



**ADAPTATION FUND**

AFB/PPRC.6/6  
August 31, 2011

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Adaptation Fund Board  
Project and Programme Review Committee  
Sixth Meeting  
Bonn, September 14, 2011

## **PROPOSAL FOR EGYPT**

## I. Background

1. The Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, adopted by the Adaptation Fund Board, state in paragraph 41 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US\$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the approval by the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would finally require Board's approval.

2. The Templates Approved by the Adaptation Fund Board (Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, Annex 3) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

*For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:

1. Country Eligibility,
2. Project Eligibility,
3. Resource Availability, and
4. Eligibility of NIE/MIE.

4. The fifth criterion, applied when reviewing a fully-developed project document, is:

5. Implementation Arrangements.

5. According to the Adaptation Fund Board Decision B.12/10, a project or programme proposal needs to be received by the secretariat no less than nine weeks before a Board meeting, in order to be considered by the Board in that meeting.

6. The following project concept titled "Preparing the Lake Nasser Region in Southern Egypt as a Climate Adaptation Hub" was submitted for Egypt by the United Nations World Food Programme (WFP), which is a Multilateral Implementing Entity of the Adaptation Fund. This is the first submission of the concept. It was received by the secretariat in time to be considered in the 15<sup>th</sup> Adaptation Fund Board meeting. The secretariat carried out a technical review of the project proposal, assigned it the diary number EGY/MIE/Food/2011/1 and filled in a review sheet.

7. In accordance with a request to the secretariat made by the Adaptation Fund Board in its 10th meeting, the secretariat shared this review sheet with WFP, and offered it the opportunity of providing responses before the review sheet was sent to the Project and Programme Committee of the Adaptation Fund.

8. The secretariat is submitting to the Project and Programme Review Committee the summary of the project, prepared by the secretariat, in the following section. The secretariat is also submitting to the Committee the technical review sheet and the responses provided by WFP, in an addendum to this document.

## **Project Summary**

Egypt – Preparing the Lake Nasser Region in Southern Egypt as a Climate Adaptation Hub  
Implementing Entity: *WFP*

Project/Programme Execution Cost: USD 695,353

Total Project/Programme Cost: 7,319,500

Implementing Fee: USD 561,040

Financing Requested: USD 8,575,892

### Project/Programme Background and Context:

The objective of the project is to develop the Lake Nasser region to serve as a receptor for climate-induced voluntary migration from other regions, as well as a hub for applied adaptation technology that is transferrable to other parts of Upper Egypt which are climate stressed. The project is a keystone in that effort, and will provide strategic planning capacity, technical assistance and transitional support to communities. The project includes a review of the master plan for Lake Nasser area and adoption of a zoning policy that takes into account climate adaptation priorities while protecting the lake water that is the source of water for all of Egypt. Technology transfer would be included to enable adaptation in Lake Nasser communities to enhance resilience and improve food production and contribute to Egypt's food security as a whole. Lastly, the project includes a knowledge and technology transfer to three of the poorest villages in Upper Egypt.

#### Component 1: Strategic adaptation planning for the Lake Nasser region (USD 1,450,000)

The objective of the project is to review the master plan for the Lake Nasser area and adopt a zoning policy that takes into account climate adaptation priorities while protecting the lake water that is the main source of water for Egypt. The outputs in this component are intended to strengthen the capacity of Government's vulnerability mapping so decision makers can formulate informed allocation decisions of land and benefits in the area to communities most affected by climate change. The component also includes selection of project beneficiaries and allocation of land rights, the upgrade of monitoring units, and the establishment of a financing mechanism to continue the adaptation strategies developed and tested in the project.

#### Component 2: Technology transfer to enable adaptation in Lake Nasser communities (USD 3,668,500)

The aim is to create a climate-adapted dual economy at scale through new livelihood opportunities for the Lake Nasser region and by providing Upper Egypt with affordable food products. This component will provide technical assistance to the Ministry of Agriculture to replicate and scale up successful pilots in the area around the lake with more attention to climate change impacts, and to pilot some new (for the area) adaptation measures. Interventions will include agro-forestry; agro-pastoralism, and agro-industry as well as enhanced renewable energy solutions, water conservation solutions (especially efficient irrigation), safe food production, breeding and adopting heat tolerant crops and livestock, assistance to link farmers to markets; raising awareness and establishing small scale education and health facilities.

The output builds on pilots conducted with support from WFP in the same region in three communities on the west side of the Lake. The component will expand assistance to the west

side of the lake as well as expand assistance to the east side of the lake in the communities of Wadi Allaqi and Abesco, equipping them with climate adaptation solutions.

Component 3: Transfer knowledge and technology to three of the poorest villages in Upper Egypt under the Government's 1000 village initiative (USD 751,000)

Successful adaptation technology in Lake Nasser communities will be piloted in three villages in Upper Egypt under the poorest 1000 village initiative. These 1000 villages will be targeted for a significant level of investment in an integrated package of basic services. This intervention is treated as a separate component because the targeted villages are not home to climate migrants. The villages will be selected during project appraisal. Based on prior consultation, they will be in the Upper Egypt governorates of Assiut and Sohag. As such, they are subject to the same climate induced heat and water stresses as the migrant villages targeted for development around Lake Nasser in Component 2. In addition to the interest of the community to participate and benefit from the project, participating villages will be selected based on poverty, food insecurity, and suitability for technology and knowledge in the area of climate adaptation.

Specific technologies to be transferred are those that were highlighted as most needed in consultations held with Upper Egypt communities. Most pressing among those are ability to adapt to heat shocks, drought and floods and their effect on agriculture and livestock raising; reduce water consumption by efficient irrigation technique; ability to cope with food shortages during seasons of shortage. Activities will include strengthening the building capacities of communities by providing the technical support for improving the communities' livelihood, introducing the new technology and training, raising the gender issue, awareness on climate change and adaptation to such changes.



# PROJECT/PROGRAMME PROPOSAL

## PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY: **REGULAR PROGRAMME**

COUNTRY/IES: **EGYPT**

TITLE OF PROJECT/PROGRAMME: **PREPARING THE LAKE NASSER REGION IN SOUTHERN EGYPT AS A CLIMATE ADAPTATION HUB**

TYPE OF IMPLEMENTING ENTITY: **MULTILATERAL IMPLEMENTING ENTITY**

IMPLEMENTING ENTITY: **UNITED NATIONS WORLD FOOD PROGRAMME**

EXECUTING ENTITY/IES: **MINISTRY OF AGRICULTURE, WITH THE MINISTRY OF ENVIRONMENT**

AMOUNT OF FINANCING REQUESTED: **US\$8,575,892 (over 4 years)**

### I. PROJECT / PROGRAMME BACKGROUND AND CONTEXT:

Egypt covers an area of nearly one million km<sup>2</sup>. The Mediterranean Sea lies to the North, the Red Sea to the East (total coastline of 3,500 km), and Libya to the West. Most of Egyptian land is desert. Only 3.5 percent of its land area is arable. Expansion through land reclamation is limited by water scarcity and inefficiency of water use. Egypt’s agricultural production has not kept pace with its growing population, and the country remains a net food importer. At the time of the last census (2006), the total Egyptian population was 76.5 million, with an average growth rate of about 2.3 percent per year.

Egypt’s total water budget is estimated at about 58 billion m<sup>3</sup>, 95 percent of which is drawn from the River Nile (55.5 billion cu. m.). The remaining 5 percent is resourced from groundwater and rainfall. Inflowing Nile water is stored in Lake Nasser and shared between Egypt and Sudan. Rain falls mostly in winter and on the Mediterranean coast and does not exceed 130-170 mm<sup>1</sup>.

Data collected by the Egyptian Meteorological Authority and local universities for the period 1961-2000 indicate that there is a general trend towards warming of the air temperature, with increases in the number of hot days and frequency of sand storms.

Egypt is categorized as a lower middle income country, with a GNP per capita of US\$2,070 in 2008. Until 2010, Egypt’s economy grew at a rate of more than 7 percent a year. However, this masked growing income disparity and increasing poverty. Egypt’s Gini Coefficient was 34.4 percent in 2008, suggesting a high degree of income inequality.<sup>2</sup> The proportion of jobless

<sup>1</sup> Excerpt from Egypt’s 2<sup>nd</sup> National Communication to the United Nations Convention on Climate Change. May 2010.

<sup>2</sup> Government of Egypt. 2008. Egypt Demographic and Health Survey (DHS).

youth reached about 60 percent in 2010<sup>3</sup>. Increasing poverty and unemployment trends led to a popular uprising in January/February 2011, calling for the President to step down. Egypt's interim government has managed to keep the economy moving, but the growth rate is predicted to fall to levels below 1 percent in 2011. Unfortunately, this is happening concurrently with an unprecedented spike in food prices globally.

### **Food Security in Egypt**

The percent of extreme poor to total population in rural Upper Egypt (where WFP operates) is nearly 15.6 percent<sup>4</sup>, while the percent of poor to total population in rural Upper Egypt was almost 44 percent in 2008/2009, more than twice the ratios for all Egypt.

The country is highly vulnerable to food price shocks being the Arab world's most populous country that is highly dependent on food imports and the world's largest wheat importer. The majority of the food consumed by households, even in rural areas, is purchased. Nominal wheat prices on domestic markets increased by 32 percent in 2010 and rice by 42 percent<sup>5</sup>, and inflation is expected to peak at 15 percent during 2011, with food prices comprising 40 percent of the consumer price index<sup>6</sup>. Despite government's heavy subsidies on wheat flour and bread, consumers are not fully exempted from the impact of the global food price rise as prices of non-subsidized products, pulses, staples and animal products have increased.

The overall deficiency in caloric intake for Egypt is estimated at 20.3 percent<sup>7</sup>. However, Upper Egypt comprises most of the severely deprived governorates: Assuit (49 percent) and Benisuef (39.3 percent) whereas deprivation in both Sohag and Menia are a little less (25.7 percent and 18.8 percent). Malnutrition has undergone a sharp rise in recent years. Stunting rates rose from 23 percent to 29 percent between 2005 and 2008 among children under five, and anaemia rose from 25 percent to 50 percent between 2000 and 2005.

Since 2006, Egypt's food security has been impacted by a series of shocks, including the avian influenza epidemic and the combined food, fuel and global financial crises. Recent political events have contributed to stalled economic growth in key sectors such as tourism and construction. The impact on food security has been compounded by the influx of returning workers from Libya, as a result of political events there, who originated from the most vulnerable districts in Egypt, and whose return represents a significant loss of income for entire communities. A joint assessment, carried out in March 2011,<sup>8</sup> found that many returnees' families were facing the threat of food shortages. The assessment found the same worrying situation among other groups affected by recent events, such as internal migrants returning from other parts of Egypt as a result of the slowdown in the tourism and construction sectors.

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<sup>3</sup> Egypt Human Development Report (2010). Ministry of Planning and UNDP.

<sup>4</sup> Using detailed household data from the Household Income, Expenditure and Consumption Survey (HIECS) for 2008/2009

<sup>5</sup> FAO/GIEWS. North Africa Brief. March 2011.

<sup>6</sup> Economist Intelligence Unit. Egypt Country Report. March 2011.

<sup>7</sup> The average daily kilocalorie requirement was determined according to FAO/WHO references for individuals by sex and age, and the average composition of households surveyed – Source: Central Agency for Public Mobilization and Statistics (CAPMAS). The State of Food Security and Vulnerability in Egypt. Draft (unpublished). April 2011

<sup>8</sup> Joint WFP/UNICEF Rapid Assessment on the Situation of Returnees from Libya in the Governorates of Assiut and Sohag, March 2011.

## Climate Risks to Food Security

Egypt's food security is at added risk due to climate change and climatic variability. An increase in temperature (see Figure 1) affects crop yields and gives rise to pests, many of which are unknown to farmers. In addition, rising temperature also reduces the amount of organic matter in the soil, which was already limited by the construction of the high dam in the 1960s, which prevented most of the silt from replenishing organic matter in Nile Valley soils. Those factors combined reduce agricultural productivity and production, which in turn affects the incomes of the 55 percent of the labor force engaged in agriculture, and the millions more – especially women - engaged in micro-enterprises that depend on agriculture.

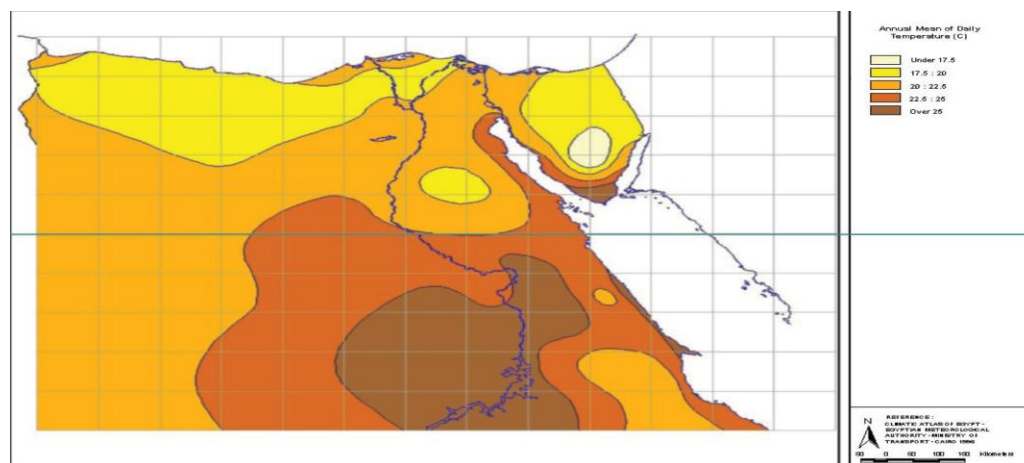


Figure 1: Annual Mean of Daily Temperature.<sup>9</sup>

Egypt is one of the world's most vulnerable countries to the potential impacts of climate change<sup>10</sup>. The Nile Delta, generates 15 percent of GDP, is home to over 40 percent of the population, and produces half the country's food.<sup>11</sup> It is vulnerable to impacts of sea level rise through direct inundation, salt water intrusion and ground water contamination. An estimated 12-15 percent of existing agricultural land in the Delta could be lost due to sea level rise (see Figure 2).<sup>12</sup> So far, rising sea levels have contributed to the loss of around 768,903 ha of land and have made hundreds of thousands of additional hectares less productive.

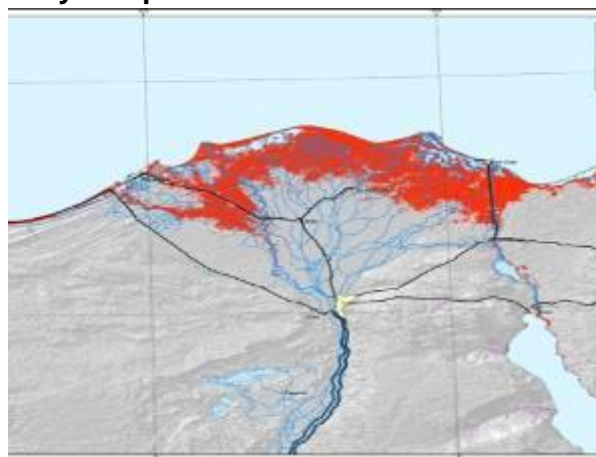


Figure 2: Lowlands at Risk of Flooding by 2100.

<sup>9</sup> Gobel W. and De Pauw E. 2010, Climate and Drought Atlas for Parts of the Near East ICARDA

<sup>10</sup> - Egypt Second National Communication (ESNC) EEA May 2010; and

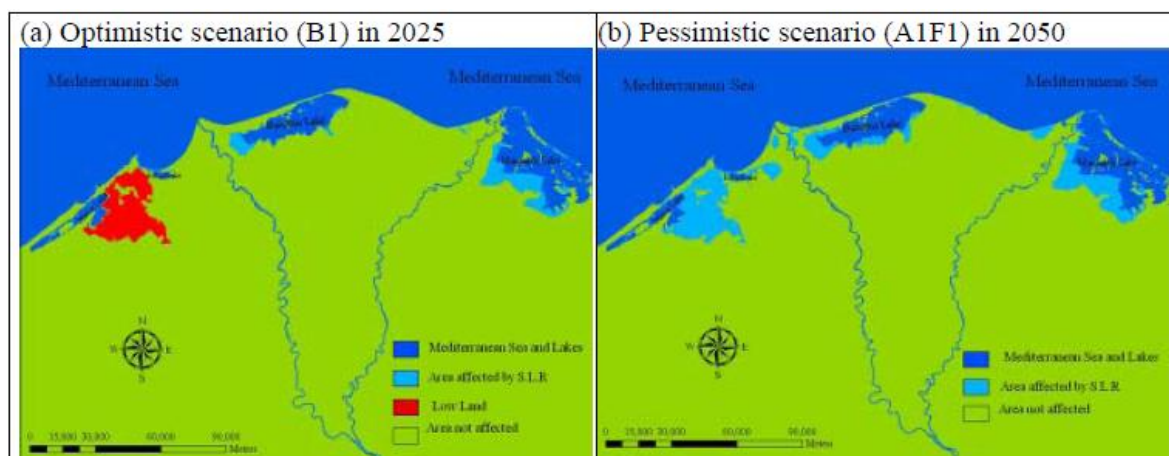
- World Bank (2009). Convenient Solutions to an Inconvenient Truth: Ecosystem-based Approaches to Climate Change. Environment Department Report.

<sup>11</sup> World Resources Institute. 2007.

<sup>12</sup> 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.

**Addition Relevant to CR3 and subsequent clarification of questions by Secretariat regarding whether migrants are indeed climate induced**

Two factors are at play as a result of SLR. **Land inundation is one risk.** Approximately 16 km<sup>2</sup> (over 67,000 acres) of valuable currently cultivated land would be inundated by 2025 under the IPCC's low-emission (B1) scenario, and over 75 km<sup>2</sup> (315,000 acres) would be inundated by 2050 under the IPCC high-emission scenario (A1F1). Those are areas in mostly in close proximity to northern lagoons. Those estimates are based on net effect of global emissions, not taking into account the effect of land subsidence due to lack of replenishment of silt, a problem which has prevailed since construction of the High Dam. Those two scenarios show that the estimated number of people forced to migrate due to direct inundation of their villages ranges from at least 20,000 in 2025 to at least 100,000 in 2050<sup>13</sup>. Extrapolating these conservative estimates out to 2100 indicates that by the end of the century a considerably higher number of people will be displaced due to inundation.



Source of maps: Coastal Research Institute (2008). Coastal Vulnerability to Climate Change and Adaptation Assessments for Coastal Zones in Egypt. A study in support of Egypt Second National Communication.

**SLR will also result in loss of agricultural land due to seawater intrusion and increased groundwater salinity<sup>14</sup>.** About three fifths of the country's agricultural production is in the low-lying delta in close proximity to the Idku, Burullus and Manzalla lagoons<sup>15</sup>. Much more land area is at risk of loss of productivity due to salinization (estimates ranged from 12 to 15 percent of Delta lands). Sea level rise will affect groundwater aquifers in the Nile Delta, in particular those close to the northern strip. These aquifers, although brackish, were considered future hope; however, increased salinity may cause them to be unusable. The Egypt Second National

<sup>13</sup> Aricon, 1989, estimates population density to be range from 400 to 1200. This figure was extrapolated over time based on a median of 800 people per km<sup>2</sup> over time assuming the prevailing population rate of increase of 2 percent per year.

<sup>14</sup> Frihy O.E. and Lotfy M.F.: 1997, 'Shoreline changes and beach-sand sorting along the northern Sinai coast of Egypt', *Geo-Marine Letters*, 17, 140-146.

<sup>15</sup> Agrawala, et al. (2004). *Development And Climate Change In Egypt: Focus On Coastal Resources And The Nile*. OECD.



Communication estimates that direct and indirect impacts are expected to lead to the migration of 6 to 7 million people from the Nile Delta<sup>16</sup>.

**Table 1: Climate Change and Nile Flows<sup>17</sup>**

Climate Warming, °C	Change in Precipitation, percent	Change in Nile Flows, percent
+4	-20	-98
+2	-20	-88
0	-20	-63
+4	+20	-68
+2	+20	+1
0	+20	+71

Furthermore, food availability is affected by the vulnerability of Egypt's water resources due to sensitivity of the Nile water levels to Ethiopian rainfall, and temperature rise upstream. The results shown in Table 1 indicate that the Nile flows are sensitive to climatic changes. With 4°C warming and 20 percent reduction in precipitation, Nile flows may decrease by 98 percent. With a 20 percent reduction in precipitation and 2°C warming the decrease may be 88 percent. If no change in temperature took place the decrease may reach 63 percent for a 20 percent reduction in precipitation. Strezpek et al (2001)<sup>18</sup> developed ten different scenarios for Nile flows. Only one of the ten scenarios predict eventual increase in the distant future, the other nine scenarios show long term reduction ranging between 10% and 90% by the year 2095.

As a result of the expected reduced flows in the Nile, overall food production is expected to be significantly reduced. Egypt's report to the UNFCCC states that climate change may bring about substantial reductions in national grain production. Climate change studies predict a reduction in the productivity of two major crops in Egypt - wheat and maize - by 14 percent and 19 percent, respectively, by 2050 (see Table 2).<sup>19</sup>

Losses in crop productivity are mainly attributed to the projected temperature increase, crop-water stress, pests and disease, as well as inundation

**Table 2. Projected Changes in Crop Production in Egypt Under Climate Change Conditions** Source: Egypt Agriculture Climate Adaptation Strategy (2010)

Crop	Change percent	
	2050s	2100s
Wheat	- 14	- 36
Rice	- 11	
Maize	- 19	- 20
Soybeans	- 28	
Barley	- 20	
Cotton	+ 17	+ 31

\*Temperature increase by 2°C

<sup>16</sup> Ministry of Environment. 2010. Egypt Second National Communication to the United Nations Convention on Climate Change.

<sup>17</sup> Egypt Second National Communication (2010)

<sup>18</sup> Strezpek, K.M., Yates, D.N., Yohe, G. Tol, R.J.S. and Mader, N. (2001), Constructing "Not implausible" Climate and Economic Scenarios for Egypt, Integrated Assessment 2,139-157, Integrated Assessment Society.

<sup>19</sup> Egypt Initial National Communication on Climate Change (1999)

and salinization of 12 percent to 15 percent of the most fertile arable land in the Nile Delta as a result of SLR and salt water intrusion.

Higher temperature causes negative effects in the form of rising crop pest levels that negatively affect crop productivity.<sup>20</sup> Scientific observations confirm that the severity of some pests and diseases affecting strategic crops has increased in the last few decades. Examples include severe epidemics of tomato late blight (*Phytophthora infestans*), wheat leaf rust caused by *Puccinia triticina* and stripe rust disease caused by *Puccinia striiformis* due to increasing temperature.<sup>21</sup>

Moreover, projected temperature rise is likely to increase crop-water requirements and decrease crop water use efficiency. Crop water requirements of Egypt's strategic crops are expected to increase from 6 to 16 percent by 2100.

Also, climate-induced heat stress reduces livestock productivity. New animal diseases, including Blue Tongue disease and Rift Valley fever, have emerged in Egypt. Both are attributed to observed changes in the Egyptian climate<sup>22</sup>. The availability of fodder is at risk due to climate change impacts on crop productivity, as well as higher competition for land and water resources between fodder and cereal crops.

The socio-economic impacts of climate change and food security are significant. In a recent WFP qualitative study<sup>23</sup> comprising a series of focus group discussions and in depth interviews, members of affected communities reported that cultivation often fails in their areas due to lack of knowledge and unavailability of solutions to changes in seasons, rainfall, temperature, and new types of pests. This in turn affects income from agriculture, livestock as well as secondary incomes that depend on agriculture. Impacts on women's livelihoods and food security is of particular concern because raising livestock, post harvest activities and small scale processing of agricultural products and byproducts constitutes the main income sources for women in rural communities. While estimates for populations at risk due to sea level rise reach up to one million people (although estimates for SLR affected populations vary widely from one source to another), populations whose livelihood deteriorated with the frequent failure of agriculture constitute at least 20 percent of Delta inhabitants. Aside from the risk of flooding, the phenomenon of sea-water seepage into ground water aquifers – a current reality in the Northern Delta communities – poses detrimental health risks as the water table often floods houses and public roads (see Figure 3).



<sup>20</sup> Egypt Second National Communication (2010)

<sup>21</sup> Abolmaaty, S.M. (2006), Assessment of the Impact of Climate Change on Some Rust Diseases for Wheat Crop Under Egyptian Environmental Conditions, PhD Thesis, Faculty of Agriculture, Al-Azhar University.

<sup>22</sup> Egypt National Environmental, Economic and Development Studies (NEEDS) for Climate Change. Under UN Convention on Climate Change, April 2010

<sup>23</sup> Ghoneim, M. (2010). Qualitative Community Assessment. A report for WFP/Egypt.

### Figure 3. Ground water in the streets of Al Salam Village

Bedouin communities that rely on rain-fed agriculture for subsistence also reported being threatened by climatic changes. Sinai inhabitants have witnessed a comprehensive and extremely negative change in dietary patterns. This is a result of limitations on food production due to significant reduction in rainfall and increased reliance on unsustainable shallow wells for water. In the south, the livelihoods of Bedouins in Wadi Allaqi had been threatened by lack of pasture for livestock as result of a drought lasting over a decade

The conclusions above are supported by WFP's soon-to-be-released Climate Vulnerability Atlas (which will be updated in Output 1.2 of the proposed project) using GIS in collaboration with the Cabinet of Minister's Information and Decision Support Center (IDSC). IDSC plays a coordinating role among key ministries and is positioned to communicate with them regarding effective utilization of the atlas for providing support and facilitating investments for climate threatened regions. The atlas is based on a climate vulnerability index, as defined by the IPCC Fourth Assessment Report. It is a weighted average of three key categories of indicators: exposure to climate change; sensitivity of each zone to climate threats; and adaptive capacity.

To cope with food insecurity due to climatic change, communities have often shifted from on-farm to off-farm jobs. They often remain within the same profession (e.g. herders changing to less sensitive types of animals, and farmers to less sensitive crops). However, they generally adopt more detrimental coping tactics such as cutting food expenditures; switching to cheaper and less nutritious foods, spending less on health care, and taking children out of school.

Migration is one of several coping strategies adopted by affected populations. The International Organization for Migration (IOM) strategic planning for sea level rise and migration (November 2010) recommended preparedness for potential large scale migration when SLR become more severe. Egypt's Second National Communication estimates that direct and indirect impacts are expected to lead to the migration of 6 to 7 million people from the Nile Delta. Migration can be of varying scale and take different forms. These can be as limited as migration of Bedouins from the valleys to the cities in search for work and food. However, most migration involves the relocation of families from one governorate to another. And most migration out of the Delta so far has been to other populated areas. However, as these get over-crowded, people are increasingly taking advantage of available land and opportunities elsewhere. Indeed, rural governorates are now home to almost two million migrants.

#### National Plan to Accommodate Climate Related Migrants

Since 1988, the Government of Egypt started planning for the Lake Nasser region to serve as a receptor for voluntary migration from other regions. More recently, addressing the issues faced by climate induced migrants has risen to be a top priority of the Government. The Lake



Nasser area (Figure 4) is a part of the Aswan Governorate comprising 73 percent of all governorate lands, and is the only remaining sparsely populated water-accessible region in Egypt. Due to its relatively vast water and land resources, Lake Nasser has long been viewed by policy makers as a potential food basket of the

**Figure 4:**

### **The Lake Nasser Region**

country. Development of Lake Nasser by migrants was first allowed under Presidential Decree no. 476 for the year 1988, which laid out the institutional roles and responsibilities for managing this important resource. Despite the political changes since early 2011, the Egyptian Government remains committed to this national priority as evidenced by its submission of this proposal

In 2002 UNDP assisted the Ministry of Planning to develop a master plan for the development of Lake Nasser, aiming to build an integrated economy of agriculture, livestock, industry, and tourism, all based on available natural resources. The plan recommended lake development schemes designed to absorb up to one million people, of which about 700,000 would be expected migrants mostly employed in agriculture, aquaculture and livestock raising. The timeframe for this was estimated to be from 2002 to 2022. The master plan was undertaken using a GIS system of natural resources and current developments. It divided the region into five zones, and specific optimal development path of each. The plan predicts a rate of economic growth in the region of 8 percent annually, surpassing the national average, and anticipated that the area would significantly contribute to closing the widening food gap for the country in the medium to long term.

The lake is bounded by Arabian rocky desert on the eastern shore and Libyan sandy desert to the west, creating a large habitat diversity that provides an opportunity for integrated development of the area around the lake. Economic activities in the lake region include agriculture, fisheries, livestock husbandry, mining of minerals/ornamental stones, tourism, and eco-tourism.

Currently, the local population in the Lake Nasser area is limited, which makes it an excellent venue for additional migrants from climate threatened areas. The population of the local communities are estimated at roughly 40,000 people, including about 1,000 Bedouins<sup>24</sup> in Wadi Allaqi, about 5,000 miners on the east side of the lake, 20,000 Nubians living on the west side, and roughly 15,000 seasonal agricultural workers engaged in shore cultivation.<sup>25</sup>

### **More About Lake Nasser**

The High Dam Lake (also known as Lake Nasser) is one the largest man made reservoirs. It was created as a result of the construction of the Aswan High Dam in 1971. The water of this reservoir covers the whole Nubian Nile valley in Egypt and Sudan and penetrates deeply into desert through tributary wadis. It is about 500 km long of which 291.8 km is in Egypt.

The reservoir has a gross capacity of 157,000 million m<sup>3</sup>. The dead storage is about 30.000 million m<sup>3</sup> at 147 metres above mean sea level, mostly used for operating the hydroelectric power station that dispatches power to the national grid.

On average, water inflow to the lake is 84 million m<sup>3</sup>/year, with 18.5 km<sup>3</sup> allocated to Sudan, 55.5 million m<sup>3</sup> to Egypt, while 10 km<sup>3</sup> are lost by evaporation. The water level in Lake Nasser began to decrease sharply in 1981 and its minimum water level (+150.60 m) was recorded in July 1988; this corresponded to a total storage of 38.4 cubic kilometers. It was followed by a sudden rise of the water level which then reached its second peak of +182.2 m in 1998.

The shoreline of the lake can extend from 5,300 to 7,800 kilometers depending on reservoir storage. The lake water level and water quality decline during summer, which discourages sustainable agriculture.

<sup>24</sup> Data provided by brunch of EEAA conservation sector in Aswan

<sup>25</sup> There is no available published count of the Nubian population in Egypt, particularly those living in the area. The figure on Nubians was extrapolated from a published report by Ain Shams University (1998) indicating that Abu Simbel village included about 16,000 people.

## The Proposed Project

Over the last few years, WFP and the Government have been piloting a number of schemes for more sustainable development of the Lake Nasser region. The Government now wishes to further develop the area with explicit attention to climate change impacts, a more urgent recognition that an increasing number of climate migrants will wish to settle in the area, and with a view to bringing existing pilots to scale and replicating them elsewhere in Upper Egypt.

The project will support the Government's efforts to develop the Lake Nasser area to become a source of increased food production and home to controlled climate migrants from the Nile Delta and Sanai in particular and do so consistent with the adaptation requirements needed in the face of climate change impacts in the lake region itself.

Component 1 will amend the original Lake Nasser master plan, taking climate conditions and threats into account. Component 2 will scale up proven approaches to food security, livelihoods and natural resource management in Lake Nasser area (a summary of WFP's pilot interventions in the area in Annex 1). And Component 3 will transfer technologies and lessons learned to other parts of Upper Egypt as part of the Government's 1000 Villages Initiative.

The Lake Nasser region faces climatic risks which are as serious as those that threaten food security nationwide. Agriculture in the Lake Nasser Region is threatened by rising temperatures and heat shocks, leading to crop damage and the advent of new kinds of pests. The expected rise in temperature will intensify evaporation; rate of transpiration by plants as well as soil moisture loss.

However, Lake Nasser is the region chosen by Government for major expansion of sustainable economic development, in particularly to absorb current and potential climate change migrants from elsewhere. While it is subject to even higher temperatures and aridity than other parts of the country, the Government is intent on developing more judicious use of the lake water before it flows downstream in the Nile where up to a quarter of the volume is lost to evaporation.

Overall, the Government has concluded that development of this region for climate change migrants is a more cost effective option than alternatives (these are detailed in Part II, Section C), including further development in the Delta and reclamation of land on the north western coast which is inaccessible because of the presence of land mines. Furthermore, the lessons learned in the Lake Nasser region will be transferable to other parts of Upper Egypt, which are the poorest villages in the country, and which are similarly heat stressed.

The project is a central tenant in the Government's climate change and food security strategy, and is reflected by an emphasis on developing new lands and developing and disseminating new production technologies in the draft NAPA.<sup>26</sup>

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<sup>26</sup> The government has prepared a strategy for climate change adaptation in the agricultural sector. The strategy forms the section on agriculture in the National Adaptation Strategy for Egypt, which is still in

## II. PROJECT / PROGRAMME OBJECTIVES:

### II.A. Overall Objective

The Government of Egypt wishes to develop the Lake Nasser region to serve as a receptor for climate-induced voluntary migration from other regions, as well as a hub for applied adaptation technology that is transferrable to other parts of Upper Egypt which are climate stressed. The project is a keystone in that effort, and will provide strategic planning capacity, technical assistance and transitional support to communities.

#### **Component 1. Strategic adaptation planning for the Lake Nasser region.**

**Objective:** To review the master plan for Lake Nasser area and adopt a zoning policy that takes into account climate adaptation priorities while protecting the lake water that is the source of water for all of Egypt.

#### **Component 2. Technology transfer to enable adaptation in Lake Nasser communities**

**Objective:** To enhance resilience and improve food production in the Lake Nasser area and contribute to Egypt's food security as a whole.

#### **Component 3: Transfer knowledge and technology to three of the poorest villages in Upper Egypt under the Government's 1000 Village Initiative.**

**Objective:** To enhance the resilience of the targeted villages and encourage the further transfer of knowledge and technology to others.

## PROJECT / PROGRAMME COMPONENTS AND FINANCING:

**Table 1. Components, Outcomes and Financing**

**Modified in response to a combination of comments**

<b>Project Component</b>	<b>Expected Concrete Outputs</b>	<b>Expected Outcomes</b>	<b>Amount Requested (US\$)</b>
<b>1. Strategic adaptation planning for the Lake Nasser</b>	<b>1.1</b> Amended master plan for Lake Nasser region (including a baseline assessment, a pre-feasibility study and a strategic environmental assessment)	Climate induced migrants allocated long-term use rights for land in Lake Nasser region, and having	400,000

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draft. It focuses on the expected impacts of climate on the productivity of 10 major crops, animal production, and fisheries. The strategy singles out the need for developing new areas and exploring and disseminating water efficient and heat resistant crops and methods of production.

<b>region.</b>	<b>1.2</b> National climate vulnerability atlas updated for Egypt and government representatives trained on its use for geographic targeting decisions.	access to privately funded schemes for scaling up sustainable development activities initiated under this project.	50,000
	<b>1.3</b> Competitive selection and fair allocation of land and benefits to climate induced migrants. Designing an incentive policy package to ensure compliance with land use plan and sustainability principles.		400,000
	<b>1.4</b> Upgrade climate monitoring units		400,000
	<b>1.5.</b> Development of a financing mechanism for scale-up of activities		200,000
	<b>SUBTOTAL COMPONENT ONE</b>		<b>1,450,000</b>
<b>2. Technology transfer to enable adaptation in Lake Nasser communities</b>	<b>2.1.</b> Suitable technologies are identified for environmentally sound energy for domestic use;	Communities totaling 55,000 people are successfully settled, generating income, owning assets, able to adapt to climate change and variability, while protecting lake resources	530,000
	<b>2.2</b> Farmers start farming organically using water saving irrigation techniques introduced (drip, spray and sub-surface)		1,085,500
	<b>2.3</b> Agro-forestry greenhouses and plots established (total area about 150 acres) with sub-surface irrigation, including nursery for growing trees and novel crops		607,000
	<b>2.4</b> Livestock and poultry hubs developed for selection and breeding of new heat resistant varieties.		1,296,000
	<b>2.5</b> Development of post-harvest, processing, and marketing small scale processing units for end use agriculture products		150,000
<b>SUBTOTAL COMPONENT TWO</b>		<b>3,668,500</b>	
<b>Component 3. Transfer knowledge and technology to three of the poorest villages in Upper Egypt under the Government's 1000 village initiative.</b>	<b>3.1.</b> Community level mobilization and climate adaptation planning (including baseline assessment, climate monitoring systems, community climate awareness activities, and community mobilization)	Climate resilience activities build climate resilient livelihoods and lift 60,450 people above the poverty line .	400,000
	<b>3.2</b> Community agricultural assets are established to enable community wide implementation of climate resilient solutions (including greenhouses, seedlings, community level organic farming centre, efficient irrigation demos)		751,000

	3.3. Livestock programs established in beneficiary communities and women owning and raising heat resistant and more productive animal and poultry breeds.	670,000
	3.4. Market channels opened for community products.	380,000
<b>SUBTOTAL COMPONENT THREE</b>		<b>2,201,000</b>
<b>TOTAL</b>		<b>7,319,500</b>
<b>Project execution costs (9.5 percent)</b>		695,353
<b>Management, monitoring, reporting and evaluation (7 %)</b>		561,040
<b>Amount of financing requested</b>		<b>8,575,892</b>

 **PROJECT CALENDAR:**

<b>Milestones</b>	<b>Expected Dates</b>
Start of project	April 2012
Midterm review	May 2014
Project Closing	March 2016
Terminal Evaluation	September 2016

 **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 is a key element in Egypt’s climate adaptation strategy in three crucial respects: 1) it will open the door for voluntary migrants from climate threatened regions such as Nile Delta low-lands and dry desert communities; 2) it will apply adaptation technologies that will assist half of Egypt to cope with repercussions of rising temperature and low water availability, and 3) it will enhance food security in the face of severe threats to food security as a result of climate change

A key outcome of the project will be improved livelihoods for some 150,000 direct beneficiaries - about 35,000 expected migrants over the life of the project; 55,000 now in the project area and 65,000 in other climate stressed parts of Upper Egypt. This is in addition to over one million future indirect beneficiaries in the first phase of the Government’s 1000 Village Initiative.

**Component 1. Strategic adaptation planning for the Lake Nasser region.**

**Objective:** To review the master plan for the Lake Nasser area and adopt a zoning policy that takes into account climate adaptation priorities while protecting the lake water that is the main source of water for Egypt.

**Output 1.1. Amended master plan for Lake Nasser region.**



The project will assist the Government with amending the current master plan and issue a zoning policy. This activity will rely on area climate analysis, carrying capacity analysis<sup>27</sup> and a strategic environmental assessment (SEA). It will also include the development of an investment and financing plan for the region<sup>28</sup>. GIS tools will be used to integrate the demographic, biological, socioeconomic and physical parameters for estimation of area carrying capacity for different climate scenarios. Water conservation will be a main concern in the SEA.

**Output 1.2. Egypt climate vulnerability Atlas effectively utilized and government representatives trained on its use for geographic allocation decisions.**

This output will strengthen the capacity of Government's vulnerability mapping so decision makers can formulate informed allocation decisions of land and benefits in the area to communities most affected by climate change. This activity is geared to update the WFP-supported Climate Vulnerability Atlas and ensure its effective utilization..

**Output 1.3. Competitive selection and fair allocation of land and benefits to climate induced migrants. Design of an incentive policy package to ensure compliance with land use plan and sustainability principle.**

This output will ensure an increased and smooth transition of migrants to new locations. The activity will be conducted in collaboration with the International Organization for Migration (IOM). A less climate-sophisticated process is being piloted at a very small scale with success.

**Response to CR6:** Currently the land is owned by the government, under the jurisdiction of Aswan Governorate, who is the licensing authority in this project.

The following protocol will be undertaken:

- WFP and IOM will conduct a qualitative exercise to further define the strata among climate vulnerable applicants who are most likely to succeed in the new locations (most probably young people or couples from rural areas, who are willing to move, and who have special skills). The aim of this exercise is used to further refine the Government's criteria for selection.
- The location of villages in the Lake Nasser area is determined in compliance with the zoning policy to be developed

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<sup>27</sup> Carrying capacity refers to the number of individuals who can be supported in a given area within natural resource limits, and without degrading the natural social, cultural and economic environment for present and future generations. Carrying capacity tells us that the biophysical limits of our environment are key in determining how many human can survive at what levels of consumption.

<sup>28</sup> Following are the previous documents prepared by different organization for development of Aswan governorate including Lake Nasser: (1) Environmental Profile and Action Plan of Aswan Governorate (1993 and 2004), Danida. (2) UNDP, MOP (Egyptian Ministry of Planning), 2002. Comprehensive development plan for Aswan and Lake Nasser. Final report of Lake Nasser development project with the economic and social planning for spatial development. UNDP and MOP, Egypt. (3) Japan International Cooperation Agency (JICA), "The high Dam Lake Area Integrated Regional Development Plan, Final Report, Egypt, 1980".

- Ads posted inviting applications from climate threatened areas following stated criteria (to include vulnerability to climate change, poverty, age, gender, health, education, marriage status and family size)
- Selection and preliminary allocation of land and benefits undertaken.
- New inhabitants visit for an orientation and to participate in the design of the village and definition of services needed. They are requested to sign allocation papers and pay a nominal fee.
- New inhabitants are offered roles/jobs according to their skills in construction of community assets in return for food or cash or a combination of the two.
- Temporary housing is constructed by the government for workers.
- When villages are completed, families are allowed to move in.

Settlers will receive the land under 45 years use- right contracts. Renewal of contracts and/or inheritance by one of the settler's offspring will be done on a case-by case basis, following an evaluation of the contract holder's performance, commitment and seriousness over his past tenure period<sup>25</sup>.

#### **Output 1.4. Upgrade climate monitoring units**

There are currently four monitoring stations on the lake which will need to be upgraded to be effectively utilized by the project. The output will upgrade the capacity of climate monitoring, forecasting, analysis, and reporting/dissemination of data and information to be used for decision making. Key indicators include temperature, wind speed and direction, drought, evapo-transpiration, soil organic matter content and sensitive biodiversity indicators. The future outlook is for this unit to eventually be networked with other units around the country that the Ministry of Agriculture would set up, based on availability of resources, with a view to build a nationwide expert system to support decision making. A qualified team based in the High Dam Lake Unit in Aswan would be trained on managing the station and reports would be disseminated to all stakeholders and interested organizations and investors.

#### **Output 1.5. Establish a financing mechanism to enable payment for scale up of activities in Lake Nasser area.**

##### **Response to CR2:**

The AF resources will be used to design a financing mechanism that can take on different forms. One alternative is a private specialized equity fund using patience capital, which pays a significant portion of investment capital required for expansions and share the risk and profits for the various activities during the first 10 years, and will pay out part of its revenues to support basic services which the Government cannot finance. In this case, the AF resources will be used to bring in this knowledge from international funds of this nature as Egypt does not have this kind of financing. Alternative two is for the government to set up a holding company to finance and manage the larger project, but then get repaid over the long-term from farming income on profit/risk sharing basis. Alternative three is to capitalize community organizations to provide a series of small loans, a scheme which has shown significant success in WFP assisted projects in Egypt. This will happen alongside the amendment of the masterplan and in consultation with the actual beneficiaries.

Adaptation fund resources will **not** be used to capitalize a financing mechanism but to start up self-sustainable activities.

## **Component 2. Technology transfer to enable adaptation in Lake Nasser communities**

**Objective:** To enhance resilience and improve food production in the Lake Nasser area and contribute to Egypt's food security as a whole.

The aim is to create a climate-adapted dual economy at scale through new livelihood opportunities for the Lake Nasser region and by providing Upper Egypt with affordable food products.

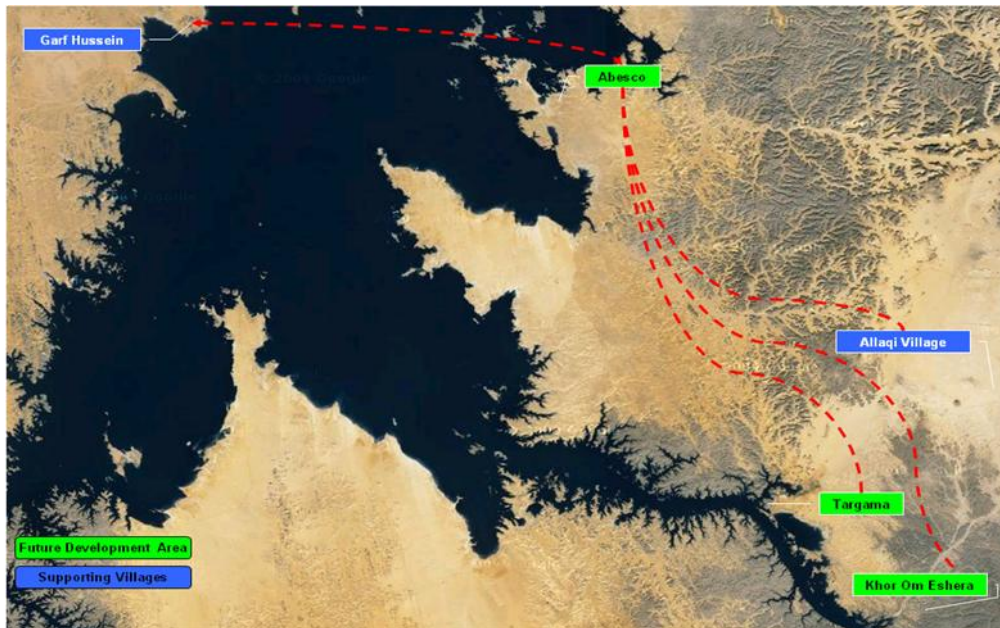
This component will provide technical assistance to the Ministry of Agriculture to replicate and scale up successful pilots in the area around the lake with more attention to climate change impacts, and to pilot some new (for the area) adaptation measures.

Interventions will include agro-forestry; agro-pastoralism, and agro-industry as well as enhanced renewable energy solutions, water conservation solutions (especially efficient irrigation), safe food production, breeding and adopting heat tolerant crops and livestock, assistance to link farmers to markets; raising awareness and establishing small scale education and health facilities.

The output builds on pilots conducted with support from WFP in the same region in three communities on the west side of the Lake (Kalabcha, Garf Hussein, and Thomas&Afia. (See Figure 5, and Annex 1 for detail). Here the Ministry of Agriculture, local government, WFP and development partners (Spanish Government, Swiss Fund, Canadian International Development Research Centre, and University of Cologne) piloted sustainable interventions on 3000 acres through food-for-work schemes. Interventions included upgrading villages with environmental (heat sensitive) architecture; climate-sensitive agriculture; efficient irrigation systems; strengthening local community organizations; assistance linking farmers to markets; raising awareness and establishing small scale education and health facilities. The component will expand assistance to the west side of the lake as well as expand assistance to the east side of the lake in the communities of Wadi Allaqi and Abesco, equipping them with climate adaptation solutions.<sup>29</sup>

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<sup>29</sup> NEF/CDS Report, 2007: suggest following eco-solutions for development lake area: eco-farming, agroforestry, fodder plant farming, medicinal plant farming and management based on UNESCO MAB Biosphere Reserve with example of Wadi Allagi BR. Awad *et al* 2006 recommend the promoting the cultivation of low input crops such as medicinal plants; Belal *et al* 2009 in the book on 'the Bedouins by the lake' advocate the Bedouins experience in the live-stock production.



**Figure 5: Lake Nasser Region Developments**

**Output 2.1. Suitable technologies identified and tested for environmentally sound energy for domestic use.**

Hydropower represents about 11 percent of the total energy generated in Egypt for (2007) and most of it by the High Dam at Aswan. The Egyptian solar atlas, issued in 1991, stated that Egypt has a rich solar energy resource equivalent to 2000-3200 kWh per square metre per year of solar intensity from direct solar radiation. The sun shines on average from 9 to 11 hours a day and most of the year is sunny.

The project area is close to the dam but there is no electric grid running to the new villages located on the lake shores because the area is still sparsely populated. Communities use expensive petroleum and natural gas.

The output will provide technical assistance for establishment of efficient and environmental friendly energy sources in new pilots providing Solar Photovoltaic (SP) that can generate electricity for water pumping, telecommunication, house lighting and domestic solar water heaters.

It will also pilot the use of biogas. Biogas can provide a clean, easily controlled source of renewable energy from organic waste materials.<sup>30</sup> This can replace more polluting firewood or fossil fuels (which are becoming more expensive as supply falls behind demand). Since small scale units can be relatively simple to build and operate, biogas can be used directly for cooking, heating and lighting).

<sup>30</sup> Biogas Plants (BGP) are an alternative to composting. In BGP, the biomass is digested in a simple plant and bio gas produced is stored and used. It requires less space, and is more efficient than composting (less wasted energy). BGP also provides clean energy, contributes to sanitation by reduce the waste as well as the end product (slurry) is a clean organic fertilizer that potentially increases agricultural productivity

## **Output 2.2. Farmers start farming organically using water saving irrigation techniques introduced (drip, spray and sub-surface)**

This output will assist in strengthening organic farming by providing technical support for upgrading the existing organic farming center on the western side of the lake in Kalabcha village, establish one on the eastern side of the lake in the Abesco new village and certify organic farmers. With strong tourism in Aswan there is a market for organic products in the region. Organic production is also a priority for the Ministry of Environment in its concern with the threat of agro-chemicals to Lake Nasser.

This output will also introduce to the area more efficient sprinkler irrigation and drip irrigation covering up to a 1500 acres.

## **Output 2.3. Agro-forestry greenhouses and plots established with sub-surface irrigation, including nursery for growing trees and novel crops**

Because most suitable land in Egypt is already under intensive crop cultivation, agro-forestry has not been practiced in Egypt, except for very limited areas along the Mediterranean region. Vast areas around Lake Nasser with water availability offer opportunities for establishment of an industry based on climate resilient agro-forestry

Dryland agro-forestry, using heat resistance varieties is an effective approach for climate sensitive development in the area around the lake. It is an integrated approach, which uses the interactive benefits combining trees and shrubs with crops and/or livestock. It combines agricultural and forestry technologies to create more diverse, productive, profitable, healthy and sustainable land-use systems and at the same time protect the lake shores and prevent water pollution..

Agroforestry farms will be established over 150 acres close to the lake shore. They will be fenced to prevent grazing and supported with subsurface irrigation. The selection of trees will depend on the ecology (water requirements), following the slope gradation from wet to dry. Indigenous trees with cash value will be a priority. Some crops, mainly vegetables, will be planted among the trees. Onion, garlic, tomato, vegetables, fodder plants and medicinal plants are most suitable. No fertilizers or pesticides will be applied in these areas. Soil fertility will be sustained by the silt deposits on the lake shores, which can be expected to increase with torrential flows on a seasonable basis. Nitrogen produced by nitrogen fixation bacteria<sup>31</sup> hosted by roots of leguminous trees (mainly acacias) will also be used to maintain soil organic matter, which is destroyed in high temperatures.

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<sup>31</sup>Through a symbiotic relationship with nitrogen-fixing bacteria, legumes are able to convert atmospheric nitrogen into a form that plants can use. Because of legumes' nitrogen-fixing capabilities soils are enriched in nitrogen and plants or crops can be grown without supplemental fertilizer.

Trees provide economically important products, such as timber, building material, fuel wood, food, medicine and fodder as well as other commodities. Important services include shade, shelter, erosion control, watershed protection, soil enrichment, conservation of biological diversity and wildlife, etc. Such farms will be communal activities and benefits will be equitably shared by communities.

#### **Output 2.4. Livestock and poultry hubs developed for selection and breeding of new heat resistant varieties.**

On the western side of the lake, a hub for fattening livestock will be established in one of three pilots: Kalabcha, Bachayer El-Kher and Thomas&Afia. The optimal location will be identified during project implementation in participation with beneficiary communities. Communities involved with the livestock hub will be provided with training in animal care, market access, and selection of heat resistant and high yielding animals.

On the eastern side Bedouin livelihoods are based on livestock transhumance. The proposed output will aim to assist a smooth transition from transhumant pastoralism to agro-pastoralism, which is sedentary, or semi-transhumant livestock farming that links crop-growing and livestock. The emergence of agro-pastoralism is associated with both the decline in range resources as and livestock numbers and productivity. The shift from traditional (mobile) pastoralism to agro-pastoralism is a form of adaptation to prolonged drought.

This output will include upgrading the fattening and feeding program in Wadi Allaqi and small scale cultivation of fodder, animal identification, vaccination, vet services, reproduction and animal insemination, parasite treatment and animal waste treatment.

#### **Output 2.5. Development of post-harvest, processing, and marketing units for end use agriculture products.**

Small-scale food processing activities represent a potential source of livelihood for many poor people in Upper Egypt. It is estimated that in Egypt more than 87 percent of the food processing industries in the formal sector are either small scale or medium scale. However there have been few opportunities to introduce enabling structures, such as cooperatives and contract farming, which could allow small-scale farmers to expand and even to serve the European markets.<sup>32</sup>

This output will be launched with activities such as crop drying, cleaning, grading, and packaging. The poor can access custom processing for household consumption without investing in processing equipment. The next phase will cover herbs, fruit and vegetable drying, canning, bottling, and juicing for local and national marketing.

This output will also strengthen farmer organizations, marketing centers and link farmers to markets through:

- Establishing new agriculture co-operatives and strengthening existing ones.  
Strengthening the network between communities in the established pilots.

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<sup>32</sup>Egyptian Processed Food Sector Review, Final Report, Client: Client: Industrial Modernisation Centre – Egypt, ECORYS-NEI, Macro & Sector Policies, Rotterdam, April 2005; [http://www.imc-egypt.org/studies/FullReport/Egyptian percent20Processed percent20Food percent20Sector percent20Development percent20Strategy\\_EN.pdf](http://www.imc-egypt.org/studies/FullReport/Egyptian%20Processed%20Food%20Sector%20Development%20Strategy_EN.pdf)

- Strengthening household and farmers' capacity to implement and maintain the new technology introduced to the pilots (e.g. efficient irrigation system, solar PV units, and other equipment) by conducting workshops.
- Providing farmers with access to information on marketing and production input prices
- Developing a local system to link small producers to markets.
- Procure for equipment for food processing for farmer organizations.

**Component 3: Transfer knowledge and technology to three of the poorest villages in Upper Egypt under the Government's 1000 village initiative.**

**Objective:** To enhance the resilience of the targeted villages and encourage the further transfer of knowledge and technology to others

Lake Nasser faces similar climate change issues to most of rural Egypt. This makes it an excellent technological hub for adoption of low-cost technologies that are transferrable to other parts of Egypt. Successful adaptation technology in Lake Nasser communities will be piloted in three villages in Upper Egypt under the poorest 1000 village initiative: .In 2007. the Government of Egypt (GOE) declared its intention to target the poorest 1000 villages (out of an overall total of around 5000 villages). The choice of the 1000 poorest villages was based on Egypt's 2006 poverty map, developed by the Ministry of Economic Development. These 1000 villages will be targeted for a significant level of investment in an integrated package of basic services.

This intervention is treated as a separate component because the targeted villages are not home to climate migrants The villages will be selected during project appraisal. Based on prior consultation, they will be in the Upper Egypt governorates of Assiut and Sohag. As such, they are subject to the same climate induced heat and water stresses as the migrant villages targeted for development around Lake Nasser in Component 2

Assiut and Sohag governorates are the most poverty stricken in the country. In fact, more than 700 out of the 1000 poorest villages are located in these two governorates. In addition to the interest of the community to participate and benefit from the project, participating villages will be selected based on poverty, food insecurity, and suitability for technology and knowledge in the area of climate adaptation.

Specific technologies to be transferred are those that were highlighted as most needed in consultations held with Upper Egypt communities. Most pressing among those are ability to adapt to heat shocks, drought and floods and their effect on agriculture and livestock raising; reduce water consumption by efficient irrigation technique; ability to cope with food shortages during seasons of shortage.

Activities will include strengthening the building capacities of communities by providing the technical support for improving the communities livelihood, introducing the new technology and training, raising the gender issue, awareness on climate change and adaptation to such changes.

Interventions will be replicable such that they can be scaled up at a later stage by the communities and local actors, with targeted support from the government. Therefore, community leadership is central to sustainability and replicability. Lessons learned will be documented and disseminated to all actors involved in the 1000 poorest village initiative in order

to replicate them in the Government's first phase of support to 151 villages covering some 1.7 million people.

### **Output 3.1. Community mobilization and adaptation planning**

Community mobilization and engagement involves the following steps:

- Mobilize and train community volunteers to raise awareness about climate change and variability to explain the changes and shocks communities have been observing, especially in agriculture, and educate communities on preparedness techniques in their own livelihoods (agriculture, livestock, health, ..etc). Community volunteers will work under a well-chosen community organization that provides the institutional structure to manage community based activities.
- Involve the volunteers in a baseline assessment of prevailing issues and community strengths and resources, and in formulating a work plan for their village, indicating climatic risks most pertinent to them, appropriate interventions, timeframe, required resources. Develop a business plan for scaling up and sustaining suggested interventions.

This activity will benefit 7000 people in three villages

### **Output 3.2. Community assets established to enable community wide implementation of climate resilient solutions**

Interventions in the three villages will be similar to those near Lake Nasser. Some modification will be needed during implementation according to landscape, soil composition, available infrastructure including connections (roads), energy source, water availability, etc.

Specific interventions available to the communities involved will include:

- Enrich the soil fertility by amendment (composting, treated municipal waste materials, treated sludge) and reduce water consumption by efficient irrigation and introducing drought tolerant crop varieties; selection of heat tolerant, disease tolerant and short- age cultivars of the important crops; adjust crop rotation as a means of adaptation to temperature rise and heat shocks. This will service a pilot demonstration of 300 acres per village.
- Income generation: Provide advice on climate-proof means of increasing income by adding value to agricultural products, and to other activities. Agro- forestry for income generation, energy, and for applying wind breaks, which are essential considering that climatic changes also involve stronger winds and sand storms<sup>33</sup>. This will also contribute to reduction of CO2

Agriculture related activities will benefit about 15000 people in three villages

### **Output 3.3. At least 10,000 women owning and raising heat resistant and productive animal and poultry breeds, as well as benefiting from relevant veterinary services.**

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<sup>33</sup> Ministry of Environment. 2010. Second National Communication to the United Nations Convention on Climate Change.



The aim will be to increase food production in the community despite the climatic challenges, and improve child nutrition. The intervention will also enhance women's role in society, being the key guardians of livestock raising in rural Egypt.

Specific tasks will include:

- Provision of awareness and training for women
- Introduction of seed cattle and goat heads as a startup livestock fund for the community through provision of seed animals.
- Provision of veterinary
- Assist farmers with marketing advice and linkages where applicable, for sustainability.

### **Output 3.4. Market channels opened for community products**

For sustainability of project interventions, it is necessary to teach farmers and community organizations how to market their products. This would ensure financial viability and continuity, as well as community empowerment, with targeted government support where needed. This activity will benefit approximately 5000 young people in three villages, who are active in the post-harvest and marketing area.

*B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.*

Number and types of beneficiaries are listed in Table 2, below. The project will provide a full range of multiple benefits, including the following:

**Economic benefits** include long-term use rights for land and productive assets that are provided to relocating people. As no ownership rights are transferred for land, inheritance is approved on a case-by-case basis depending on performance of beneficiaries. Other economic benefits include access to water (both for agriculture and palatable), markets and health care. The project will support significant, new on-farm and off-farm income-generating activities.

**Environmental benefits** include enrichment of biodiversity of the target area and restoration of ecosystem by growth indigenous plants, new trees which will stabilize the lake shores and protect from sand intrusion the desert, and efficient clean energy will prevent water pollution and degradation of vegetation.

**Social benefits include** enhancement of social cohesion by co-operation activities, establishment of community mobilization and community assets, provision of training and strengthening education and improved access to health services.

### **Response to part on benefit to women in CR 4**

The project social benefits will also include women's empowerment. Women are among the most affected by climatic risks in the Delta as the qualitative assessment has so far shown. They form the majority of owners of livestock, and the majority of those engaged in food processing, and other micro-enterprises. This project will thus offer them an economically viable and empowering window for adaptation to climate change. Moreover, WFP has in the

past strengthened women community organizations as part of its work modality and will continue to do so under this project

**Table 2: Estimated Beneficiaries (reformulated based on CR**

Components/ Output	Project Intervention	Direct Beneficiaries
<b>1. Strategic planning for the Lake Nasser area</b>		
Outputs 1 and 2	Planning for Lake Nasser area and vulnerability atlas updated for Egypt	Governorate of Aswan and Egypt as whole
Output 3	Selection of land for new migrants	Climate change migrants ( <b>at least 15,000 migrants over the life of the project</b> and up to 300,000 until 2022)
Output 4	Support for climate monitoring units	Aswan and Egypt as whole
<b>2. Technology transfer to inhabitants and climate migrants in Lake Nasser area</b>		
Outputs 1-5	Establishment of efficient irrigation; agro-forestry, organic farming, livestock and poultry hubs	10,000 people
Output 6	Small scale processing units for the end use agriculture product	5,000 people
Output 8	Development of marketing centers	3,000 people
<b>Subtotal</b>		<b>18,000 people</b>
<b>3. Transfer know-how and technology to three of the poorest villages in Upper Egypt</b>		
Outputs 1	Community mobilization, baseline, awareness	7000 people
Outputs 2	Community assets established to enable implementation of climate resilient solutions	15,000 (5,000 people per village)
Output 3	Providing heat resistant and more productive animal and poultry breeds	10,000 people
Output 4	Market channels opened for community products	3000 people
<b>Subtotal</b>		<b>53,000 people + over one million indirect beneficiaries over the long term representing the population of the first phase of the 1000 poorest village initiative</b>

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

The total cost of the proposed four year project is US\$**8,575,892** from the Adaptation Fund. The project will directly benefit 150,000 people. The replicability of approaches and technologies being developed, through active dissemination and learning, will improve the cost effectiveness

of the project by reaching millions more.

The proposed project aims to address several facets of climatic risks including:

- Inundation of the Delta and drought and flash flooding in Beduin desert communities and the at risk of inundation – addressed through acceptance of migrants;
- Reduction in agricultural production, particularly cereals – addressed through horizontal expansion in upper Egypt
- Lack of adaptation knowledge and coping strategies for the most climate vulnerable – addresses through introduction of knowledge and coping strategies.

Each of these is addressed in Table 3 with a view to what alternative strategies would cost, both in terms of efficiency and the burden associated with no action.

**Table 3: Cost Analysis  
Including response to CR5**

Outcome	Cost of proposed adaptation intervention	Cost of alternative adaptation intervention	Cost burden of no action scenario <sup>34</sup>
1) Opening up r migration from climate threatened areas due to inundation and salinization	USD 6 million for relocation and provision of new assets and livelihoods for 100,000 people	<p>Instating living shore lines would salvage up to 100,000 people from forced migration due to direct inundation. Cost of living shore lines is estimated at USD 10.5 million<sup>35</sup> for an estimated stretch of 25% of the Delta length at risk.</p> <p>It should be noted that 100% coverage of Delta shoreline is not possible as this approach is not implementable in unprotected stretches that have been identified as areas of soil erosion (estimated to be 75% of the Delta length)</p> <p>This is in addition to a salinity control program costed at USD 200 million. This program includes changing land use from cultivation of crops at large to alternating between cultivation of rice and fish farming (aquaculture).</p>	<p>Loss of lives or chaotic migration of at least 100,000 people by 2050</p> <p>Loss of livelihoods for an additional 6 million people affected indirectly due to inundation, and heavy groundwater and land salinization.</p>
2) Addressing risk of reduction in agricultural production due to temperature rise		The Government's Agriculture Adaptation Strategy indicates expected loss in crop productivity (see below table) by 9 to 50 percent as a result of temperature increase alone. This is estimated to lead to losses in farm profits by about 44	Loss of food production (see below table) that may not be compensated by international procurement as global climate change is predicted to reduce food production worldwide.

<sup>34</sup> An economic valuation exercise of climatic socio-economic is underway by UNDP and other UN agencies (WFP included).

<sup>35</sup> As stated in the UNDP funded project from GEF

<p>And 3) introducing coping strategies and adaptation knowledge to the Upper Egypt region</p>	<p>USD 400 million for full scale implementation in 700 of the poorest villages in Upper Egypt</p>	<p>percent over the next 25 to 40 years. The Strategy indicates that adaptation on existing lands would require a package of interventions reaching costed at USD 180 million for climate monitoring; USD 100 million for increasing organic matter in the soil; and over USD 500 million for breeding programs of new heat and salt tolerant varieties.</p>	<p><b>Figure: Changes in crop productivity as a result of climate change</b>  <b>Source: Egypt Agriculture Climate Adaptation Strategy (2010)</b></p> <table border="1"> <thead> <tr> <th data-bbox="987 310 1146 415">Crop</th> <th data-bbox="1146 310 1466 415">% change in crop productivity over 25 to 40 years with 2 - 4 C increase</th> </tr> </thead> <tbody> <tr> <td data-bbox="987 415 1146 447">Wheat</td> <td data-bbox="1146 415 1466 447">- (9-18 %)</td> </tr> <tr> <td data-bbox="987 447 1146 478">Corn</td> <td data-bbox="1146 447 1466 478">-(19%)</td> </tr> <tr> <td data-bbox="987 478 1146 510">Cotton</td> <td data-bbox="1146 478 1466 510">+17 to 31%*</td> </tr> <tr> <td data-bbox="987 510 1146 541">Maize</td> <td data-bbox="1146 510 1466 541">- (19%)*</td> </tr> <tr> <td data-bbox="987 541 1146 573">Oats</td> <td data-bbox="1146 541 1466 573">- (18%)</td> </tr> <tr> <td data-bbox="987 573 1146 604">Rice</td> <td data-bbox="1146 573 1466 604">- (11%)</td> </tr> <tr> <td data-bbox="987 604 1146 636">Soya beans</td> <td data-bbox="1146 604 1466 636">-(28%)*</td> </tr> <tr> <td data-bbox="987 636 1146 667">Tomatoes</td> <td data-bbox="1146 636 1466 667">- (14% to 51%)**</td> </tr> </tbody> </table> <p>* Water requirements of these crops will increase between 8 and 16%</p> <p>** Reduction is estimated at 14% and 51% if mean temperature rises by 1.5C and 3.5C respectively</p>	Crop	% change in crop productivity over 25 to 40 years with 2 - 4 C increase	Wheat	- (9-18 %)	Corn	-(19%)	Cotton	+17 to 31%*	Maize	- (19%)*	Oats	- (18%)	Rice	- (11%)	Soya beans	-(28%)*	Tomatoes	- (14% to 51%)**
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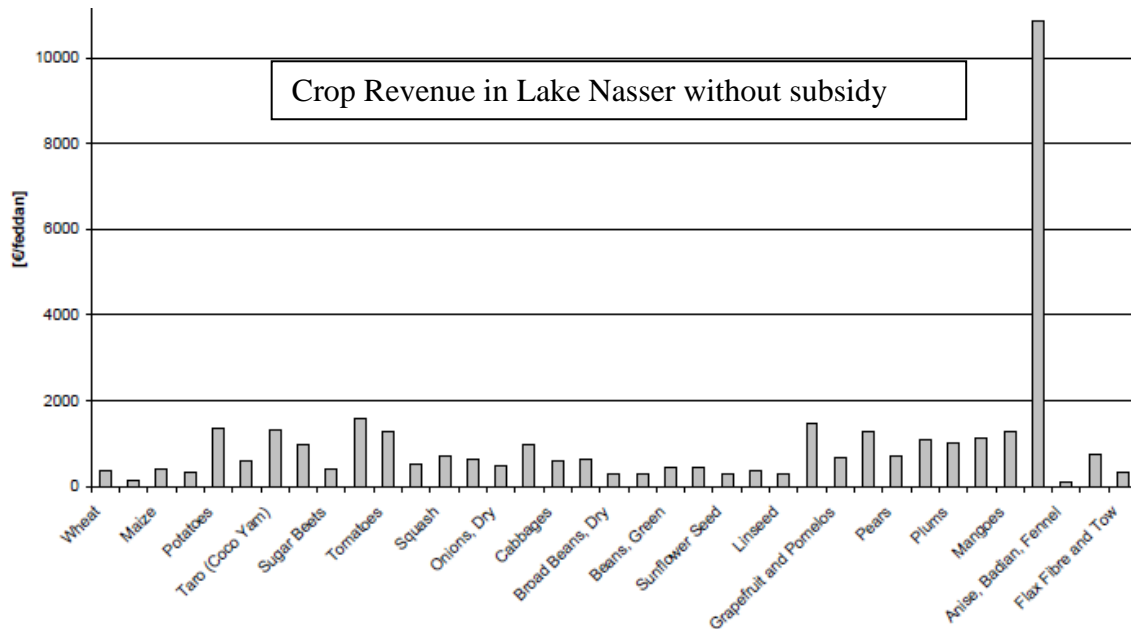
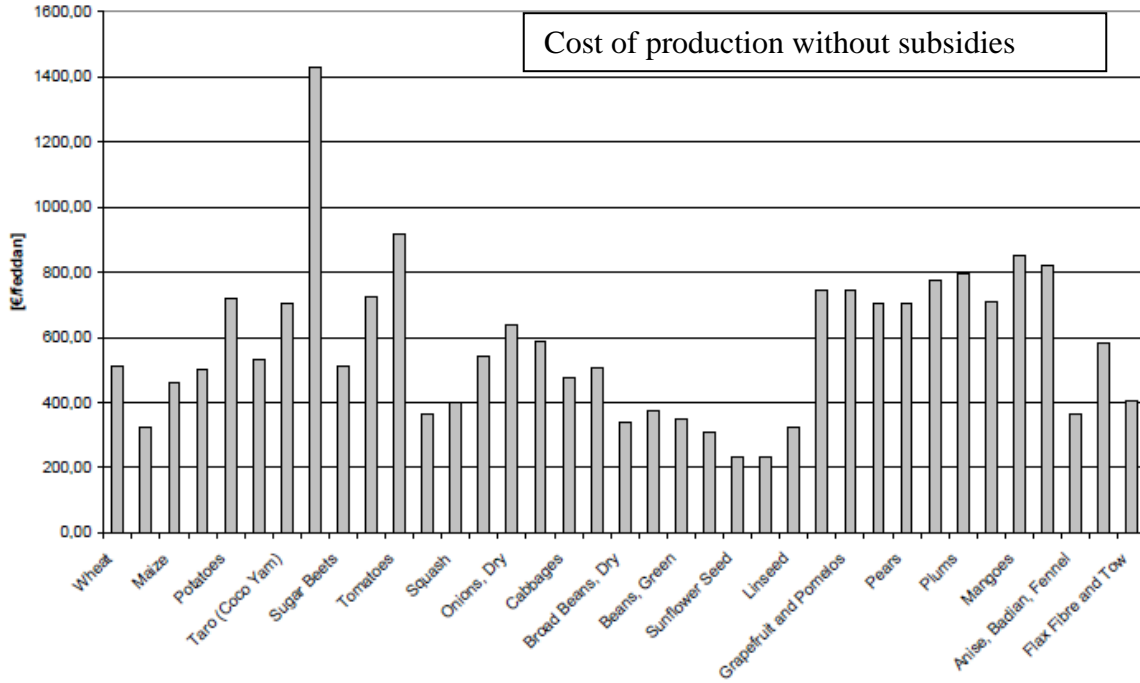
Further with regard to cost efficiencies:

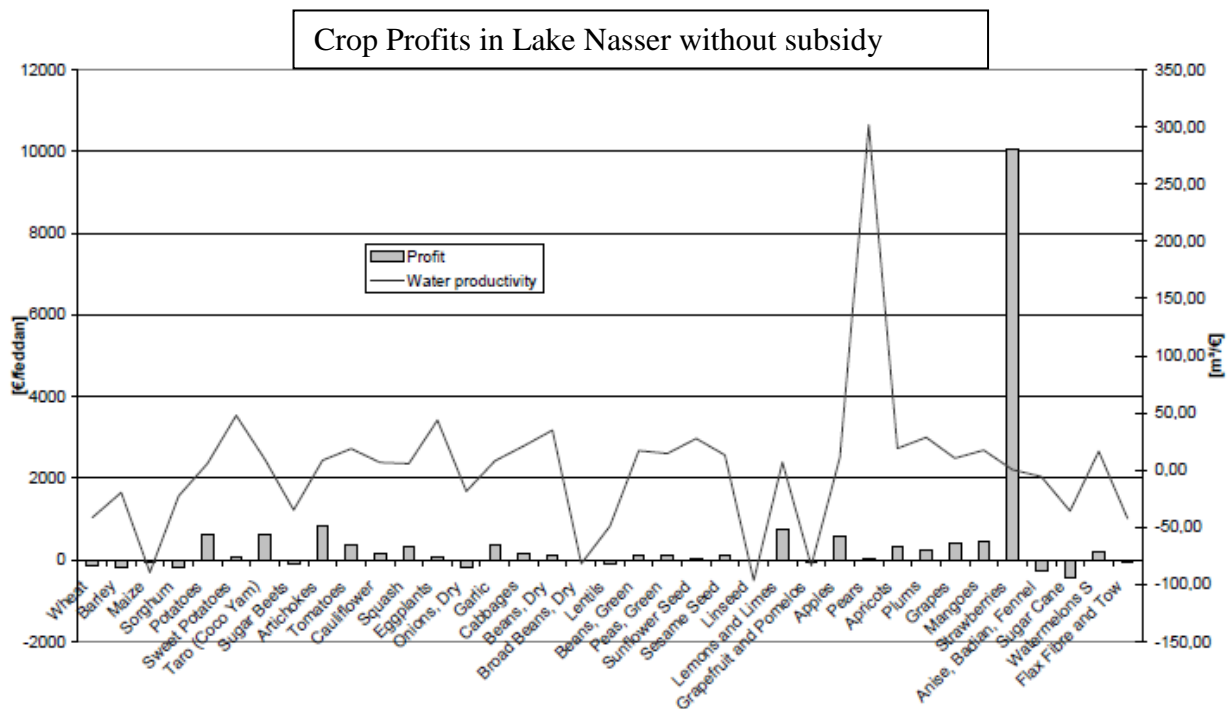
- Animal varieties introduced will be local varieties that are enhanced for better dairy and meat productivity. Successful examples include the Anglo-Nubian goat as well as a breed of local cattle with Friesian cows, which are known to withstand heat while producing greater and higher quality milk. Reliance on local varieties reduces the cost while ensuring successful results.
- Introducing agro-forestry practice with low labor input will enrich diversity of the goods while reduce the cost of produced goods. Legume trees will enrich the soil fertility that reduces cost of fertilizer added.
- Reliance on indigenous plant varieties for cultivation will reduce cost and ensure success
- Reliance on enhancing existing infrastructure to the extent possible also contributes to the low budget proposed. Some of the locations proposed such as Abesco and Allaqi on the east side of the lake; and Garf Hussein, Kalabcha, Thomas&Afia, and Abu Simble all have existing infrastructure such as roads, partly constructed canals, partly constructed houses, and administrative buildings.
- Reliance on local consultants and managers unless external expertise is needed also contributes to the low budget proposed.
- Reliance on local suppliers both for food assistance as well as equipment, as Egypt is known to have a competitive industrial base compared to other countries of the region. This will help the local economy as well as lower the costs to the project.

**Response to CR 5 and 11**

- The philosophy of the project is to create a productive community that is able to sustainably generate its income. To that end, the project was designed to introduce activities that are financially profitable. This includes climate-proof farming, animal raising, eco-lodging, post-harvest agro-business, etc. that all have been proven by past experience and feasibility studies to generate revenue.

- Agriculture in Lake Nasser has been analyzed from a profitability point of view (see figure below). It indicates that a reasonable crop rotation would mean a per acre net profit of at least USD 1750 per year, including revenue from crop sale, livestock and post harvest services. Considering living expenses for a family of five of about USD 1200 per year, and a 5 acre plot per family, it means that scale up is feasible, if a reliable mechanism is available to phase out initial capital expenses (houses, irrigation, land preparation and household energy).





Source of Figures: Institute for Technologies in the Tropics, University of Applied Sciences (Cologne). 2008. Sustainable Rural Infrastructure Management in Lake Nasser (Project Report)

From an institutional standpoint, there are several “institutions” that would support the farmers including the local farmer organization itself (community based); Ministry of Agriculture ongoing programs to support farmers (including extension services, microfinance, market information); as well as the financing mechanism as all the forms we suggested (specialized equity fund using patience capital; or a holding company; or a community based mechanism supported by national institutions) include not only financial but technical know-how.

*D. Describe how the project / programme is consistent with national or sub-national sustainable development strategies.*

The previous Government was intent on developing the Lake Nasser region as a home for climate change migrants and as a potential alternative breadbasket for Egypt’s threatened food production. In spite of the political upheavals in the country this year, the current Government remains strongly committed to this national priority as evidenced by its submission of this proposal and by the ownership of the project from the key Ministries of Agriculture and Environment, as well as the government of the Aswan region.

This project addresses issues and recommendations of Egypt’s Initial and Second National Communications to the UNFCCC. In both reports agriculture is recognized as one of the most climate vulnerable sectors. The Second National Communication recommends the urgent need for wider adoption of heat tolerant crops and livestock varieties in rural Egypt in general, in addition to piloting sustainable integrated land and water management in rural areas.

The Project also responds to the priorities of the Ministry of Agriculture’s climate adaptation strategy, which requires climate monitoring, adaptation of heat tolerant and water efficient crop

varieties and stresses the importance of irrigation efficient technologies and sustainable agriculture. This initiative falls within the next U.N. Development Assistance Framework, where the UN in Egypt will be working towards the outcome of “helping Egypt to formulate and implement sound climate change adaptation measures and policies.” Individual agencies contributing towards this outcome include WFP, UNDP, UNEP, FAO and IOM.

The project follows recommendations of the Aswan Governorate Environmental Action Plan 2004-2017 regarding sustainable management of Lake Nasser and River Nile particularly for sustainable development for new settlements; awareness building and the conservation of biodiversity<sup>36</sup>.

The Ministry of Agriculture and Land Reclamation (MALR) is in charge of agricultural research and extension, land reclamation and agricultural, fisheries, and animal wealth development. MALR is also advocating organic farming and limiting the use of chemical fertilizers and pesticides to reduce crop, soil and water pollution. In addition, present policy is to minimize the use of herbicides and to depend mainly on the mechanized control of submerged weeds and water hyacinths.

Finally, the project employs the low-cost productive environmental village (PLEV) approach of the Ministry of Housing’s Green Building Council. This national initiative is seen as a means to meet the rising and crucial demand of young people for affordable housing, but with a lower impact on the environment and natural resources

*E. Describe how the project / programme meets relevant national technical standards, where applicable.*

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.

The legal basis for irrigation and drainage is set in Law No. 12/1984 and its supplementary Law No. 213/1994 which define the use and management of public and private sector irrigation and drainage systems including main canals, feeders, and drains. The laws also provide legal directions for the operation and maintenance of public and private waterways and specify arrangements for cost recovery in irrigation and drainage networks.

The project falls within 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.

The entire area of Wadi Allaqi has protection status under law 102/1983. According to the Law, it is forbidden to undertake actions, activities or procedures, which would lead to the destruction, damage or degradation of the natural environment, or harm terrestrial, marine or plant life, or detract from its aesthetic quality in a protected area. Wadi Allaqi was designated a biosphere reserve in 1993 within the UNESCO Man and Biosphere Program (MAB) for protecting unique habitat diversity as well as promoting and demonstrating a balanced relationship between people and nature.

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<sup>36</sup> Aswan Governorate Environmental Action Plan 2004-2017, 2004, Environment Sector Programme (ESP), EEAA -Danida

The proposed project recognizes that Lake Nasser is important as a wintering area for migratory Palearctic waterbirds and is designated as an Important Bird Area within the IBA international network<sup>37</sup>.

Where requested by Government and other stakeholders the project will undertake independent environmental assessments.

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

There is no duplication of funding. The funds requested from the Adaptation Fund fill a gap in financing.

Other entities working in this area include UNESCO, as Wadi Allaqi was declared a Biosphere Reserve within UNESCO network Man and Biosphere Reserves which will partly be a focus for the tourism output of this project.

UNDP assisted in 2002 the Government of Egypt in preparing a master plan for Lake Nasser, which the project now is proposing to amend based on climatic challenges.

Canadian IDRC implemented a project in the three pilot villages set up on the western side of the lake by the Ministry of Agriculture, aiming at strengthening community organizations in this area. The same pilots were also assisted by the Spanish Cooperation, which provided solar panels for houses; and the Swiss-Egyptian Development Fund which assisted in digging canal mains to provide stable year-round irrigation.

The Italian Cooperation provided a grant to the Ministry of Agriculture to assist community organizations and implement community action plans in Lake Nasser area as well as Governorates of Upper Egypt proposed under this project.

Climate adaptation was not a focus these initiatives considered in their design, but certainly they all reported climatic challenges as stated in the analysis of this project proposal in the course of their work. This project will be the first to address climatic changes and variability, which seriously threatens livelihoods in the manner explained.

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

The Government considers this project to be a model for learning which will allow the national and Aswan governments, together with local communities, the opportunity to review new approaches to enhancing resilience in the face of climate change, in particular in settling migrants sustainably and in food production. The project is explicitly designed to establish best practice and scale up successful activities to achieve climate change resilience at scale.

The project will enable skills development for adaptation in rural areas in response to rising climatic challenges. By strengthening community organizations and engaging them in the implementation of project activities, they become hubs for knowledge exchange at the community level.

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<sup>37</sup> BirdLife International (2011) Important Bird Areas factsheet: Lake Nasser. Download from [www.birdlife.org/datazone/sitefactsheet.php?id=6200](http://www.birdlife.org/datazone/sitefactsheet.php?id=6200), 10 May 2011



Among the key partners in the project are local academic institutions, such as the South Valley University. Engaging them in solutions introduced under this project is a way of building on-the-job their capacity and knowledge. This is also a way to retain this knowledge at the national and sub-national levels.

### **Response to CR 8**

WFP Egypt has included knowledge management and evidenced based programming as part of its country strategy. Thus WFP will take the lead in all activities related to monitoring, evaluation and knowledge management, managing it through its own system as well as ensuring their proper integration into government and research systems. Several measures will be taken to ensure the engagement of the concerned governmental authorities in the follow-up of the project and eventually its feeding into governmental policies and programs. This includes the following:

- Inclusion of concerned government officials in project monitoring roles.
- The inclusion of concerned technical government officials and decision makers at the national level in the annual workshop that WFP is to organize to discuss opportunities and constraints, share experience and learning, and point the way forward
- Sharing extracts of the reports with the concerned government officials at the local level
- WFP will carry out advocacy efforts and meetings to integrate knowledge generated under this project into national development programs, and support the design national plans to scale up this project for nationwide application. WFP will ensure mainstreaming knowledge generated under this project in the activities of key economic Ministries (planning, finance, agriculture, trade, among others). WFP will involve the Information and Decision Support Center (IDSC) in the knowledge management component as they are the repository of information and backstopping office of the Prime Minister in terms of development information and decision support.
- Carry out a training course for new parliamentarians on the concept of climate change and food security, analysis conducted for Egypt, and knowledge generated under the pilot in Aswan and Upper Egypt.

WFP will engage the media (print and specialized TV programs) as a way to disseminate information about the project

During the design process an evaluation strategy will be developed and aligned to the expected outcomes of the project. Evaluation in addition to monitoring will provide the basis for the evidence-based approach proposed in this project. Also during appraisal, the need for special studies based on the overall objectives of the project will be assessed.

The knowledge management activities in the project will draw upon national actors and capabilities, and include community-based monitoring and evaluation. In addition, and specifically:

In each village, a baseline will be established, both in qualitative terms (video footage, interviews with households, etc.) and quantitatively with respect to agreed upon indicators.

At the Government's request, WFP will pay special attention to document and disseminate solutions introduced for adaptation and use in the context of the 1000 village initiative.

Quarterly progress reports with an agreed-upon, standardized structure will be prepared by project management and partners; these will be shared with all villages as well as stakeholders at national level. They will – along with individual monitoring reports – form the basis for annual reports by project management.

### **Response to CR7**

Best practices and key messages will be captured in several forms including:

- Brochures that give summary information about the best practice, how it was done, challenges faced, outcomes and successes, key lessons learned and contacts for further information. The information will be mentioned in short messages with many pictures to depict much of it. The target group of this material shall be farmers, extension officers, local NGOs members and directorates staff- particularly the directorates of Irrigation and Agriculture in Aswan, Assuit and Sohag.
- A promotional brochure that gives a general overview of project, its components and expected outcomes. They will be disseminated among partner agencies such as EEAA, South Valley University, Aswan Governorate, etc. to inform about the project, targeting decision makers among the other groups.
- Best practices will be also be captured in synthesis reports that detail out each practice with elaborate information on all its aspects. The report will be featuring the aspects of the brochure, however in full details. The target shall be the settlers, the extension workers and directorates as well as farmers in Assuit and Sohag.
- A 20-minutes documentary will be produced to document the project, its best practices and lessons learned in an audio-visual form. The CD will be disseminated to concerned stakeholders including the governorate, NGOs, the Ministries of Agriculture, Environment, Irrigation, Social Solidarity, Planning and Finance at local and national levels, members of the development partner group working in Egypt, etc.
- Materials for an orientation program targeting new government officials, including a one hour briefing package for Ministers and senior government and a full 2-day training for new technical staff in Ministries.

Each year, a workshop will join project actors from community, department, regional and national level to discuss opportunities and constraints, share experience and learning, and point the way forward. This will be incorporated in annual work plans.

WFP will work with the Ministry of Agriculture to include all relevant reports and other information on the web-site of the Ministry. WFP will assist the Ministry with providing extracts of experience and lessons learned that can influence the formulation of future policies and programs.

*H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation.*

This project is based on extensive consultations with a range of stakeholders and at all levels:

In early 2010, a series of consultations was undertaken with the Government and communities at risk in different parts of the Nile Delta and Sinai, which indicated the severity of climate impact on their livelihoods and living standards. Those consultations principally revealed the desire of people to migrate as a result of climate change threats. Consultations included focus group discussions for men and women, as well as in-depth interviews with local authorities. On the basis of these consultations, WFP submitted a Climate Change Qualitative Community Assessment of climate change threat to the Government in May 2010.

Migration as means for adaptation was also reinforced by a separate consultative process conducted by the International Organization for Migration with communities in Abu Qir (one of the Delta threatened communities by sea level rise), which also recommended the need for the Government to develop an organized means of migration for climate induced migrants.

### **Response to CR3 and CR9**

In May 2010, a stakeholder consultation was held in Aswan including beneficiaries of WFP supported pilots already implemented in this region. The consultation - which included local community representatives - discussed the proposed Adaptation Fund project which was endorsed by stakeholders, who also emphasized the importance of developing a renewable and sustainable source of energy and a water efficient irrigation system for agricultural interventions.

In the same month, a stakeholder consultation of the same nature was held in Assiut for all Upper Egypt governorates. The Upper Egypt consultation identified a number of food security challenges including responding to changes in the agricultural climate, and limited capacity and technology application in Upper Egypt villages. The consultation recommended transfer of technology and know-how and strengthening of farmers' skills. The consultations were followed by summary meetings in Cairo among national Government actors where the current proposal was fine tuned.

In October 2010, an expert meeting comprising over 30 national experts, and hosted by the Information and Decision Support Center, which coordinates the National Adaptation Strategy. The meeting was held to discuss WFP's vulnerability map, and moving the proposed project forward. The meeting emphasized the urgency of the issue from both a food security and environmental given the Lake Nasser region's productive potential and the lake's sensitivity as Egypt's main water reservoir.

Past experience indicates that willingness to migrate to Lake Nasser is substantial. In 2004, when the announcements were made for the existing project, an overwhelming number of applications were received, amounting to almost 4 times the expected figure. With that said, and for the full project document, WFP will also work on ascertaining this positive trend through a rapid participatory assessment that will include communities from the communities that plan to migrate as well as the recipient communities. WFP with the government and the help of professional rural sociologists would conduct the rapid rural appraisal (RRA) whose results would feed into the full project proposal, if the concept is accepted.

The RRA would determine priority locations; strata within those priority societies most likely to succeed in the new area; and determine any challenges/issues from their perspective that would be catered for in the program design. An iterative process between local communities

and migrating communities will be undertaken to determine the best relocation scenario that meets both expectations.

Alongside RRA, the government would open up an organized channel for people to submit formal expressions of interest in the project.

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

## **Component 1** Strategic sustainable planning for the Lake Nasser region

### *Baseline without Adaptation Fund Support*

Egypt has been identified as particularly vulnerable to the impact to the climate change. According to the Second National Communication reports (1999 and 2010 respectively) the most vulnerable sectors to climate change are coastal zones, water resources and agriculture. Sea Level Rise is the cause of the most serious climate change impacts that threatens the densely populated River Nile Delta.

The Egyptian Government recognizes that climate change has and will continue to induce migration of affected populations to other parts of Egypt. It also recognizes that climatic changes will have substantial negative impacts on crop productivity, livestock production, fisheries, water resources, etc with a direct impact on food security in the country. It has thus recognized horizontal expansion as one of the plausible means of filling a potentially huge food gap.

The Government over the last forty years has added millions of reclaimed acres to the agricultural plot, which grew from approximately three million acres in 1950s to over eight million acres at the current time. However, the Government's reclamation efforts had slowed down since early 2000 due to institutional reasons. Now with more awareness about the potential impacts of climate change, the Government has renewed its interest in horizontal expansion. One of the most appropriate sites for horizontal expansion is the Lake Nasser area with its rich natural resources and sparse population. The Government has recently started to allow seasonal migrants, fishermen, and the tourism industry to benefit from its resources. Since early 2000, UNDP assisted the Government of Egypt with a master plan for Lake Nasser, laying out the economic potential of the area. Based on the master plan, the Government began to pilot sustainable land use by migrants. The Ministry of Agriculture, assisted by WFP, implemented a number of pilots for environmental villages that use stable year-round cultivation. The pilots (accommodating approximately 3000 people so far) were only a demonstration that stable and more sustainable development alternatives might work.

With increasing awareness of climate change, and after the Government's issuance of the Agriculture Climate Adaptation Strategy, and the soon-to-be-published National Adaptation Strategy, the Government gave more urgency to developing new areas to accommodate migrants and produce more food.

### **Response to CR10**

To that end, Lake Nasser was advocated for by academics after considerations all the possible locations nationwide, due to availability of freshwater and suitable land for cultivation. Those resources are not easily available in other parts of the country, except through expansions along the Nile valley, which are also subjected to more or less the same heat conditions. Therefore, the Government made a decision to give priority to climate induced migrants wanting to

voluntarily move to Lake Nasser area and own assets there. At the same time, the Government is well aware of climatic challenges in the Lake Nasser area, which are common to all of Upper Egypt, which houses more than 30 percent of Egypt's population and agricultural land, and recognizes the need to develop a set of adaptation interventions for climate change and climate variability in the lake area. The Ministry of Environment has been particularly interested in ensuring that adaptation solutions in the lake area are environmentally friendly and sustainable, given the sensitivity of the lake to pollution. The current project was designed as an explicit response to these concerns. It will not only provide beneficiaries with new productive assets, but will also leave the country with adaptation knowledge on food production and rural livelihoods in higher temperatures and increase drought, which is crucial for Egypt in the next phase. This is why component three was included to show that techniques are transferrable to a region with similar climatic conditions, in this case, "Upper Egypt"<sup>38</sup>. It will also allow for environmentally sustainable development of the area, salvaging it from the expected negative environmental impacts caused by uncontrolled encroachment of seasonal activities or migration.

Worthy of mention also that relocation to Lake Nasser is not new for Delta communities. For many years they have engaged in seasonal cultivation, fishing, and mining.

#### *Adaptation Alternative*

Component 1 of the project will assist the government with preparing land-use plans and a zoning policy, relying on area climate analysis, carrying capacity analysis and a strategic environmental assessment (SEA). It will provide a clear assessment on the number of migrants who can be benefit by settling in Lake Nasser area without degrading its ecosystem. The plan will provide an environmentally sound development strategy of the area supported by a financial investment plan for the region. This component will also strengthen the capacity of government in vulnerability mapping to enable decision makers to formulate informed land and benefit allocation decisions in the area for communities most affected by climate change.

#### **Component 2** Technology transfer to enable adaptation in Lake Nasser communities

##### *Baseline without Adaptation Fund Support*

Most migrants who are settled and/or will be settled in the Lake Nasser area come from the north part of the country, where temperatures are 2-5°C degrees lower than that in the southern parts. In fact, temperature is as high a 10C more in the Lake Nasser area than the Nile Delta on the north. Taken into consideration the expected temperature rise and water scarcity, the new settlers on the lake are not well equipped with a strategy for maintaining sustainable livelihoods in this area. The main crops cultivated in the north are wheat and corn, which are not productive at higher temperature. The lack of farmer knowledge about appropriate, efficient irrigation systems, and temperature-induced pests and diseases agriculture production will fail and the development of the Lake Nasser region as a whole will be compromised.

#### *Adaptation Alternative*

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<sup>38</sup> Upper Egypt refers to the Southern governorates of Egypt. They are referred to as "Upper" due to their higher elevation. Upper Egypt starts from the governorate of Menia up to Aswan (the southernmost governorate).

Component 2 of the project will provide an integrated package of interventions based on tested technologies and transfer of good practice to enable migrants to settle successfully and create robust livelihoods. Implementation of this component goes beyond the pilot villages established already. It focuses on transfer of adaptive technologies and know-how, including those which will expand sources of income.

Adaptation interventions will 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; increasing organic matter in the soil using silt held up behind the High Dam as well as biological waste; and applying productive income-generating agro-forestry as a means to reduce the impact of direct sunlight on agriculture, as well as to protect the area from sand encroachment. Livestock and poultry hubs will be established to apply already developed heat resistant varieties and to incorporate indigenous knowledge and experience of Bedouins in livestock herding under climatic changes and variability.

The component will also build capacity through an education and training program on the use and maintenance of introduced technologies and approached as well as increase awareness on climate change and optimal means for adaptation.

Livelihood strengthening interventions also include helping migrants build sustainable market linkages; add value to their products using agro-industry (sun-dry tomato, tomato paste, dry fruits, castor oil); engage in off-farm income-generating activities such as handicrafts; and engage in tourism services since this area is rich with antiquities.

**Response to CR10.2** WFP work in Egypt has over many years successfully applied the model of engaging beneficiaries in the creation of all types of new assets which would later belong to them or their communities. This includes physical assets (land, irrigation systems, greenhouses...); social assets (supporting the set up/strengthening of community organizations, facilities for technical support to farmers and farmer communities ...); financial assets (capitalizing small/micro-loan funds; providing small grants); or human assets (skills development). This provides them with experience, ownership of the assets being created, and an opportunity to participate in shaping it. They are employed as unskilled labour or skilled where applicable, which gives them an immediate income source. WFP intends to apply this approach under the proposed project. In such as case, beneficiaries may come but families would follow when assets have been established. This will be part of the participatory process (rapid rural appraisal) to be done if the concept paper is approved, in time for submission of the full proposal.

It is also to be noted that by relocating, families do not lose their original assets (houses, land if any). In the three pilot villages implemented by WFP, households who failed and lost their assets in Lake Nasser to those who were next-in-line were no more than 5%.

**Component 3** Transfer adaptation technology to three of the poorest villages in Upper Egypt

#### *Baseline without Adaptation Fund Support*

In 2007, the Government declared its intention to target the poorest 1000 villages (out of an overall total of around 5000 villages). The choice of the 1000 poorest villages was based on Egypt's 2006 poverty map, developed by the Ministry of Economic Development. These 1000 villages will be targeted for a significant level of investment in an integrated package of basic services.

Climate change is a risk for rural areas all over Egypt. According WFP Qualitative Community Assessment (2010), members of affected communities reported that cultivation often fails in their areas due to lack of knowledge and unavailability of solutions to changes in seasons, rainfall, temperature, and new types of pests. This in turn affects income from agriculture, livestock as well as secondary incomes that depend on agriculture. Adverse impacts of climate on women's livelihoods and food security is of particular concern taken into consideration that livestock raising, post harvest activities and small scale processing of agricultural products and byproducts constitutes the main income sources for women in rural communities.

### *Adaptation Alternative*

Component 3 of the project will enable the identification of climate risks among a sample of three of the 1000 poorest villages in Upper Egypt (to be determined during project appraisal) to demonstrate transferability of climate adaptation technology. Specific technologies to be transferred are those that were highlighted as most needed in consultations held with Upper Egypt communities. Most pressing among those are the ability to adapt to heat shocks, drought and floods and their effect on agriculture and livestock raising; reduce water consumption by efficient irrigation technique; ability to cope with food shortages during seasons of shortage. Technologies most likely to be needed include soil management under heat conditions (increasing organic matter in the soil, and applying agro-forestry where applicable); expanding irrigation efficiency; and heat tolerant crop and animal varieties. Awareness raising and training will also be provided.

## **PART III: IMPLEMENTATION ARRANGEMENTS**

*A., Describe the arrangements for project / programme implementation.*

The priority given to the development of the Lake Nasser area dates back to 1963, when the Government established a series of governing bodies to manage the lake's resources. Those included the Aswan Regional Planning Authority (ARPA) for lake development, complemented in 1968 by the UNDP supported "Lake Nasser Development Centre" to undertake development-relevant research in agriculture, fisheries, public health, settlement planning, tourism and transportation. Subsequently, a High Dam Development Authority was established to develop the lake region. The HDLA, affiliated with the Ministry of Agriculture, currently manages the Lake development plans in cooperation with the local government of Aswan.

Executing entities will be the Ministry of Agriculture in collaboration with the Ministry of Environment, the Aswan Governorate and others. In villages themselves, execution of most activities will be undertaken by community organizations after receiving training, and with assistance from Government and WFP as needed.

The Ministry of Agriculture's High Dam Development Unit will be the main executing agency for the project. The Unit has a field office in Aswan with a cadre of employed staff with field experience, as well as a network of qualified local consultants. The Aswan office will coordinate the day to day implementation. The Unit also has an office in Cairo, which coordinates at the policy level. The Unit will coordinate the execution of all of component two and three activities, and will facilitate the activities of component one.

The Ministry of Agriculture's Climate Research Center is directly responsible for the overall adaptation strategy of Egypt in this sector. The Institute will be responsible for providing

technical support to the project and ensuring that the project is achieving the intended targets within the National Agricultural Climate Adaptation Strategy. The Center will be responsible for managing the climate monitoring function under Component 1, participate in master plan revision under component 1, and providing local expertise to assist in identification of suitable adaptation technologies under Components 2 and 3.

The Ministry of Environment and the Egyptian Environmental Affairs Agency (EEAA) will coordinate the strategic planning for the Lake Nasser region. In this context, they will work closely with concerned Ministries and agencies, namely Ministry of Agriculture and its relevant agencies; Aswan Governorate and its local units; among others. The Ministry of Environment/EEAA will also provide guidance for the overall project within its mandate and expertise, particularly as it relates to climate adaptation in general and more specifically use of renewable energy, among others. Ministry of Environment will play a leading role in preparation of a strategic environmental assessment of the master plan under Component 1, and will monitor implementation to ensure pollution prevention. In Wadi Allaqi conservation area, the EEAA Conservation Sector in Aswan will manage project activities and interventions in collaboration with the High Dam Lake Unit of the Ministry of Agriculture.

The Governorate of Aswan will play a leading role in coordinating the implementation of Component 1, and adopting the master plan and zoning policy as a basis for land allocation decision making. The Governorate will grant licenses for the various activities as needed. It will facilitate and monitor implementation of project activities.

The Ministry of Housing's Green Building Council will provide expert advice on low-cost eco-housing to be instated in the area to minimize environmental damage.

The World Food Programme, Egypt Country Office will be responsible for overall project implementation, supervise project implementation, oversee monitoring and evaluation, provide technical support, and report to the Adaptation Fund.

Execution of most activities will be undertaken by community organizations after receiving training, and with assistance from consultants as needed in the different specializations.

Collaboration will be forged with Universities in the area, such as the South Valley University in Aswan for the Lake Nasser interventions, which can be in a position to provide expertise needed for the technology adaptation/transfer process.

The Center of Bio-organic Agriculture Services (CBAS) in Aswan will provide bio-organic agricultural services by supply farmers with bio-fertilizers; bio-control agents, particularly parasitoids and predators; technical recommendations and following up as well as carrying out physical and chemical soil and water analyses and technical training courses for staff and beneficiaries in the field of bio-organic agricultures.

#### *B. Describe the measures for financial and project / programme risk management.*

WFP's policy requires that risk assessment is conducted every year in all its designed and ongoing programs. Table 4 matrix summarizes key risks and mitigating factors.

#### **Table 4: Risks and Responses**



Risk	Likelihood	Response
<p>Unforeseen changes in the poverty, hunger, nutrition and other socio-economic variables due to external factors such as Triple F crisis, pandemics, climate change.</p>	<p>Medium</p>	<p>Strengthen community resilience through adaptation solutions.            Early warning systems for food prices (integrated into WFP other programs in Egypt)            Awareness on preparedness for and management of pandemic situations.</p>
<p><b>Added in response to CR9 and CR3:</b>            Limited demand for migration to Lake Nasser area and non-smooth integration of migrants in recipient societies</p>	<p>Low</p>	<p>Several new communities have been established for land reclamation in Egypt over the last 2 decades. Members of these communities came from many governorates of the country, creating an agglomeration of families of different cultures and backgrounds. Experience showed that over the years, these settlements of people succeeded in socially integrating and creating solid societies to which they have a strong and evident sense of belonging.</p> <p>WFP will undertake a rapid participatory assessment to verify the demand, determine priority locations; strata within those priority societies most likely to succeed in the new area; and determine any challenges/issues from their perspective that would be catered for in the program design. An iterative process between local communities and migrating communities will be undertaken to determine the best relocation scenario that meets both expectations.</p>
<p>Non suitability of the migrants of the introduced approaches and technologies to the climate and agro-ecological conditions of the region</p>	<p>Low</p>	<p>The project will select migrants who have relevant skills and are willing to be trained in new farming and production techniques. Also, the technologies which will be scaled up and replicated have been tried and tested in the region. New technologies have been tested in similar conditions.</p>
<p>Interest by the Nubian people (original inhabitants of the area) to accept the project</p>	<p>Low</p>	<p>Both the previous pilots and consultations done in preparation for this project showed that Nubian people still living in the area only demand similar services to those offered to migrants. This has been arranged and the pilots have been</p>

		<p>progressing smoothly. Nubians have co-existed successfully with other people, such as miners, foreshore cultivation farmers, and fishermen, all of whom come from other locations. <b>Under this project, locations for settlement projects of new migrants will not be carried out in existing Nubian villages, but rather in other locations around the lake.</b> Assistance to Nubians will be provided to put them on equal footing as new migrants in terms of rights and responsibilities with regard to the lake ecosystem.</p>
<p><b>Added in response to CR11</b></p> <p><b>Non-sustainability of project due to institutional or financial factors</b></p>	<p>low</p>	<p>Previous studies proved the economic feasibility of agricultural productivity in the area.</p> <p>The project will also ascertain these positive feasibility indicators through a pre-feasibility study to be conducted under component 1</p> <p>The project will also be building institutional capacity for sustainable operations through strengthening farmer organizations, marketing centers and creating linkages to market</p>
<p><b>Modified in response to CR12: (see annex 3 on political situation in Egypt)</b></p> <p>Political Risk i.e. non-smooth transition from the interim to the elected Government administration leading to changes which impact project implementation. This includes:</p> <ul style="list-style-type: none"> <li>- delays in or incomplete handover of responsibilities from one official to another</li> <li>- Heightened conflict that affects assets constructed under the project, but this is not so much of a risk because assets would not start to appear on the ground except after one year of project start, as the focus initially would be on component one and preparations for components two and three.</li> <li>- New government may change priorities, but this is highly</li> </ul>	<p>Medium</p>	<p>Sign necessary agreements reflecting roles and responsibilities of government partners vis-à-vis the project in advance of start-up</p> <p>Educate and brief new officials on the project to avoid consequences of potentially slow handover</p> <p>Work collaboratively with all stakeholders involved, not only government, in order to build ownership of the project by the people</p>

<p>unlikely because food security and income generation are important outcomes of this project and will remain high on any government priorities. Food security is Egypt's impending doom and it is very hard to foresee a future government who would not consider it a priority. Climatic variability is also felt harshly and has visible effects of food production already. Finally, all political parties of all ideological backgrounds already indicated they would honor Egypt's commitments towards international agreements, UNFCCC included</p>		
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*C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.*

Monitoring will be undertaken on several levels:

- Field personnel based in the High Dam Lake Development Project Office in Aswan and in the EEAA office in Aswan will conduct day to day monitoring of activities and progress. Those units will jointly prepare quarterly progress reports for submission to WFP as the multilateral implementing entity and to the management of the executing entity for review. Quarterly progress report formats will be developed prior to start of the project and included in memoranda of understanding with those entities.
- WFP personnel and consultants will undertake regular visits to the project locations to ensure that targets are met. Visits will entail periodically convening focus group discussion and in-depth interviews with key stakeholders to elicit maximum information about progress and road blocks. Monitoring visit reports will be prepared by personnel and consultants.
- Six monthly progress reports on the overall project will be prepared by the WFP as the multilateral implementing entity.

Evaluation will be based on (1) a baseline assessment (to be funded from WFP's own resources and included as part of the full proposal to the Adaptation Fund); (2) midterm evaluation of project early outputs, project management arrangements, progress of implementation, bottlenecks, and impact where relevant; (3) final evaluation of project outputs and outcomes.

**Response to CR8:** WFP taking the lead in M&E and knowledge management refers to its role in managing it through WFP's own systems, as well as ensuring their proper integration into government and research systems. In fact, several measures will be taken to ensure the engagement of the concerned governmental authorities in the follow-up of the project and eventually its feeding into governmental policies and programs. This includes the following:

- Inclusion of concerned government officials in project monitoring roles.
- The inclusion of concerned technical government officials and decision makers at the national level in the annual workshop that WFP is to organize to discuss opportunities and constraints, share experience and learning, and point the way forward
- Sharing extracts of the reports with the concerned government officials at the local level
- WFP will carry out advocacy efforts and meetings to integrate knowledge generated under this project into national development programs, and support the design national plans to scale up this project for nationwide application. WFP will ensure mainstreaming knowledge generated under this project in the activities of key economic Ministries (planning, finance, agriculture, trade, among others). WFP will involve the Information and Decision Support Center (IDSC) in the knowledge management component as they are the repository of information and backstopping office of the Prime Minister in terms of development information and decision support.
- Carry out a training course for new parliamentarians on the concept of climate change and food security, analysis conducted for Egypt, and knowledge generated under the pilot in Aswan and Upper Egypt.

### **Monitoring and Evaluation Plan and Budget (indicative, to be finalized during appraisal)**

<b>Task</b>	<b>Responsible Parties</b>	<b>Budget US\$*</b>	<b>Time frame</b>
Inception Workshop	WFP, MALR, EEAA and other stakeholders	15,000	Start of project
Monitoring field visits	WFP, MALR, EEAA	48,000	Monthly over the four year project
Quarterly reports	WFP and executing agencies	6,000	At the end of each quarter
Annual Progress Reports (APR)	WFP and executing agencies	5,000	At the end of each year
Meetings of the Project Steering Committee	WFP	20,000	Every 3 months
Mid-term Evaluation MTE	WFP recruited external evaluation team	35,000	Month 24 of the project
Final Evaluation (FE)	WFP recruited external evaluation team	55,000	After project conclusion

Final Report	WFP and executing agencies	10,000	At least two months before the end of the project
<b>TOTAL COST</b>		194,000	

*D. Include a results framework for the project proposal, including milestones, targets and indicator*

A complete results framework for the project proposal, including milestones, targets and indicators, will be prepared during the project preparation phase.



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

**A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT<sup>39</sup>** *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*

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, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
Name & Signature Implementing Entity Coordinator	
Date: <i>(Month, Day, Year)</i>	Tel. and email:
Project Contact Person:	
Tel. And Email:	

<sup>6</sup>. 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.

## **ANNEX 1: Summary of WFP Pilot Interventions in the Lake Nasser Region**

Since the formation of Lake Nasser, agricultural development has been carried out on the western side of the lake due to its low slope gradient and numerous broad valley, or *khors*. The majority of settlers have been migrants from the north with traditional knowledge of farming in the Nile valley. This has been challenging, as the area is mostly desert and difficult to farm without access to knowledge of land reclamation and dry farming. Until 2004 all agriculture was performed on the shores of the lake below water storage capacity of areas that were periodically inundated. This so-called seasonal cultivation is economically successful in terms of seasonal farmer income, but is associated with high fertilizer and pesticide use and concomitant impacts on the lake ecology. This exacerbates a rising problem, where the lake system is showing symptoms of ailments. Microbiological surveys show that there has been a significant increase in total bacterial counts<sup>40</sup>.

Against this backdrop, and to provide a sustainable alternative to development around the lake, the Ministry of Agriculture, local government, WFP and development partners (Spanish Government, Swiss Fund, and the Canadian International Development Research Center) piloted a number of interventions between 2005-2010. The pilots were carried out on 3000 acres on the West side of the lake (see Figure 5) on the high ground above the flood area, namely in the villages of Kalabcha, Garf Hussein, and Thomas and Afia. Beneficiaries are migrants who moved to the new villages. According to a recent report<sup>41</sup>, more than a third of the beneficiaries in the area are between the ages of 30 and 40. Another 14 percent are between 20 and 30. percent. Beneficiaries who are immigrants from regions in Lower Egypt and the Delta constitute some 36 from rural areas in lower Egypt. Another 19 percent come from urban areas in lower Egypt.

Since the launch of the project, seasonal unsustainable agricultural practices on the lake shores has decreased by about 75 percent. Interventions included upgraded housing with environmental architecture; sustainable organic agriculture; efficient irrigation systems; strengthening local community organizations; assistance to link farmers to markets (those communities are now suppliers of tomatoes to Heinz and sesame to a major Egyptian food processor on a forward contracting basis); as well as raising awareness and establishing small scale education and health facilities. The pilots also strengthened community organizations, which are now in charge of microfinance funds for livestock raising for women and negotiating forward contracts on behalf of the farmer community.

The eastern side of the lake is part of the Eastern Desert, a rocky plateau bisected by wadis (dry rivers). Lake water deeply penetrates the wadis, providing new opportunities for development in this area. Wadi Allaqi, the largest wadi on the eastern side, is a candidate for

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<sup>40</sup> Kassas, A. Fattah. 2002. Symposium Report, Environmental Change and Desert Development: *New Water, New Opportunities in Southern Egypt*, UESD, South Valley University, Aswan, Egypt 16-18 December 2002

<sup>41</sup> Near East Foundation NEF/Center for Development Services (CDS): December 2010, "New land, New Life" Project. Adaptation to the climate change IDRC Grant Number 104270-012, Final technical report

expansion of sustainable development activities. Local livelihoods on the eastern side have traditionally been based on animal raising. The Bedouin pastoral economy is characterized by five essential elements: sheep-herding, camel-herding, charcoal production, collection of medicinal plants, and temporal cultivation in ecologically favorable habitats. The major problems facing the local communities in Wadi Allaqi are lack of pasture due to scarcity of rainfall; failure to access fodder for animals; lack a steady income stream; lack of veterinary services; abundance of poisonous pests and snakes; difficulty to access markets; illiteracy; no access to potable water; and poor nutrition and health.

On the eastern side of the lake, assistance was provided to enhance research towards more sustainable development and use of natural resources in Wadi Allaqi. The project was implemented from 1987 to 2004 by a multidisciplinary team from South Valley University in cooperation with national and international research institutions and development agencies, such as United Nations Environment Programme (UNEP), UNESCO, Canadian International Development Research Center, United Kingdom Department of Foreign Assistance and International Development (DFID), in addition to some of the major European universities and the Government of Egypt. The project was implemented by local Bedouin communities of Wadi Allaqi. Desert farming, novel crops, medicinal plants, efficient irrigation, indigenous environmental knowledge and gender issues were the main focus of activities.

The Allaqi project achieved concrete outcomes, which proved that sustainable interventions can be indeed adopted as a way of life for local populations. Wadi Allaqi was designated as a protected area, and subsequently as a UNESCO Biosphere Reserve. The traditional livelihoods of the Bedouin communities of the area were improved in this particular area. Aswan Governorate established a basic health clinic in the area. A literacy program was established to provide basic reading and writing skills to Bedouin children and some adults. Infrastructure (water supply and road construction) were improved by the local authorities for easier access to the local market. Transfer of knowledge and technology was done through a published book,<sup>42</sup> a series of working papers, and scientific articles.

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<sup>42</sup> "Bedouins by the lake" (2009, AUCP).

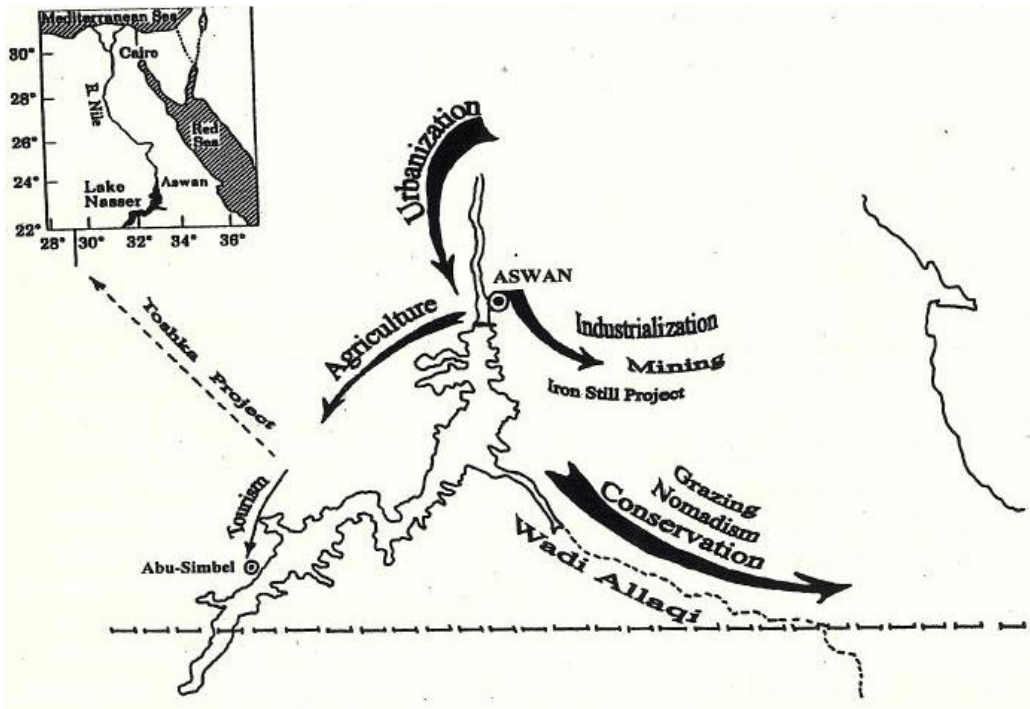


Figure 6.: Lake Nasser



In response to CR1

**ANNEX 2: CHART SHOWING SEQUENCE OF ACTIVITIES**

Output/Activity	QUARTER												Output/activity depends on:	
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12		
<b>Preparatory Activities</b>														
Sign letters of commitment by key government, and form a steering committee for the project composed of Ministries of Agriculture (MALR) and Environment (MSEA); community organizations; Ministry of Planning; Governorate of Aswan; WFP.														
<b>Risk 0.1:</b> Government entities may not accept to take part, particularly when the government changes after the coming elections														
<b>Risk level and reason for categorization:</b> <b>Low</b> because WFP was requested by all the key entities in writing (MALR, MOE, and Aswan Governorate) to develop this activity and to submit this proposal to the Adaptation Fund. It is highly unlikely that a new government would not put this as a priority due to the seriousness of the food security situation in Egypt and due to the already felt impact of climatic variability on food production.														Concept approval by AF
<b>Risk Management measure:</b> WFP will call for the steering committee to be officially formed as soon as WFP receives approval of the concept note. If a new government official is appointed, WFP briefs the new partner and brings him/her up to speed.														
<b>Component One: Strategic adaptation planning for the Lake Nasser region.</b>														
<b>Amended master plan for Lake Nasser region</b>														
Update information using GIS on activities and projects that have started in Lake Nasser area since the masterplan was published in 2004														Signature of Letter of Commitment by Governor of Aswan (see 0.1)
Compile climate data for Lake Nasser region, and figure into the masterplan														

Output/Activity	QUARTER												Output/activity depends on:	
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12		
Finalize the masterplan data and disseminate the results publicly in an event														
<b>Government representatives trained on climate atlas use for geographic targeting decisions.</b>														n/a
<b>Competitive selection and fair allocation of land and benefits to climate induced migrants.</b>														n/a
Ads posted inviting applications from climate threatened areas following stated criteria and indicating benefits package														Ads will be posted by Aswan Governorate (licensing authority)
Field focal points established in climate threatened areas (determined based on climate vulnerability map) with support from WFP and IOM to provide support to households wanting to relocate.														
Selection and preliminary allocation of land and benefits package														Preliminary allocation letters will be signed by Aswan governorate. Beneficiary travel is arranged by the project.
New inhabitants visit for an orientation and to participate in the design of the village and definition of services needed. They are requested to sign allocation papers and pay a nominal fee as indication of seriousness.														
New inhabitants are offered roles/jobs according to their skills in construction of community assets; when villages are completed, families are allowed to move in with long-term use rights														

<b>Risk 1.1: Governorate would not proceed with the advertisement and subsequent allocation decisions.</b>
Risk level: Low.
Risk Management measure: Signed letter of commitment obtained before the full proposal submission to AF would detail the needed.
<b>Risk 1.2: Limited demand for migration to Lake Nasser area and non-smooth integration of migrants in recipient societies, or migration is not climate induced</b>
Risk level: Low.
<b>Risk Management Measure:</b> 1) Actions 1.3.2 and 1.3.4 above ensure the potential success of migration; 2) Set up informational centres and conduct qualitative focus groups in locations that are determined on the climate vulnerability atlas to be of highest vulnerability (e.g. Delta low lands); governorate will include selection criteria pertinent to location of origin.
<b>Risk 1.3: Lack of interest by the Nubian people (original inhabitants of the area) to accept the project</b>
<b>Risk level:</b> Low. Both the previous pilots and consultations done in preparation for this project showed that Nubian people still living in the area only demand similar services to those offered to migrants. This has been arranged and the pilots have been progressing smoothly. Nubians have co-existed successfully with other people, such as miners, foreshore cultivation farmers, and fishermen, all of whom come from other locations.
<b>Risk Management Measure:</b> Under this project, locations for settlement projects of new migrants will not carried out in existing Nubian villages, but rather in other locations around the lake. Assistance to Nubians will be provided to put them on equal footing as new migrants in terms of rights and responsibilities with regard to the lake ecosystem.

		QUARTER												Output/activity depends on:
Output/Activity		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	
<b>Upgrade climate monitoring units</b>														
	Detailed assessment of existing monitoring facilities	■												
	Procurement and installation of equipment		■	■										
	Training of government personnel operation the stations and central government on climate monitoring			■	■									
<b>Financing mechanism for scale-up</b>														
	Finalize in a participatory manner a business plan for Lake Nasser		■	■										
	Conduct a thorough study of financing alternatives and identify potential financial entities to manage the mechanism			■	■									
<b>2</b>	<b>Component two: Technology transfer to enable adaptation in Lake Nasser communities</b>													
<b>2.1</b>	<b>Suitable technologies are identified for environmentally sound energy for domestic use</b>													
	Detailed assessment of existing efficient energy solutions			■										
	Procurement and installation of equipment (PV and Biogas Units)			■	■									
	Training of community members on operation and maintenance of power units					■								
	Risk: Farmers are not able to operate, maintain or replace purchased equipment													

	Risk level: <b>Medium</b>																
	Financing mechanism responsible for scale-up is endowed with a nominal fee from farmers for operation and maintenance of communal facilities																
2.2	Farmers start farming organically using water saving irrigation techniques introduced																
	Land preparation																
	Procurement and installation of irrigation system for 1500 acres																
	Training of farmers to use and maintain this system																
2.3	Agro-forestry greenhouses and plots established (total area about 150 acres)																
	Land preparation and installation of irrigation systems																
	Development and operationalization of greenhouses																
2.4	Livestock and poultry hubs established																
	Establish irrigated open range area																
	Procure seed animals from heat and drought tolerant varieties																
	Establish vet clinic and monitoring system for animal health																
	Train beneficiaries on animal health under climate shocks																
2.5	Post harvest and marketing centers																
<b>Component Two Risks:</b>																	
Risk 2.1: Governorate would not provide necessary licenses																	
Risk level: low																	
Managing Risk: See risk 1.1 above																	
Risk 2.2: Some crops may fail																	
Risk level: <b>Medium</b>																	

	Managing Risk: Diversify to lessen risk
	Risk 2.3: Prices and market trends may change
	Risk level: <b>Medium</b>
	Managing Risk: Train marketing centres on tracking changes in prices and market demand. Employ IDSC's agriprice network to support farmers as they have a similar mandate
	Risk 2.4: Climate variability may change course and bring unexpected shocks. Crops may entirely fail.
	Risk level: <b>Medium</b>
	Managing Risk: teach community organizations how to collaborate on climate forecasting with the Ministry of Agriculture and the Meteorological authority

**Note: Component three is a repeat of component two risks and activity set, but foreseen to start in year two**

### **Annex 3: Political Situation in Egypt Response to CR12**

In January 2011, Egypt witnessed a popular uprising, which led to overthrowing of ex-President Hosni Mubarak, who ruled the country for 30 years. The uprising was driven by several stated factors, some of which are economic (e.g. low incomes, inability to buy food, high rates of unemployment particularly among youth), and others are political (concern about fraud in the last parliamentary election cycle). Since then, Egypt has witnessed rising levels of political participation, as evident in a referendum on constitutional changes, in which over 18 million people participated, vis-à-vis three million politically active people for the last 30 years. Egypt now has a full interim government, led temporarily by the Supreme Council of Armed Forces, who declared it would protect the democratic process and handover to an elected government soon. As dismantling of the last Parliament was done based on the demands of the uprising, new parliamentary elections are tentatively scheduled for November/December 2011. The Constitution was amended to ensure free and democratic elections, but the new Parliament will design a full new constitution.

The proposal already stated that political risk is medium risk simply because of how the risk is intentionally worded. Our risk here is not government change, but simply that the handover from the current fully operational interim government to the elected government would not be a smooth transition.

By “not smooth” we mean:

- heightened conflict that affects assets constructed under the project: but this is not so much of a risk because assets would not start to appear on the ground except after one year of project start, as the focus initially would be on component one and preparations for components two and three.
- Delays in or incomplete handover of responsibilities from one official to another: this is a medium risk and WFP's role here will be to educate and brief the new officials on the project.
- New government may change priorities: highly unlikely because food security and income generation are important outcomes of this project and will remain high on any government priorities. Food security is Egypt's impending doom and it is very hard to foresee a future government who would not consider it a priority. Climatic variability is also felt harshly and has visible effects of food production already. Finally, all political parties of all ideological backgrounds already indicated they would honor Egypt's commitments towards international agreements, UNFCCC included.