commitment relevant to sustainable agriculture and climate issues, how it affects the livelihoods of the farming communities of the zone as well as the effectiveness of the different adaptation solutions offered under Phase 1 and the new proposed priority solutions that Phase 2 would also introduce. For a comprehensive analysis, these consultations engaged stakeholders involved in the implementation of Phase 1 as well as other stakeholders in a sample of new villages where Phase 2 would be extending to.

Among the tools used were focus group discussions were 142 men and 161 women from targeted communities were consulted. Participants in these consultations where invited through announcements done by local NGO inviting interested women and men in the community to the focus groups, by providing details on objectives, venue and timing. Moreover, men and women interested in implementing new adaptation techniques participate in community outreach efforts in different locations in the village was particularly ensured through targeted invitations by the NGO and community leaders. Key informant interviews were conducted with diversified government officials, capacity development organizations, experts and academics to provide specialized information on the different food security, rural development agricultural, irrigation, and livestock production and institutional topics dealt with.

Table 4 below summarized the consultations done with the different stakeholders:

Table 4. Summary of stakeholders and community consultations

Institution	Participant(s)	Position	Methodology
Ministry of Agriculture	Eng. Othman El Shaikh	Project manager -Building Resilient Food Security Systems to Benefit the Southern Egypt Region	In-depth meetings

	Dr. Ali Hozyen	Chairman of Executive agency for comprehensive development	
	Dr. Sayed Khalifa	Chairman of the Agricultural Syndicate and Former Chairman of Agriculture Extension Sector	
	Dr. Mahmoud Medany	Climate change expert- Formal Head of the Agricultural Research Center and the Climate change information center of the Agriculture Research Center	
	Mr. Khaled Abdelrady	Director of agriculture- Luxor Governorate	
	Eng. Ibrahim Souror	Director of agriculture- Assuit governorate	
General Authority for Fish Resources Development	Dr. Mohamed Bakir	Professor	
Egyptian Meteorological Authority	Dr. Ashraf Zaky	Under Secretary of state for research and climate	
Ministry of Water Resources and Irrigation	Eng. Peter Sabry	Projects Engineer and consultant- Ministry of irrigation	
Agriculture research center	Dr. Mohamed Hayder	Professor- Institute of Animal production- Agriculture research center	
	Dr. Mohamed soliman	Head of Agricultural research center	
	Dr. Amal Ismael	Proffesor-Institute of extension services – Agriculture research center	
Sohag University	Dr. Khalaf Hamam	Head of Crops production department – Faculty of Agriculture	
Aswan University	Dr. Yaser Diab	Dean of faculty of agriculture	
Daraw Agricultural Secondary School- Aswan	Group of agricultural secondary schools' males and females students	-	Focus group discussion
Assuit University	Dr. Mohsen Gamee	Professor of water management- faculty of agriculture	
Qena Agriculture secondary school	Mr. Mohamed Badawy	Teacher	In-depth meetings
Ministry of Social Solidarity	Mr. Mahmoud Farouk	Director of Social Solidarity- Luxor	
Royal Company for Export of Agricultural Produce (private company)	Mr. Hussien El Saman	Director	

NA	Mr. El Noby Salem	Trader of Agricultural inputs	
NA	Dr. Atef Abdo	Medical and aromatic plant consultant	
Elboghdady CDA- El Boghdady Village-Luxor	Mr. Fathy Mohamed	Board member	
Bader CDA - Al Awana village- Assuit	Mr. Ali Abdelmeged	Board member	
Bader CDA Al Awana village- Assuit	Ms. Nawal Ahmed	Board member	
Ali ben Abitalib CDA - Sohag	Mr. Mohamed Ghab	Board member	

Please refer to annex 1 for further details on the consultations carried out.

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

Agricultural production is particularly vulnerable to the impacts of climate change. The Government of Egypt thus prioritizes climate adaptation in the agriculture sector as a necessity in facing the increasing food security gap at the national and local levels. It also recognizes it as an important means to support the vulnerable smallholders' communities of rural Upper Egypt that rely predominantly on agriculture. Because of this the government has very much supported the **Building Resilient Food Security Systems to Benefit the Southern Egypt Region** project since its inception in 2013. It has also adopted several of its interventions in its agricultural planning and services. Examples of this include the adoption of the project adaptation interventions in wheat and maize production in the National Wheat Campaign and the National Maize Campaigns that disseminate recommendations of cultivations to farmers nationally.

The project aims to complement the Government's efforts in addressing climate change by promoting technology transfer and capacity development for climate change adaptation to 15 villages in Southern Egypt. In doing so, it will be building on the success of Phase 1 to effectively expose more communities of the Southern zone to proven approaches and interventions that have proven under phase 1 to considerably increase the productive capacity of farmers, enhance their irrigation efficiency and diversify their livelihoods, all effectively enhancing their resilience. It also aims to widen the scope of the previous intervention through introducing more adaptation techniques, including intensified crop production through greenhouses and aquaculture, and building institutional capacity to sustain the different activities.

Additionality of project components

Component 1

Climate change is severely impacting rural communities of Southern Egypt. It is reducing crop productivity, stressing water resources, and inflicting significant losses through extreme weather events. Without such concrete adaptation measures, agricultural production, water resources, as well as farmer livelihoods will continue to be threatened.

While farmers recognize the need for these techniques, their limited stressed livelihoods and limited natural resources do not allow them to take risks. They need to see concretely the positive results and cost-benefits of any technique before adopting it.

Additionality

The project will promote adaptation solutions based on tested technologies and approaches and transfer of knowledge and good practice to create robust, resilient, and sustainable livelihoods in the Southern zone and which eventually can be replicated. The project will be providing an integrated package of interventions that have been selected and designed in participation with benefiting communities in response to the climate-induced problems that they now face and that would get worse with time without adaptation measures. These include assisting farmer communities to adopt low-cost and efficient irrigation techniques; adopting available heat tolerant and water efficient crop varieties with high economic value; adding value through simple agro-processing; intensifying production and enhancing land and water use through greenhouses and deploy of low-cost early warning messaging to reduce losses. Fish farming, livestock and poultry hubs will be established to apply already developed heat resistant varieties and to offer windows for diversification of income as an adaptation tool.

As a result of irrigation efficiency, water savings are expected to range between 20-30 percent. Similarly, it is estimated that adaptation measures in agriculture introduced under this project will save about 20 percent of agricultural production and farmer incomes.

As demonstrated by Phase 1, these techniques increase households' resilience through enhancing their productive capacity and diversifying their production. Cutting on their use of inputs (seeds and fertilizers) and resources (water), the interventions help them realize more income from their cultivations, On the other hand, the early warning reduces losses in extreme weather events.

Component 2

Building climate resilience is a complex issue that has several stakeholders including community members, civil society, academia and governmental entities. For effectiveness and sustainability, each of these groups has a role to play in building resilience. However, in many cases, capacities of such stakeholders in not strong enough to assume the responsibilities under these roles. For example, whereas local community development association have a pivotal role in anchoring and sustaining adaptation solutions within communities, in many cases such associations do not have adequate institutional capacities (such as adequate office facilities and equipment, experiences, qualified personnel and financial resources) to effectively engage in the introduction and implementation of such adaptation techniques. Likewise, at the time when local academic institutions can be very effective in spreading knowledge about climate risks and plausible adaptation techniques through their students, climate change is not featured in their academic curricula.

Additionality

The project will be adding to what was achieved by phase one to build capacity of more stakeholders for extending adaptation measures to new areas (districts) and sustaining them. In this regard, it will be building capacity of 200 additional government staff working in extension and technical support in the 15 new villages covered under this Phase 2. It will also build the capacities of the local CDAs in these 15 villages for anchorage and sustainable management of the activities within these village. New interventions for climate resilience not incorporated in the Phase 1 support to local universities and schools will be introduced in this phase. These include resilient livestock production, use of earl warning systems and improved irrigation that will widen the scope and comprehensiveness of their climate resilience curricula.

The project will be documenting the experiences of communities and disseminating lessons learned and best practices among a wide range of local, regional and national stakeholders who are facing much the

same climate threats as found in the Southern zone, especially with respect to temperature rise and water scarcity and their impacts on food security.

The Government considers the proposed project a pillar of participatory learning and innovation and central to its climate change adaptation and poverty reduction strategies. It is depending on the project to develop the lessons needed and capacities among the different stakeholders. As such, the project will leave behind civil society organizations that are able to help communities face climate impacts as well as governmental institutions that are able to obtain and analyze climate data, process it for use to aid policy making and investment decisions, technical staff who can help communities implement climate adaptation solutions, and policy makers who will be more aware of climate change and food security challenges and how to address them.

Finally, the Government considers the project's focus on women, civil society, and the research communities to be demonstrative of the only approach to adaptation and development which it considers robust and sustainable.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.

Several measures will be undertaken to ensure project sustainability, including:

- Consultations undertaken will support implementation of activities in communities where the uptake of project interventions would be ensured through appropriate conditions, especially the commitment of project participants and the availability of appropriate technical service providers.
- Capacity building needs in local NGOs with whom the project will partner will be identified. In response, the project will be providing institutional support to address these needs, empowering the NGOs to successfully fulfil their roles explicitly during project implementation as well as after its completion, thus increasing sustainability.
- Project beneficiaries will be active stakeholders in all phases of the project design and implementation as a means to build ownership and ensure their commitment to maintaining the different interventions.
- Technical and capacity building support to beneficiaries will be provided as a key element to ensure they sustain their projects/activities. An example is the training in animal care and project management that will be provided for animal raising loan beneficiaries.
- Most of the income generation approaches and technologies focus on women beneficiaries who in the country and region (as elsewhere in the world) have a track record of diligence, accountability and perseverance. From a gender perspective, as women will be involved and empowered as much as men, they will make this change more stable and long-lasting and will break the intergenerational cycle of poverty in these villages.
- The project loans mechanisms are designed to generate income that will make them self-sustaining. Loan values, repayments schedules, interest rates etc., will be calculated to sustainably generate revenue for the beneficiary, encouraging him/her to uphold it. Similar to past experience in Phase 1, agreements with the partner NGOs shall stipulate that a portion of the interest funds

from the loans shall be used by the NGO in covering its loan administration costs, thus ensuring sustainability of this lending facility. The remaining portion of the accrued interest shall be used by the NGO to follow-up on the other activities of the project after its lifetime. This will include inviting technical experts to visit farmers bi-annually to support their project-introduced crops, varieties, practices, etc. It will also include organizing seasonal harvest days where project-introduced benefits will be celebrated to encourage adoption by other farmers and community members. Likewise, maintenance and operation 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. It will also partner with local academic and research institutions such as local universities and agricultural schools. Such linkages were witnessed to create ownership, enhancing potentials for sustainability in the South.
- The project will cooperate with permanent official research bodies, some of which are affiliated with regional universities, while other are affiliated to governmental research centers (most of them are affiliated with the Agricultural Research Center affiliated to the Ministry of Agriculture) for its technical aspects.
- The project will use domestic varieties, which were recommended by Egyptian research institutes, rather than imported crops. This increases the chances of sustaining execution through the existing mechanisms, whereby it would have been much more complicated and difficult had the project relied on imported seeds.
- In the land holding consolidation, ownership will be built through gradual retraction whereby the project will cover all costs in the first season. In second season farmers will cover 50% of implementation costs. In the third season farmers will cover 75% of farm production costs, and ultimately, in the fourth season, the farmers will bear all the costs.
- Finally, the project shall develop a participatory plan with arrangements and agreements for handover after the completion of the project.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

Project activities are designed and will be implemented in order to minimise any risk for negative social and environmental impacts. Activities are designed in close consultation with beneficiaries – including the most vulnerable groups – and stakeholders will take into account the different needs and constraints of these groups.

A preliminary social and environmental risk assessment was performed based on the Adaptation Fund's 15 environmental and social principles outlined in the Adaptation Fund Environmental and Social Policy. Component 2, which mainly includes capacity development and knowledge management, is not expected to have a negative effect on the environment. Activities under component 1 might have potential negative environmental impacts if not implemented properly.. The project is therefore categorised to be “medium risk”, or category B. The below table shows the results

of the preliminary social and environmental risk assessment carried out during the development of this project concept note.. An environmental and social risk assessment will be carried out against the Adaptation Fund’s 15 principles during full project preparation, and an environmental and social risk management plan will be developed to mitigate risks identified.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>	X	No risk. The proposed project is not foreseen to violate applicable national or international laws. During full project preparation, the project design team will closely collaborate with Government stakeholders to ensure compliance with national law, including the National Environmental Regulation.
<i>Access and Equity</i>		<p>Medium risk</p> <p>The project activities will be located so as not to obstruct access to existing schools, health or vet facilities, water or sanitation. The activities will also not be affecting peoples access to sources of energy in the villages (electricity and butane gas).</p> <p>The project will work with farmers to better manage their land resources and maintain ownership of their land. Decisions made on joint management of resources such as consolidated land and water canals are to be made democratically among the farmers through voting.</p> <p>While water is not ‘owned’ by farmers in rural Egypt as such, the project activities are foreseen to enhance equitable access to water through the water saving techniques that reduce losses and increase access of farmers in downstream plots.</p> <p>However, during consultations, communities expressed concern regarding potentially unequal access by community members to project benefits. Particularly, conservative norms and traditions would impede women participation in project activities. Therefore, opportunities to increase women and disadvantaged people’s participation in the project’s activities and decision-making processes will be identified. Targeting criteria will be put in place for prioritization of people to benefit from the activities. Other members of the communities who would not meet the targeting criteria would not receive equal economic benefits from the project.</p> <p>To minimize risks, the project was designed in a participatory manner and detailed environmental and social assessment, including gender, will be performed during project preparation to further inform the preparation and adoption of mitigation measures.</p>
<i>Marginalized and Vulnerable Groups</i>		Low risk Vulnerable groups, namely women, youth, the disabled, and the elderly were consulted to ensure that their identified threats, challenges and priorities are reflected in project design.
<i>Human Rights</i>	X	No risk This project affirms the rights of all people and does not violate any pillar of human rights.

<i>Gender Equity and Women's Empowerment</i>		<p>Medium Risk</p> <p>Conservative norms in the project areas could impede women's ability to participate in project activities, exacerbating gender inequality. Opportunities to increase women and disadvantaged people's participation in the project's activities and decision-making processes will be identified. Targeting criteria will be put in place for prioritization of disadvantaged groups to benefit from the activities.</p> <p>Detailed environmental and social assessment, including gender, will be performed during project preparation to further inform the design in adopting adequate mitigation measures.</p>
<i>Core Labour Rights</i>	X	<p>No risk.</p> <p>The project will ensure respect for international and national labour laws as prescribed by the International Labour Organization as stated in WFP's policies, as well as the Egyptian Labour Law. In this regard, the project shall respect freedom of association and the effective recognition of the right to collective bargaining (conventions ILO 87 and ILO 98) and shall not involve forced or compulsory labour (conventions ILO 29 and ILO 105). It shall also not be employing children in forced, economically exploitive or hazardous work; or in a way that interferes with educations or is harmful to health or physical, mental, spiritual, moral, or social development. Discrimination in respect to employment and occupation will be controlled through transparent targeting and effective complaints channels</p>
<i>Indigenous Peoples</i>	X	<p>No risk</p> <p>There are no recognized indigenous people in Egypt.</p>
<i>Involuntary Resettlement</i>	X	<p>No risk</p> <p>The project will not lead to involuntary settlement of any form.</p>
<i>Protection of Natural Habitats</i>	X	<p>No risk</p> <p>There are no natural habitats that are legally protected, officially proposed for protection, recognized by authorities for their high conservation or ecological value or recognized as protected by the local communities in the project villages. There are no specifically endangered or rare animal, insect or plant species in the project villages. The project does not involve hunting or fishing activities.</p>
<i>Conservation of Biological Diversity</i>		<p>Medium risk</p> <p>The project promotes efficient use of natural resources and helps farmers to reduce their use of agriculture inputs. It also does not involve hunting or fishing activities. The project shall be introducing animals (bees, ducks, goats and fish) in the project villages. Ducks, goats and bees introduced in the communities are not alien to the area. Only fish and crop varieties that are properly selected (certified) will be introduced. Exotic fish species will not be introduced. Detailed environmental and social assessment will be performed during project preparation.</p>
<i>Climate Change</i>	X	<p>No risks</p> <p>The project activities build resilience of beneficiaries in the face of climate-induced impacts on their food production and livelihoods.</p> <p>The proposed project is not in the sectors of energy, transport, heavy industry, building materials, large-scale agriculture, large-scale forest products, and waste management. Its activities will not emit any significant greenhouse gases</p>

		<p>and will not exacerbate climate change by any means. The project will maintain vegetation and will not cut trees, thus not affecting carbon sinks in the project areas.</p>
<i>Pollution Prevention and Resource Efficiency</i>		<p>Medium Risk Although the units for aquaculture to be introduced by the project are small-scale, the quality of the discharge wastewater from these units could be low, leading to soil pollution if not properly managed The project is expected to reduce use of fertilizers in the project areas. It is also not expected to introduce new fertilizers or pesticides, herbicides or fungicides in the project. The project will help farmers reduce their diesel consumption in irrigation and shall not involve use of vehicles or generators. It shall not lead to the annual use of more than 100,000 litres of diesel.</p> <p><i>The project activities do not involve use of bottled or transported or ground water. It will help farmers realize efficiency in surface water irrigation and does so in a manner that introduces improvements in local waterways The project shall not be generating hazardous or non-hazardous wastes that could have negative environmental impact. Additionally, it will be helping farmers to recycle their agricultural wastes, that they would normally burn, thus helping in reducing the negative environmental impacts that these wastes inflict on the environment.</i></p> <p>During full proposal preparation, the project design team will carry out a detailed environmental and social assessment and will design an environmental and social risk management plan.</p>
<i>Public Health</i>	X	<p>No risk The project will not increase traffic or use heavy machinery or dangerous materials that can pose risks to public health or safety. The aquaculture units to be provided by the project will have pumps for water circulation and aeration, which eliminates risks of vector growth. There are no other foreseen sources of risks on public health.</p>
<i>Physical and Cultural Heritage</i>	X	<p>No risk There are no physical or cultural heritage recognized the international references (the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage and the List.</p>
<i>Lands and Soil Conservation</i>	X	<p>No risk The project will be implemented in rural communities that are not in proximity to coastal areas. The topography in these communities is flat, with no steep slopes. The composition of the land in these villages is mostly clay that is used for agricultural production. The activities of the project are not foreseen to result in soil loss, erosion or run-off. They are expected to support the production of agricultural land in a sustainable manner through several techniques that help stop land degradation that is currently resulting from farmers' excessive use of water and fertilizers-while increasing the production per unit of land. The activities are also not foreseen to affect water bodies in the area.</p>

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

A. Record of endorsement on behalf of the government⁴² *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

<i>(Enter Name, Position, Ministry)</i>	<i>Date: (Month, day, year)</i>
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B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

<p>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 (.....list here.....) 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 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/programme.</p>	
<p><i>Name & Signature</i> Implementing Entity Coordinator</p>	
<i>Date: (Month, Day, Year)</i>	<i>Tel. and email:</i>
<i>Project Contact Person:</i>	
<i>Tel. And Email:</i>	

⁶ Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes propo.sed by the implementing entities.

Annex 1- Summary of Stakeholder Consultations and Key Findings

To ensure an inclusive project that can effectively build resilience in an inclusive and sustainable manner, an extensive consultation process was undertaken during the course of February-May 2019 to seek the input of these stakeholder. Government officials at central and local levels from the Ministries of Agriculture and Land Reclamation, Irrigation and Social Solidarity, representatives from civil society organizations, donors, academia, and technical experts as well as private sector were consulted through in-depth meetings.

Focus group discussions were undertaken with community members (142 men and 161 women) in two categories of villages. While Category 1 was villages covered under Phase 1 of the Building Resilient Food Security Systems To Benefit the Southern Egypt Project, Category 2 was villages in Southern Egypt not reached by Phase 1. To ensure inclusiveness, participants in these consultations were invited through public announcements done by local NGO inviting all interested women and men in the community to the focus groups, by providing details on objectives, venue and timing. Moreover, participation of men and women interested in implementing new adaptation techniques and/or participating in community outreach efforts in different locations in the village was particularly ensured through targeted invitations by the NGO and community leaders. Where needed, e.g. in cases where sign-up for these discussions showed that a particular group is not present, representation of this group was ensured through targeted invitations by the NGO and community leaders as well.

In addition to the above, WFP was engaged in bi-lateral discussions on donor funded projects working on agricultural development in Southern Egypt as well as climate vulnerability and resilience needs in Egypt with FAO, UNDP, IFAD, JICA, USAID, and the EU on several occasions including official receptions, committee meetings of the UNPDF, joint missions, etc.

Key Conclusions from the Consultations

The following summaries the key issues raised, and points concluded from the different meetings and focus group discussions:

Ministry of Agriculture	<ul style="list-style-type: none"> - Egypt is one of the most affected countries by climate change, both in terms of the sea level rise in the delta and the temperature rise in Upper Egypt - The agriculture sector is very vulnerable to climate change as it affects crop production and stresses water resources. - Because of the high climate vulnerability of this sector, the Government of Egypt prioritizes adaptation in the agricultural sector, placing it as a main sector in the National Climate Adaptation Plan. - Rural communities of Southern Egypt are already stressed because of their heavy dependence on small-scale agriculture as a main livelihood. Climate change exacerbates this vulnerability, significantly weakening their resilience. - In spite of recognizing it as a priority, the Government's ability to fully address climate change impacts is hampered by current financial constraints as a result of the economic reform programme that included of the flotation of the Egyptian pound in 2016.
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	<ul style="list-style-type: none"> - The Building Resilient Food Security Systems to Benefit the Southern Egypt project is considered a main contribution to the Government’s efforts to address climate change. Other contributions in this regard include the UNDP project for adaptation in the Delta and the IFAD project to help adaptation in reclaimed land. - The Building Resilient Food Security Systems to Benefit the Southern Egypt has been very successful. It has been able to introduce effective models that farmers take up once they see the benefits. Thus, the project’s approach to demonstrate results then create visibility about these results as well as organize knowledge sharing events such as farm-to farm visits was very effective in creating spillovers. - The project’s approach to introduce low-cost, small-scale adaptation solutions has also been a key factor in enabling the uptake by farmers. - The Government of Egypt is already institutionalizing some of the project’s practices as per funding availability. Examples of this include the uptake of the wheat recommendations in the National Wheat Campaign and likewise in the Maize and sorghum campaigns. The Government is also adopting the Climate Information Centers approach established by the project - The project’s deploy of civil society partners at the local level is commendable because it facilitated implementation and anchored the activities within the communities for substantiality. This has been very effective, where now many of the partner CDAs are already sustaining activities such as the revolving animal lending schemes and the irrigation activities on their own. - The project had built an excellent reputation among farmers in its districts. This trust should be leveraged in upscaling adaptation to other areas. Such upscale should rely on extending to new districts and should adopt the model of partnership with CDAs. - New solutions for building resilience should also be considered. Among these could be protected cultivation which increases production multifold. Small-scale aquaculture is also a very promising solution that would help the households through diversifying production and allowing better access to nutritious food. - Climate insurance is another possibility. However, current institutional capacity of potential service providers and the risk magnitude impede this technique at the time being.
<p>Ministry of Irrigation and Water Resources</p>	<ul style="list-style-type: none"> - Water stress remains a main challenge for farmers in Southern Egypt. Climate change is significantly exacerbating this stress. - The Ministry of Irrigation, through its vision till 2050 attempts to set the frame work for making the best agriculture, social and environmental use of the available water resources. - This Vision puts decentralization of on-farm water management as a key priority for irrigation efficiency enhancement. - Besides the need for irrigation infrastructure enhancements, the

	<p>ministry considers low-cost techniques such as use of drought tolerant varieties, water saving crops, scheduling of irrigation, etc. for on-farm management of water to be very much needed.</p> <ul style="list-style-type: none"> - The Building Resilient Food Security Systems to Benefit the Southern Egypt project has been very successful in introducing replicable low-cost irrigation enhancement techniques at the farm level. Farmers adoption of these techniques, particularly when they are having to contribute is a very good testimonial for the successful approach. It is also an indicator that such techniques should be introduced within wider geographical outreach - The project's establishment of water user associations under local civil society organizations proved to be a commendable model. - The project's water saving techniques have realized benefits beyond enhanced water management. Equitable access to water was promoted and conflicts were reduced among farmers through 1) joint management of their waters under the WUA established and 2) reduced losses leading to increased availability of water, particularly to downstream plots. Land was also saved along the sides of the lined canals.
<p>Research and Academia</p>	<ul style="list-style-type: none"> - While the different research institutes produce new crop varieties with improved traits such as heat and drought tolerance, ability of these institutes to disseminate these varieties is limited by weak extension resources. - Access to farmers of Southern Egypt, in particular, to technical expertise, new varieties, new crops, etc. is restricted by limited financial resources that hamper their ability to reach out to research or academic organizations - The Building Resilient Food Security Systems to Benefit the Southern Egypt project has narrowed the gap through suitability linking farmers to research and academic organizations through the information centers established in local CDAs. This model is very successful and should be replicated. - The projects engagement of students under its first phase was a very good opportunity for mainstreaming climate adaptation in their education.
<p>Local consultations with community members and CDA representatives (for the gender related findings, please refer to Gender Assessment</p>	<ul style="list-style-type: none"> - The average land holding in villages of Southern Egypt is 0.75 of a feddan. - Most of the farmers households rely on the crop they produce from fragmented lands and are thus economically stressed. - Climate change is significantly affecting rural communities of Southern Egypt. In particular, the increasing intensity and frequency of extreme weather events is causing losses that can go up to 70% in their

Annex)	<p>crops.</p> <ul style="list-style-type: none"> - Irrigation water requirements were reported to increase, where farmers had to increase the duration of irrigation for most of their crops. - Animals, particularly poultry were very vulnerable to climate change and associated extreme weather spells. - Phase one of the Building Resilient Food Security Systems To Benefit the Southern Egypt Project was very effective in building climate resilience among farmers. It was effective in reducing their climate-inflicted losses, diversified their livelihoods and increased their production and financial capacity, and helped them adapt to stresses in water resources. - Besides supporting the farmers in facing climate change, the Building Resilient Food Security Systems To Benefit the Southern Egypt Project had several environmental benefits. Among these were increasing land available for cultivation by removing barriers between fragmented land plots for consolidation and helping farmers economize the use of water, fertilizer, and pesticides. - the Building Resilient Food Security Systems To Benefit the Southern Egypt Project enhanced collaboration among the farmers through the water users' associations and the land consolidation. Equitable access to water was promoted and conflicts reduced by the lining canal. In cases where they had different opinions on operational issues such as the varieties to be used or the sowing dates, they democratically resolved such issues through voting. - The additional income realized by the smallholders' households helped them in covering education and health expenditures and buying nutrition commodities. Some bought appliance for marriage of their daughters or themselves. Others indicated that they used the savings they managed to have from these projects to start up other income generation projects such as cloth trading. - The project effectively empowered women through income that gave them a sense of independence while also enhancing their roles in making decisions on household expenditures. - Strengthened institutional systems for development and sustainability was among the results mentioned by the farmers. The project improved farmer's adaptive capacity and built the capacity of the local partner NGOs as well as concerned government staff at the local level. - The project provided a window for farmers to access financial and technical resources that allowed for expansion of their production and income generation capacity. At a higher level, this injection of resources stimulated their communities' local economy and enhanced their self-sufficiency. - The implementation arrangements of the Building Resilient Food
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	<p>Security Systems to Benefit the Southern Egypt Region were effective and Efficient.</p> <ul style="list-style-type: none"> - The Building Resilient Food Security Systems to Benefit the Southern Egypt Region project has generated several best practices that could be replicated. - If the project is to be replicated in new villages, it should build on best practices of phase one. This includes 1) the engagement of the different stakeholders 2) the integrated package of interventions that worked on different yet complementary domains 3) the capacitating of local CDAs and then entrusting them with the implementation. Lessons learned from phase one should also be considered. Among these are 1) the need for the extension of the goats loans to 15 months rather than 6 months as originally introduced 2) widening the role of local universities in project implementation through provision of technical support to youth students of the project villages- besides the farmers- to engage in - project activities, 3) expanding on innovative approaches such as the use of on-farm theatre that was but originally phase one design but proved very successful during implementation 4) expansion of agro-processing units as it creates highly demanded job opportunities 5) use of second generation seeds of wheat produced by project farmers for dissemination of the varieties in 4 subsequent seasons in the villages 6) expanding the early warning system to incorporate information and recommendations with regards to climate-related infestations of plant pests and disease - If greenhouses or aquaculture are introduced, they would be acceptable by community members. - In villages where the Building Resilient Food Security Systems to Benefit the Southern Egypt Region project was not implemented; community members were aware of how climate change is impacting their livelihoods. They expressed needs for plausible adaptation techniques and expressed general acceptance of the different interventions introduced by the Building Resilient Food Security Systems to Benefit the Southern Egypt Region project and the project implementation mechanisms. - As per cultural norms in the project area, elderly continue to live with their family members and are very much respected members of the family. There are no nationally or internally recognized indigenous people, tribal groups, displaced people, refugees, or people living with HIV/AIDS in the project areas. - There are no physical or cultural heritage recognized the international references (the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage and the List of World Heritage in Danger 29) in or near the project villages. - There are no natural habitats recognized by local communities in the project areas.
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	Date:
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B. Implementing Entity certification Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

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 (National Adaptation Plan) 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 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/programme.	
Ithar Khalil	
 Implementing Entity Coordinator	
Date: August, 05, 2019	Tel. and email: +20-2-25261992 ithar.khalil@wfp.org
Project Contact Person: Ithar Khalil	
Tel. And Email: +20-2-25261992, Ithar.khalil@wfp.org	

⁶. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.